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Construction procurement

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Terms and definitions

Refer to [Terms used in this guideline](#)

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1 Scope

These guidelines are aligned to [AS/NZS ISO 9001:2016 Quality management systems – Requirements](#). They are specific to construction procurement and apply to all project and contract activities for NSW Government construction projects, including those involving private sector investment or financing.

Project and contract activities may include:

- detailing project requirements
- project management
- option and concept development
- design and construct
- asset maintenance and operation
- decommissioning.

The guidelines should be read and applied in conjunction with NSW Government's Procurement Policy Framework. <https://www.procurepoint.nsw.gov.au/policy-and-reform/nsw-government-procurement-policy-framework> which includes:

- Environmental management guidelines
- Work Health & Safety management guidelines.

2 Purpose

Contractors should use these guidelines when planning and implementing their quality management system (QMS), and when preparing site-specific quality management plans (QMPs) which include Inspection and Test Plans (ITPs). The purpose is to:

- specify the minimum quality standards required for all government construction projects
- provide a consistent approach to plan and implement quality systems
- increase productivity and efficiency
- facilitate processes for continuous improvement
- demonstrate compliance with applicable quality Standards.

3 Application

When bidding for government construction contracts valued over \$1 million, contractors must have an independently certified quality management system that is compliant with [AS/NZS ISO 9001:2016 Quality management systems – Requirements](#).

All contractors working on NSW Government construction projects must commit to a systematic approach to quality management and demonstrate acceptable standards of quality. Table 1 shows the minimum quality documentation requirements.

Table 1: Type of work and quality documentation requirements

| Type and value of contract | | Quality documentation requirements |
|-------------------------------------|---------------------|--|
| Construction | Under \$1 million | QMP and ITPs |
| | \$1 million or more | Certified QMS, QMP and ITPs |
| Design and engineering | \$250,000 or more | Certified QMS & QMP |
| | Under \$250,000 | QMP |
| Project and contract management # | \$1M or more | Certified QMS and QMP |
| | Under \$1M | QMP |
| Construction related product supply | Under \$50,000 | ITPs and/or certificates of product conformity |
| | \$50,000 or more | Certified QMS and QMP/ITPs |

The application of this guideline outlined in *Table 1: type of work and quality documentation requirements* may be modified by an Agency subject to a detailed analysis of specific project and/or contract related Quality risks. The risk assessment should be undertaken using processes that align with [NSW Treasury's Internal Audit and Risk Management Policy for the NSW Public Sector \(TPP15-03\)](#)

Agencies may reduce or remove requirements for a QMS/QMP for project and contract management service providers if works are conducted under an Agencies QMS and QMP. This is primarily applicable to secondment and client-side engagements of individual contractors/personnel.

5 Specifying requirements

To ensure prospective contractors are aware of all project-specific requirements, including the extent of monitoring and auditing activities, agencies must include all known quality management requirements:

- as part of the request for tender and tender documentation
- in special clauses of the contract between the agency, the contractor and related suppliers.

5.1 Tenders

Requirements, as shown in [Section 3 - Application](#), are to be specified in the request for tender and contract documents

For contracts requiring a certified QMS, tenderers should select contractors from a prequalification scheme, procurement list or panel of contractors who have already provided evidence of current certification. To verify the suitability of the QMS during the tender process, potential contractors may be required to provide:

- evidence of current certification (if not already provided for prequalification etc.)
- a description of their QMS
- other documentation to demonstrate their ability to meet relevant conditions.

Where needed, the requirements for consultant QMPs should be adapted to suit the service to be provided.

5.2 Contract requirements

The contract conditions would normally include, as a minimum:

- preparation of a QMP and/or ITPs by the contractor and/or its suppliers, and the certification of their conformity before applicable work commences
- reviewing and updating the QMP and/or ITPs
- planning and conducting its reviews, audits, inspections, witnessing and surveillance of the implementation of the QMS (where applicable), QMP and/or ITPs
- controlling nonconforming services/products and undertaking appropriate corrective and preventive actions
- providing evidence of conformity with requirements for payment claims
- establishing, and maintaining quality records
- providing access to the work sites, information, documentation, records, explanations, personnel and accommodation necessary for any 2nd party audits/reviews

A typical set of tender/contract conditions specifying such requirements is included in [Appendix F](#).

Appendices B, C and D provide further guidance regarding the documentation requirements for QMPs.

6 Quality Management System (QMS)

6.1 Compliance

A QMS provides a structure for documentation and processes and enables product and service delivery to be controlled and managed to meet the specified requirements consistently.

The extent and detail of the documentation and processes included in a contractor's QMS would be determined by the products, services, practices and characteristics of the contractor, its customers' requirements, and the needs of its personnel and its own contractors.

Planning and implementing a QMS involves:

- Identifying the areas and assessing the level (likelihood and impact) of risk of products and services not conforming with the specified requirements
- developing processes, plans and procedures to manage risks and opportunities
- identifying and providing resources and allocating responsibilities to suit the plans and procedures
- implementing the plans and procedures
- monitoring, auditing and improving the implementation of plans and procedures

- regularly reviewing and improving the QMS.

6.2 Evidence of acceptability

QMS documentation must comply with requirements of [AS/NZS ISO 9001:2016 Quality management systems – Requirements](#). Where required, the contractor must provide formal JAS-ANZ certification of their quality system (or equivalent) as evidence of compliance.

7 Quality Management Plan (QMP)

7.1 Compliance

A QMP is a project or contract specific plan developed by the contractor. Applying appropriate quality management processes to plan and deliver the project ensures conformity with the requirements for the contract and manages the quality risks. The QMP is used and updated regularly during the life of the project or contract.

A QMP should typically include clearly defined:

- project or contract objectives and scope of works
- project and contract schedule/timeframes
- resources, including management structure/personnel and their relevant training
- personnel responsibilities and authorities
- process controls to be used to deal with construction and design risk
- quality procedures, ITPs and associated checklists related deliverables

It would also include methods for:

- measurement and analysis of outputs and inputs into the construction and design works
- implementation of monitoring and auditing processes
- control processes purchased products and sub-contract works
- identifying nonconformities, and implement corrective and preventive actions
- document control and records management.

7.2 Evaluation criteria

A potential contractor's quality management capability would be assessed using the identified tender evaluation criteria. Possible criteria include:

- the status of the QMS
- quality management implemented on current and/or recent comparable contracts
- assessment of past QMPs and/or ITPs.

Consideration of QMPs, design plans and/or ITPs may not be required in a tender process if:

- the relative abilities of the potential contractors are known, or
- it is assessed that they will not affect the tender evaluation outcome (such as with low risk contracts).

The agency may accept a contractor with alternative, adequate and relevant process control in place where:

- there is a limited number of potential contractors with a QMS, or
- having a QMS is assessed as unnecessary for the risks involved with the type and nature of the proposed contract.
- appropriate product test certificates from an appropriate test facility for products are provided, or
- an appropriate QMP covering the service delivery for consultant services is provided.

7.3 Contractor performance

The contractor's QMP and/or ITP should be reviewed for conformity with the requirements at the commencement of the contract. Subsequent reviews, audits, inspections, and witness and surveillance activities to monitor adequately the QMS, QMP and ITP implementation would also be planned, resourced and undertaken.

To assess the need for 2nd party reviews and audits, the following should be considered:

- the level of risk involved with the contract
- the performance of the contractor
- the results of any 1st party reviews and audits.

To assess the outcome of an audit or review:

- consider any comment obtained from the contractor
- verify that the appropriate corrective action has been taken by the contractor.

If this assessment indicates that implementation of a QMS or QMP or ITP was not satisfactory, undertake further auditing/reviewing and other such activities to verify conformity.

Confirmation of the satisfactory completion of audits, reviews, inspections and tests (and the corrective action undertaken to meet contract requirements) are to be obtained from the contractor and assessed progressively when making progress payments for completed work.

The performance of the contractor in meeting quality requirements should be evaluated and included in regular performance reports prepared for and addressed under the contract.

8 Documents and records

Agencies must maintain records of the quality performance of their service providers. Records should include:

- QMP
- QMS review reports
- QMP review and performance reports
- Comments by contractors on review and performance assessment findings
- Related registers.

Further information about the types of documents and records to be maintained is included in:

- Work Health & Safety management guidelines
- Environmental management guidelines.

Appendix A - Terms and definitions

The terms defined in the current *AS/NZS ISO 9000, Quality management systems – Fundamentals and vocabulary*, apply to these Guidelines. <https://www.iso.org/standard/45481.html>

The following definitions also apply and take precedence:

| Term | Definition |
|---------------|--|
| Agency | A NSW Government department, authority, corporation or other entity established by an Act of the NSW Parliament, excluding (for the purposes of the guidelines) State Owned Corporations. The terms Government agency, agency or agencies may be used interchangeably. Agencies may also be customers. |
| Audit | An examination of a random or discrete sample of processes to determine if correct plans/procedures are being followed and includes a document review or an examination of activities or an examination of documents and activities, to assess their conformity with requirements. |
| Certification | The attestation by certificate that the QMS meets certain defined provisions of the current AS/NZS ISO 9001 Quality management systems – Requirements for use for a certain scope of activities. Usually this would be provided following a 3rd party certification audit by an organisation accredited under a Joint Accreditation System of Australia and New Zealand (JAS-ANZ) recognised product certification scheme or another scheme acceptable to the relevant agency. |
| Client | The owner of the asset to be procured or project product, and representative of the end users of the asset. |
| Construction | Services relating to construction of buildings or works, including: <ul style="list-style-type: none"> a) pre-erection works b) construction works c) repairs, alterations and restorations. |
| Contractor | A consultant or supplier that contract with a customer to carry out asset construction, provide other products (including goods) and/or provide services. Has the same meaning as service provider or organisation, as defined in AS/NZS ISO 9000 Quality management systems – Requirements) |
| Customer | An entity calling for tenders and awarding a contract, including a customer as defined in the current AS/NZS ISO 9000 Quality management systems – Requirements. Each contract involves a customer (or agency) and a service provider. |
| ITP | Inspection and Test Plan |
| QMP | Quality Management Plan (including design plan) |
| QMS | Quality Management System |

| Term | Definition |
|---------------|---|
| Management | Planning and interactive controlling of human and material resources to achieve time, cost, quality, performance, functional and scope requirements. It involves the anticipation of changes due to changing circumstances and the making of other changes to minimise adverse effects. |
| Principal | The Minister for a departmental agency, or the agency where it is a state-owned corporation or authority, which awards and enters a contract as the customer, and for whom the contract work is done under s of a contract (and whose agent invites, receives and processes tenders). |
| Procurement | The collection of activities performed by and for an agency to acquire services and products, including assets, beginning with the identification/detailing of service requirements and concluding with the acceptance (and where applicable, disposal) of the services and products. |
| Project | An undertaking with a defined beginning and objective by which completion is identified. Project delivery may be completed using one contract or more contracts. |
| Subcontractor | An organisation that contracts with a contractor as the customer to carry out construction and related services, and/or provide other products. |
| Supplier | An organisation that contracts with a contractor/principal to supply a product and/or service. |

Appendix B – Typical contract and tender clauses and schedule

Agencies will develop their own clauses to suit their requirements. Typical clauses, as samples of what may be included in conditions of tendering and contracts, are shown below:

In the conditions of tendering

For contracts using the GC21 General Conditions of Contract and valued at or over \$1 million with a high risk of quality nonconformity, as determined by the agency:

Quality management

The Principal may elect to pass over a tender if the Tenderer has not obtained a certified corporate Quality Management System as complying with the NSW Government Quality Management Guidelines.

Refer to General Conditions of Contract, Contract clause 'Quality management' and Specification clause 'Quality management requirements'.

Submit, when requested, one of the following:

- evidence of current certification of the Tenderer's Quality Management System as meeting the current AS/NZS ISO 9001 Quality management systems – Requirements, by a certifying body registered with the Joint Accreditation System - Australia and New Zealand (JAS-ANZ), or
- a successfully implemented Quality Management Plans and associated Inspection and Test Plans complying with the Quality Management Guidelines on works comparable (in value and type) to the Works in the last twelve months.

For contracts using the GC21 General Conditions of Contract and valued at or over \$1 million with a low risk of quality nonconformity, and contracts valued at under \$1 million with the definite possibility of quality nonconformity, as determined by the agency:

Quality management

Tenderers must demonstrate their capacity to systematically plan and manage the quality of work, and to implement an effective Quality Management Plan and Inspection and Test Plans in accordance with the NSW Government Quality Management Guidelines.

Refer to General Conditions of Contract clause 'Quality management' and Specification clause 'Quality management requirements'.

Submit with the tender a Quality Management Plan and associated Inspection and Test Plans successfully implemented on a previous comparable contract.

In the contract conditions

For contracts using the GC21 General Conditions of Contract and valued at or over \$1 million with a high risk of quality nonconformity, as determined by the agency:

Quality management requirements

- 1 Refer to General Conditions of Contract clause 'Quality management' regarding quality management requirements. Maintain the Contractor's Quality Management System as meeting the current AS/NZS ISO 9001 Quality management systems – Requirements, or

equivalent requirements. Develop, document and implement a Quality Management Plan and Inspection and Test Plans (ITPs) for the Contract that are in accordance with; the NSW Government Quality Management Guidelines.

- 2 Obtain evidence from proposed Subcontractors and certify that Subcontractors' quality management systems meet the requirements of the Contractor's Quality Management System.
- 2A Submit the Quality Management Plan within 28 days of the Date of Contract, covering the relevant elements of the Contractor's Quality Management System. Include an index of the Contractor's quality procedures proposed Inspection and Test Plans (with associated checklists) and a schedule of proposed internal audits for the Contract.
- 2B Submit certification that each Subcontractor's/Consultant's quality management plan and/or ITPs meet requirements no later than 14 days before work for which they apply commences. Do not start that work before the certification is submitted.

For contracts using the GC21 General Conditions of Contract and valued at or over \$1 million with a low risk of quality nonconformity, and contracts valued at under \$1 million with the definite possibility of quality nonconformity, as determined by the agency:

Quality management requirements

- 1 Develop, document and implement a Quality Management Plan and Inspection and Test Plans (ITPs) for the Contract that are in accordance with the NSW Government Quality Management Guidelines.
- 2 Submit the Quality Management Plan and ITPs (for activities nominated in the Contract and certification of compliance for other activities), and certification of the compliance of Subcontractors'/Consultants' plans and ITPs, no later than 14 days before work for which they apply commences. Do not start that work before the documentation is submitted.

For all contracts add:

- 3 As part of the Quality Management Plan, prior to commencing design work, prepare and implement a Design Plan for the design work under the Contract, covering each phase of the design and the key activities for each phase.
- 4 The Principal will undertake surveillance (monitoring) of all work associated with the Contract. The Principal may inspect work at nominated 'Witness' points, but this work may proceed without endorsement. Do not proceed beyond a nominated 'Hold' and without the endorsement of the Principal. Endorsement by the Principal at 'Hold' point 'Witness' points will not release the Contractor from its obligation to achieve the specified requirements of the Contract. Give at least 24 hours' notice prior to reaching such points.
- 5 Submit Inspection and Test Plans, plus any necessary associated checklists, for the following particular activities to the Principal at least 14 days prior to commencing work on that activity. Incorporate the listed Hold and Witness points which require attendance by the Principal.

| Activity requiring ITP | Stage of work requiring inspection or test | H or W point (for attendance by Principal) |
|---|--|--|
| As identified elsewhere in the contract | As identified elsewhere in the contract | As identified elsewhere in the contract |

6 Submit copies of conformity records as specified, including:

| Product/Service Conformity Records | Time Records Required |
|--|--|
| Completed Inspection & Test Plans and associated checklists (including inspection and certification of formwork and scaffolding) | With each Payment Claim as specified, and when otherwise required by the Principal |
| Test results obtained from testing laboratories and the like | With each Payment Claim as specified, and when otherwise required by the Principal |
| Quality or test records obtained from manufacturers and suppliers | With each Payment Claim as specified, and when otherwise required by the Principal |
| Contractor's certification of quality conformity and performance | With each Payment Claim and when otherwise required by the Contract |
| Work as executed documents (including operation and maintenance manuals/work as executed drawings) | Progressively and prior to Completion |
| Register of product and service conformity records | Progressively and prior to Completion |

7 If at any time the Contractor fails to comply with the requirements of this clause 'Quality management requirements', the Principal may implement such inspections and tests as the Principal determines and the cost incurred by the Principal will be a debt due from the Contractor.

In the GC21 General Conditions of Contract

17 Quality management

17.1 The Contractor must systematically manage its processes in accordance with the Quality Management Systems, Plans, standards and codes specified in the Contract.

17.2 The Contractor must:

- submit documentation required by the Contract by the time or times specified in the Contract;
- review and update the Contractor's quality management procedures and documentation so they remain adequate at all times to manage and ensure the quality of the Works complies with the requirements of the Contract;
- control non-conforming services and/or products and undertake corrective and preventative action as and when necessary;
- establish, maintain and keep records of all activities related to the management of quality; and
- provide sufficient access to the workplace, and to information, records and other relevant documentation, resources (including personnel), and all other things necessary to allow the

Principal to carry out reviews, surveillance and audit of the Contractor's procedures and conformance with the contractual quality management requirements.

- 17.3 The Contractor must demonstrate to the Principal, whenever requested, that it has met and is meeting at all times its obligations under clauses 17.1 to 17.3.

Appendix C – Quality Management Plan assessment checklist

This checklist has been designed to assist Government agencies and other customers in assessing their service providers' Quality Management Plans. It may also assist service providers in developing their Quality Management Plans (QMP). An agency/customer may specify other items that will be addressed in the service providers' Quality Management Plans to support the control of risks. The number references are to clause numbers in the current AS/NZS ISO 9001 Quality management systems – Requirements.

Please respond with Y = yes, N = no, O = not applicable.

4 Quality Management Plan

4.2.2 Quality manual (Quality Management Plan)

- Has a QMP been developed for the contract?
- Does the QMP include the required documented methods/procedures or reference them?

4.2.3 Control of documents

- Are all documents in the QMP identified and revision status shown?
- Does the QMP describe how changes to contract related documents are identified and approved, and how documents are reviewed/updated and distributed, and obsolete versions withdrawn?

4.2.4 Control of records

- Does the QMP describe how the quality records will be stored and maintained for the time required so that they are readily retrievable, in facilities that provide a suitable environment to minimise deterioration or damage, and prevent loss of the records?

5 Management responsibility

5.2 Customer focus

- Do the procedures/processes documented in the QMP include a process to identify and meet customer requirements, and enhance customer satisfaction?

5.4 Planning

5.4.1 Quality objectives

- Does the QMP document appropriate and measurable quality objectives for the service provider personnel that are relevant to the products and services required under the contract?

5.5 Responsibility, authority and communication

- Are persons identified in the QMP, with their responsibilities and authorities defined with a method for communicating them to all service provider personnel?

- Is the contract quality representative nominated in the QMP with appropriate responsibilities and authority?

5.6 Management review

- Does the QMP include a requirement and method for the regular review of the adequacy and effectiveness of the QMP by the service provider's senior and other management and indicate a timetable and agenda?

6 Resource management

6.1 Provision of resources

Does the QMP show the resources proposed:

- to implement the Quality Management Plan and continually improve its effectiveness?
- to enhance customer satisfaction by better meeting customer requirements?

6.2.2 Competence, awareness and training

Does the QMP:

- Identify the necessary skills and experience of the personnel performing the contract work, with procedures for making personnel aware of their roles, addressing deficiencies in competence and evaluating the effectiveness of the actions taken?
- Include a site-specific induction and training plan, with induction and training procedures describing the competences held and required, who is to be trained, when and how, and which record competencies and training?
- Nominate the personnel with responsibility and authority for planning and implementing training and induction procedures for the contract work?

6.3 Infrastructure

- In the procedures described in the QMP, does the service provider document processes to determine, provide and maintain the infrastructure (such as office space, other facilities, equipment and services) needed to achieve product/service requirements?

6.4 Work environment

- Do the procedures/processes described in the QMP allow for the service provider to determine, document and manage the work environment (including identifying/assessing risks) needed to achieve product/service requirements?

7 Product realisation

7.2 Customer-related processes

- Does the QMP identify the customer, statutory/regulatory and other related contract requirements?
- Does the QMP include procedures covering customer communications/feedback, including customer complaints?

7.3 Design and development

- Does the QMP identify and allow for the use of competent persons to carry out design and development, reviews and verification (to suit a design plan)?
- Does the QMP include procedures covering design and development planning, inputs, outputs, reviews, change control, verification and validation?
- Does the QMP describe methods/procedures for the service provider's control and verification of design activities by its service providers, and for their activities when they do not have a quality management system or plan, or otherwise lack the procedures required?

7.4 Purchasing

7.4.1 Purchasing process

Where subcontracted work is involved, does the QMP document procedures:

- Covering how the service provider will evaluate its potential service providers' ability, select subcontractors and record the results of the evaluation, including selection/evaluation criteria?
- For verifying purchased products/services, and the performance of suppliers/service providers?

7.4.2 Purchasing information

- Does the QMP document how the subcontract requirements will be confirmed and specified in tender documents, subcontracts and purchase orders whenever applicable?
- Does the QMP provide for documenting the method and results of evaluation of supplier or other service provider ability to perform and performance (when applicable)?
- Does the QMP provide for subcontract work process control documentation (when applicable)?

7.4.3 Verification of purchased product

- Does the QMP include the methods/procedures for surveillance/inspection/other verification and the release/acceptance of the product/service that will be implemented for subcontracted work, and for their specification in subcontracts (when applicable)?

7.5 Product and service provision

7.5.1 Control of product and service provision

- Does the QMP include process control documentation for all work processes?

7.5.2 Validation of process for production and service provision

- Does the QMP provide for the service provider to identify work processes for which the resulting output cannot be fully verified by subsequent monitoring, inspection and testing, requiring other verification/validation?
- Does the QMP provide work process descriptions, indicating the criteria for process review/approval, equipment approval and qualifications of operators/personnel, equipment controls, method for validating process outputs and records to be kept?

7.5.3 Identification and traceability

- Does the QMP allow for process documentation with identification and traceability for the contract?
- Does the QMP describe the method(s) for subdividing the contract work into lots or discrete work areas and for allocating lot numbers?
- Does the QMP describe how monitoring output, samples and test results will be recorded against the lot to which they relate, and the traceability of nominated materials/products will be maintained, when appropriate?

7.5.4 Customer property

- Does the QMP describe how Clause 7.5.4 will be implemented to protect any materials or equipment supplied, or other property provided, by the customer?

7.5.5 Preservation of product

- Does the QMP describe how Clause 7.5.5 will be implemented to preserve the product during internal processing and delivery to their intended destination in order to maintain conformity to requirements?

7.6 Control of monitoring and measuring equipment

Does the QMP describe how Clause 7.6 will be implemented for monitoring and measuring equipment used, including setting out, constructing and verifying the work under the contract to ensure:

- monitoring and measurement is carried out in a manner that is consistent with the monitoring and measuring requirements?
- measuring equipment is calibrated or verified at specified intervals, or prior to use, against appropriate measurement standards, and records are kept?
- certified external calibration is arranged or suitable internal calibration procedures are used to check calibration?
- measuring equipment is identified to determine the calibration status?
- measuring equipment is safeguarded from adjustments that would invalidate the measurement result?
- measuring equipment is protected from damage and deterioration during handling, maintenance and storage?
- the validity of previous inspection and test results is verified if measuring equipment is damaged or out of calibration, and records are kept?
- the ability of computer software to satisfy its intended application is confirmed when used in monitoring and measuring to suit specified requirements?
- Is responsibility defined in the QMP for the control measures listed above?

8 Measurement, analysis and improvement

8.1 General

In the procedures/processes documented in the QMP is provision made:

- For the service provider to plan and implement the monitoring, measurement, analysis and improvement processes/methods, and their frequency, needed to demonstrate conformity to product/service requirements? (may be addressed in ITPs)
- For the method for identifying and controlling the inspection and test status of all product/service to demonstrate conformity to requirements under the contract?

8.2 Monitoring and measurement

8.2.1 Customer satisfaction

- Does the QMP describe a method for the contract of monitoring/measuring performance, as the customer perceives it, and acting in it to suit?

8.2.2 Internal audit

- Does the QMP describe methods for internal auditing/reviewing its implementation for the contract?
- Is responsibility identified in the QMP for scheduling audits/reviews and acting on audit/review results for the contract?

8.2.3 Monitoring and measurement of processes

- Does the QMP describe how Clause 8.2.3 will be implemented, where appropriate, to monitor and measure the effectiveness of the work processes used for the contract?

8.2.4 Monitoring and measurement of product

- Does the QMP describe how Clause 8.2.4 will be implemented to monitor and measure the characteristics of the product/service to ensure product requirements are met? (may be addressed in the ITPs)
- Does the QMP document a suitable method for closing out work area conformity and acceptance?
- Does the QMP include an effective traceability/closure procedure for any work areas that may have to be covered up before the results of all conformity tests are known?

8.3 Control of nonconforming product

- Does the QMP describe a method established which describes the controls and related responsibilities to ensure that a product/service which does not conform to requirements is identified and controlled to prevent its unintended use or delivery?
- Does the above method provide for the service provider to deal with nonconforming products/services by one or more of the following ways:
 - by taking action to eliminate the detected nonconformity?
 - by authorising its use, release or acceptance under a concession by a relevant authority and, where applicable, by the customer?
 - by taking action to preclude its original intended use or application?
- Does the above method require reworked and repaired products and rectified services to be re-inspected and re-tested or evaluated to demonstrate conformity with the requirements?
- Does the method provide for records to be maintained of the nature of nonconformities and any subsequent actions taken, including any concessions obtained?

- Does the method provide for the service provider to take action appropriate to the effects, or potential effects, of the nonconformity when a nonconforming product/service is detected after delivery or use has started?
- Does the QMP define the responsibility and authority of personnel for identifying, acting on and recording quality nonconformity issues? (As for Clause 5.5)

8.5 Improvement

8.5.2 Corrective action

- Does the QMP describe the methods and actions the service provider will adopt to eliminate the causes of nonconformities in order to prevent their recurrence, including requirements for:
 - reviewing nonconformities (including customer complaints)?
 - determining the causes of nonconformities?
 - evaluating the need for, and appropriateness of, action to ensure that nonconformities do not recur?
 - determining and implementing the action needed as appropriate to the effects of the nonconformities encountered?
 - recording the results of the action taken?
 - reviewing the effectiveness of the corrective action taken?
- Does the QMP define the responsibility and authority of personnel for ensuring corrective action is implemented and effective?

8.5.3 Preventive action

- Does the QMP describe a method for preventive action to eliminate the causes of potential nonconformities in order to prevent their occurrence, including requirements for:
 - determining potential nonconformities and their causes?
 - evaluating the action needed to prevent the occurrence of nonconformities?
 - determining and implementing the action needed?
 - recording the results of the action taken?
 - reviewing the effectiveness of the preventive the action taken?

Appendix D – Guideline for Inspection and Test Plans

1 Preparing Inspection and Test Plans

This Guideline is provided to assist service providers in preparing Inspection and Test Plans (ITPs) for construction contracts.

Although the current AS/NZS ISO 9001 Quality management systems – Requirements, does not cover ITP with inspection and testing, service providers will be required to develop and implement ITPs.

1.1 Purpose and scope

The purpose of an Inspection and Test Plan is to put together a single document that records all inspection and testing requirements relevant to a specific process. On a construction contract the process is likely to be a construction activity, element of work, trade work or providing a product section. An Inspection and Test Plan identifies the items of materials and work to be inspected or tested, by whom and at what stage or frequency, as well as Hold and Witness Points, references to relevant standards, acceptance criteria and the records to be maintained. Inspection and Test Plans, when properly implemented, help ensure that, and verify whether, work has been undertaken to the required standard and requirements, and that records are kept.

1.2 Glossary

| Term | Definition |
|-----------------|--|
| Hold point | <p>A 'hold' point defines a point beyond which work may not proceed without the authorisation of a designated service provider or authority.</p> <p>This 'designated service provider or authority' might be an agency's or other customer's representative/authorised person, or a regulatory authority (such as a council, Sydney Water, WorkCover and the like) representative, or it may be the service provider inspecting its service provider or employee or agent.</p> |
| Witness point | <p>A 'witness' point provides a party (such as the customer, service provider and a regulatory authority) with the opportunity to witness the inspection or test or aspect of the work, at their discretion.</p> |
| Surveillance | <p>Surveillance - Intermittent monitoring of any stage of the work in progress (whether by the service provider or customer).</p> |
| Self-inspection | <p>Where the service provider performing the work verifies the quality progressively - often with the aid of checklists.</p> |
| Work area | <p>A discrete section of the whole work, usually defined by location, where any trade work or activity would be completed before it moves onto another area. Examples include a wall, a room, a building, a length of pipeline between manholes and the like. Also referred to as lots.</p> |

1.3 Roles and Responsibilities

There are no set rules as to who, in a service provider organisation, should document Inspection and Test Plans. It is appropriate, however, that they receive input from those with a good technical and practical knowledge of, and experience in, the activities involved. The use, understanding and acceptance of ITPs by inspectors and other personnel will generally be greatly enhanced if they are involved in their preparation.

The service provider is responsible for ensuring that all the required Inspection and Test Plans are prepared, including those covering work or processes to be carried out by its service providers. While it is preferable that its service providers prepare the ITPs for their own work, in the final analysis some may require the service provider's involvement.

A senior representative of the service provider would be made responsible for approving Inspection and Test Plans, and any subsequent amendments, prior to their submission or submission of compliance/conformity certification to the customer. The contract conditions would define the submissions to the customer and any responses required.

1.4 Overview

The following steps are involved in documenting Inspection and Test Plans for a construction contract:

| Step | |
|--------|---|
| Step 1 | Read the contract documents (including the technical specifications) and prepare a list of any discrepancies, ambiguities, missing information and standards of materials and/or workmanship that are considered inappropriate. |
| Step 2 | Contact the customer and resolve the issues listed as a result of Step 1. |
| Step 3 | Examine the scope of work and divide it into separate areas requiring an Inspection and Test Plan (where not already prescribed in the contract documents). As a general guide it is normally most convenient to document a separate Inspection and Test Plan for each trade or work area/section. |
| Step 4 | Note the Hold and Witness Points required by the customer (including as listed in the contract documents). |
| Step 5 | Review the contract documents again and note the requirements that have the most impact on the quality of the finished work. For each, ask the question 'What will be the consequences if it is not made sure this is right?' Be certain to include any references to tests, submitting information to the customer, obtaining approvals and Hold and Witness Points (see 1.6.9 for further information). |
| Step 6 | Determine from Step 5 which items or aspects of each inspection will need to be recorded on checklists and prepare these. |
| Step 7 | Discuss the checklists with those directly involved with the work and obtain their input. This input should particularly be directed at identifying those issues that have caused problems (and involved extra costs) in the past, and therefore warrant checking at the earliest opportunity to avoid unnecessary and costly rectification. |

| Step | |
|---------|--|
| Step 8 | Prepare each Inspection and Test Plan to reflect the requirements of the contract documents. Reference the ITP in the Quality Management Plan and cross-reference to the other related ITPs. |
| Step 9 | Issue each Inspection and Test Plan and/or associated certification to the customer for consideration within a reasonable period prior to commencing the work described in the Plan and adjust them to suit any comment received (or act as otherwise required in the contract documents). |
| Step 10 | Decide how best to divide the whole of the work into work areas for control purposes and indicate these locations either on a schedule (with reference to grids and levels) or by marking up drawings. |
| Step 11 | Prepare and issue checklists for each work area and identify them according to location. |
| Step 12 | Train those directly involved with each of the ITP in their use. Formalise a procedure for the notification of Witness and Hold Points to the appropriate person(s). |
| Step 13 | Carry out inspections and tests in accordance with the Inspection and Test Plans, provide notices to the customer and/or regulatory authorities for Hold or Witness Points, as designated or applicable, and record the results on checklists. |

1.5 Contract particulars

Record the following contract particulars on each of the Inspection and Test Plans:

- Contract Name
- Contract Number
- Description of process/activities for that particular Inspection and Test Plan

1.6 Inspection and Test Plans

1.6.1 General

1.6.2 to 1.6.9 inclusive describe what needs to be considered for each component of an Inspection and Test Plan. They explain the components and how to select the relevant information required for each.

1.6.2 Description of operation or stage of work requiring inspection or test

Because 100% inspection and testing in most cases is neither practical nor desirable, it is necessary to adopt a testing frequency and sampling process which provides a representative indication of the work to suit the risks involved, as is addressed in 1.6.4.

Inspections and tests are often best done after a number of separate activities, but prior to a major one that will cover up previous work. Service providers would carry out preliminary tests to assist in obtaining an early indication of conformity.

Determining the type and extent of inspections and tests (along with the characteristics - see 1.6.3) is probably the most challenging aspect of documenting an Inspection and Test Plan. The approvals required are sometimes easier to determine as they are usually specified and identify particular work/stages requiring inspections and tests. The type, timing and frequency of inspections and tests vary to suit the risks and work involved.

The 'what to test', 'how to test' and 'when to test' is governed by:

- What the work is and how complex it is
- Accessibility for inspections and sampling
- Consequences of failure, including as follows:
- Cost of remedial work
- Effect on construction program
- Accessibility for rectification
- Disruption to use of building or structure
- Consequential damage to other elements
- Threat to safety of workers and public
- Availability of resources.

The type, timing and frequency (the what, when and how often) of inspections and tests are best determined in conjunction with the consideration of the characteristics to be verified.

1.6.3 Characteristics of inspection/test/approval

The characteristics of a work item can be defined as 'a distinguishable property of an item, material or process'. Examples of characteristics are colour, texture, size, strength, flatness, alignment, capacity and the like.

The characteristics to be verified will frequently determine the stage at which the inspection or test must take place if the potential for subsequent nonconformities is to be avoided. This further work might also cover up or deny access for the purposes of verifying certain characteristics.

Some characteristics can only be considered after one particular operation and before another, such as the inspection of steel reinforcement after installation but prior to the pouring of concrete.

1.6.4 Stage/frequency

The inspection/test stage/frequency will often be determined by the requirements of the contract documents or by the type of inspection and/or test and the characteristics under consideration, as outlined above. In the latter case however, there is the potential for a considerable range in what constitutes the most appropriate frequency and sampling process. It is suggested that a representative sampling of the work to suit the risks involved be used as a guide initially. Thereafter, frequencies would be increased and processes reviewed for 'problem' work activities and decreased where consistent conformity was evidenced.

1.6.5 Records

Records are essential to quality management because they provide the documented evidence necessary to verify that a product/service is in accordance with the contract requirements.

The records would be in various forms, and would include the checklists, test certificates, certificates of compliance/conformity, survey data, written approvals and the like. Inspection and Test Plans would help define the records required.

1.6.6 Specification/standard

The standards against which conformity is measured can take various forms. The most common source is usually the contract technical specification. Other standards would often be referenced in this document, and may include any of the following:

- Contract documents/specification generally
- Contract drawings

- Approved workshop drawings and/or calculations
- Approved technical details/procedures
- Approved samples and/or prototypes
- Regulatory requirements
- Australian Standards
- International Standards
- Standard specifications
- Manufacturers' recommendations.

1.6.7 Acceptance criteria

Acceptance criteria would normally be defined in the contract documents (either directly or by reference to other standards such as Australian Standards). Where this is not the case it would be necessary to identify them and possibly to agree to them with the customer. It is preferable to establish acceptance criteria with the customer (where they are not specified or clear) to agree the yardsticks (such as test panels/sections or previous work) against which a product/service is to be declared conforming or nonconforming.

1.6.8 Inspection/test procedures

For many inspections/tests, the methods employed will be specified or self evident and determined by the characteristics being examined. In other cases, however, the precise manner in which the inspection/test is carried out would need to be identified and described. A clearly described test procedure will usually be necessary to help achieve consistent and reliable results.

A typical test procedure using statistical techniques might, for example, cover:

- reference to work areas/lots or batches
- frequency of sampling
- method of taking samples
- method of conducting a test (including conditions)
- qualifications of test personnel and equipment calibration/condition/specification
- method of documenting results

In some cases it may be possible to satisfy the requirements simply by referencing the requirements of Australian Standards and the like.

1.6.9 Hold and Witness Points

It is the service provider's responsibility to identify the Hold and Witness Points (with the people responsible for the inspection/test/endorsement and other requirements) that are required for its service providers and employees doing the work. The service provider would do this to the extent that is necessary to be confident that the work is being carried out to the standards required.

The customer usually retains the option to inspect the work at any stage and may identify Hold and Witness Points requiring the customer's attendance. When preparing an ITP, the word 'Surveillance' would be shown against all selected inspection or test points that are not otherwise covered by Hold or Witness Points.

1.6.10 Checklists

As noted in 1.6.2, with some work, the logical stage to carry out an inspection or test is often after a number of separate activities, but prior to a major one that will cover up previous work.

It is often useful to complete checklists at such stages and with each inspection and test - where they will, in effect, summarise the procedures that have, and should have, taken place up to the particular point in the work process.

Checklists are useful reminders to the person doing the work of all the matters that are to be addressed. They are used to confirm all the matters have been attended to. They are also reminders to the person inspecting the work of all the matters that should be checked.

A checklist also gives an opportunity to record any special or unusual conditions under the contract, and draw these to the attention of the people doing the work. For example, special precautions for protecting existing work, notifications to the public, and other matters that might not normally be required for the particular trade or activity, may be included.

The fact that checklists exist, and that their use and content have been verified, would give a customer confidence that the person doing the work is aware of all the important steps, attributes and matters to be addressed, and the standards that should be complied with, and that conformity is being verified.

Appendix E – Typical audit arrangements

A contract requiring Inspection and Test Plans only

| | Internal (1st party) audit, organised and resourced by the service provider. | External (2nd party) audit, organised and resourced by the customer. |
|------------|---|---|
| ITP | <p>Requirements</p> <p>1 Review of process Frequency: Ongoing daily inspection Scope: Ensure: (a) Inspection and tests are carried out; (b) attendance as noted in ITP; (c) records of inspections and tests are maintained; and (d) work is acceptable or corrective action taken. By: Service provider's authorised person or delegate, e.g. site foreman</p> <p>2 Compliance audit/review of implementation Frequency: As per contract needs and procedures (typically every month) Scope: As for 1 By: Auditor or project manager/officer</p> | <p>Requirements</p> <p>1 Surveillance and monitoring at Hold and Witness Points. Frequency: At Hold and Witness Points Scope: Specified in contract documents By: Customer's authorised person or delegate</p> <p>2 Sighting initially and review with claims for payment Frequency: At provision and claims for payment (typically monthly) Scope: Satisfactory ITP provision /implementation By: As for 1</p> <p>3 Compliance audit/review of implementation Frequency: As necessary in accordance with the assessed risk of nonconformity Scope: ITP being applied in accordance with procedures and records maintained By: Customer audit/review personnel</p> |

A contract requiring Inspection and Test Plans and a Quality Management Plan

| | Internal (1st party) audit, organised and resourced by the service provider. | External (2nd party) audit, organised and resourced by the customer. |
|------------|---|--|
| ITP | <p>Requirements</p> <p>1 Review of process Frequency: Ongoing daily inspection Scope: Ensure: (a) Inspection and tests are carried out; (b) attendance as noted in ITP; (c) records of inspections and tests are maintained; and (d) work is acceptable or corrective action taken. By: Service provider's authorised person or delegate, e.g. site foreman</p> <p>2 Compliance audit/review of implementation Frequency: As per contract needs and procedures (typically every month) Scope: As for 1 By: Auditor or project manager/officer</p> | <p>Requirements</p> <p>1 Surveillance and monitoring at Hold and Witness Points. Frequency: At Hold and Witness Points Scope: Specified in contract documents By: Customer's authorised person or delegate</p> <p>2 Sighting initially and review with claims for payment Frequency: At provision and claims for payment (typically monthly) Scope: Satisfactory ITP provision/ implementation By: As for 1</p> <p>3 Compliance audit/review of implementation Frequency: As necessary in accordance with the assessed risk of nonconformity Scope: ITP being applied in accordance with procedures and records maintained By: Customer audit/review personnel</p> |
| QMP | <p>Requirements</p> <p>1 Review and update of Plan Frequency: As per contract and procedures (typically every 4 months) Scope: Ensure Plan is current and meets requirements of the contract By: Service provider's authorised person or delegate</p> <p>2 Compliance audit of implementation Frequency: As per contract and procedures (typically every 4 months) Scope: Ensure Plan is being implemented By: Auditor or audit/review personnel</p> | <p>Requirements</p> <p>1 Review of Plan Frequency: As per contract and customer requirements and procedures (typically at commencement of contract and as determined by the performance of the service provider) Scope: Verify service provider is maintaining and implementing the Plan By: Customer's authorised person or delegate</p> <p>2 Compliance audit of implementation Frequency: As necessary in accordance with the assessed risk of nonconformity (typically review for each phase of the contract) Scope: Examine processes in accordance with the assessed risk of nonconformity By: Auditor or audit/review personnel</p> |

A contract requiring an accredited Quality Management System

| | Internal (1st party) audit, organised and resourced by the service provider. | External (2nd party) audit, organised and resourced by the customer. | Certification (3rd party) audit, requested by the service provider |
|----------------------------------|---|--|--|
| ITP | <p>Requirements</p> <p>1 Review of process Frequency: Ongoing daily inspection Scope: Ensure: (a) Inspection and tests are carried out; (b) attendance as noted in ITP; (c) records of inspections and tests are maintained; and (d) work is acceptable or corrective action taken. By: Service provider's authorised person or delegate, eg site foreman</p> <p>2 Compliance audit/review of implementation Frequency: As per contract needs and procedures (typically every month) Scope: As for 1 By: Auditor or project manager/officer</p> | <p>Requirements</p> <p>1 Surveillance and monitoring at Hold and Witness points. Frequency: At Hold and Witness Points Scope: Specified in contract documents By: Customer's authorised person or delegate</p> <p>2 Sighting initially and review with claims for payment Frequency: At provision and claims for payment (typically monthly) Scope: Satisfactory ITP provision/ implementation By: As for 1</p> <p>3 Compliance audit/review of implementation Frequency: As necessary in accordance with the assessed risk of nonconformity Scope: ITP being applied in accordance with procedures and records maintained By: Customer audit/review personnel</p> | <p>Requirement</p> <p>1 Check compliance with System procedures Frequency: As part of certification audit for conformity/ nonconformity with System procedures Scope: To meet the requirement of the System procedures By: Organisation and auditor acceptable to the customer</p> |
| QMP | <p>Requirements</p> <p>1 Review and update of Plan Frequency: As per contract and procedures (typically every 4 months) Scope: Ensure Plan is current and meets requirements of the contract By: Service provider's authorised person or delegate</p> <p>2 Compliance audit of implementation Frequency: As per contract needs and procedures (typically every 4 months) Scope: Ensure Plan is being implemented By: Auditor or audit/review personnel</p> | <p>Requirements</p> <p>1 Review of Plan Frequency: As per contract and customer requirements and procedures (typically at commencement of contract and as determined by the performance of the service provider) Scope: Verify service provider is maintaining and implementing the Plan By: Customer's authorised person or delegate</p> <p>2 Compliance audit of implementation Frequency: As necessary in accordance with the assessed risk of nonconformity (typically review for each phase of the contract) Scope: Examine processes in accordance with the assessed risk of nonconformity By: Auditor or audit/review personnel</p> | <p>Requirement</p> <p>1 Check compliance with System procedures Frequency: As part of certification audit for conformity/ nonconformity with System procedures Scope: To meet the requirement of the System procedures By: Organisation and auditor acceptable to the customer</p> |
| Quality Management System | <p>Requirements</p> <p>1 Review of System Frequency: As described in System procedures to meet the requirements of</p> | <p>Requirement</p> <p>1 Compliance audit/review of System Frequency: (a) At pre-registration/pre-</p> | <p>Requirements</p> <p>1 System and compliance audit (re-certification)</p> |

| | Internal (1st party) audit, organised and resourced by the service provider. | External (2nd party) audit, organised and resourced by the customer. | Certification (3rd party) audit, requested by the service provider |
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| | <p>the standard (typically every 12 months) Scope: Ensure System suitability, adequacy and effectiveness. By: Top management.</p> <p>2 Compliance and system audit Frequency: As described in System procedures to meet the requirements of the standard (typically on a 12 monthly program) Scope: Ensure System (a) meets requirements of standard and of the agency and (b) is effectively implemented and maintained. By: Auditor or audit/review personnel</p> | <p>qualification; (b) At tender (for some contracts); (c) During contract (in accordance with the risk of nonconformity) Scope: Verify System meets requirements of the agency By: Auditor or audit/review personnel</p> | <p>Frequency: as required for certification or by agency Scope: Requirement specified by certification organisation to meet JAS-ANZ requirements or alternative acceptable to the agency By: Certifying organisation auditor or alternative acceptable to the agency</p> <p>2 System and compliance audit of critical aspects Frequency: Typically every 6 months Scope: Requirement of the System procedures and/or specified by the customer By: Organisation and auditor acceptable to the customer</p> |