



**ACT**  
Government

# QUALITY CONSTRUCTION 00B

MUNICIPAL  
INFRASTRUCTURE  
TECHNICAL  
SPECIFICATION  
**00 - PRELIMINARIES**

Transport Canberra and  
City Services

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# 1 QUALITY CONSTRUCTION

## 1.1 General

### 1.1.1 Responsibilities

#### 1.1.1.1 General

Requirement: Establish, implement and maintain a quality management system (QMS) that provides confidence to the Principal of the following:

- > The product specified can be produced.
- > Critical processes are under control.
- > Product performance has been confirmed.

### 1.1.2 Cross references

#### 1.1.2.1 Specifications

General: The following documents are related to this Specification.

MITS00A	General requirements
RMS Q6	Quality Management System (Type 6)

### 1.1.3 Referenced documents

#### 1.1.3.1 Standards

General: The following documents are incorporated into this Specification by reference:

##### Australian standards

AS 1289	Methods of testing soils for engineering purposes
AS 1289.1.4.1	Sampling and preparation of soils-Selection of sampling or test sites-Random number method
AS/NZS ISO 9000	Quality management systems-Fundamentals and vocabulary
AS/NZS ISO 9001	Quality management systems-Requirements
AS/NZS ISO 10005	Quality management systems-Guidelines for quality plans
AS ISO 10013	Guidelines for quality management system documentation
AS/NZS ISO 19011	Guidelines for quality and/or environmental management systems auditing

### 1.1.4 Standards

#### 1.1.4.1 General

Standard: To AS/NZS ISO 9001.

Proprietary products: To *TCCS Products previously considered for use list*

## 1.1.5 Interpretation

### 1.1.5.1 Abbreviations

General: For the purposes of this Specification the following abbreviations apply:

<b>CAR:</b>	Corrective Action Request.
<b>ITP:</b>	Inspection and Test Plan.
<b>NATA:</b>	National Association of Testing Authorities.
<b>NCR:</b>	Non-conformance Report.
<b>NNC:</b>	Notice of Non-conformance.
<b>QAR:</b>	Quality Assurance Representative (Principal).
<b>QMR:</b>	Quality Management Representative (Contractor).
<b>QMS:</b>	Quality Management System.
<b>RMS:</b>	Roads and Maritime Services, NSW Government and its successors.
<b>WAE:</b>	Work-as-executed.

### 1.1.5.2 Definitions

For the purpose of this Specification, the definitions given in *AS/NZS ISO 9000* and the following apply:

**Certification:** A written assertion of facts.

**Corrective action request:** A formal advice/instruction from the Authorised Person requesting action to eliminate the cause of a detected nonconformity or other undesirable situation. Unless specifically noted, it will not require raising of an NCR.

**Disposition:** Action taken to resolve non-conformance. (Lot Specific)

**Hold Point:** A mandatory verification position in the Contract beyond which work cannot proceed without the designated authorisation.

**Inspection and test plan:** The working document which identifies the specific inspections and tests to be carried out for works required by the Contract.

**Lot:** Any part of the works which has been constructed/manufactured under a continuous operation of uniform conditions and is essentially homogeneous with respect to material and general appearance. The whole of the work included in a lot of a uniform quality without obvious changes in attribute values.

**Non-conformance report:** A mandatory (standard format) report submitted by the Contractor that details the nonconforming work and the Contractor's proposed disposition of the non-conformance.

**Notice of non-conformance:** Formal instruction from the Authorised Person regarding product non-conformance from documented requirements. It automatically creates a Hold Point and requires an NCR from the Contractor.

**Performance audit (Process audit, Technical procedure audit, Methods audit):** An examination to evaluate whether established methods and procedures are being adhered to in practice.

**Product:** The result of a set of interrelated or interacting activities which transforms inputs into outputs.

**Product audit (Conformance audit, Service audit):** An assessment of the conformity of the product with the specified technical requirements.

**Qualified surveyor:** A surveyor who is eligible for membership of the Spatial Sciences Institute as a certified engineering surveyor.

**Quality assurance representative (QAR):** Appointed by the Principal for a specific project and responsible for the auditing, review and surveillance of procedures and documentation required by the Contractor's approved Quality Plan.

**Quality check lists:** Forms completed during the manufacture/construction process verifying key steps, and records required for the quality register. Check lists apply to each identified lot of work.

**Quality management representative (QMR):** Also known as Project quality representative, appointed by the Contractor for a specific project with the authority and responsibility for the implementation and operation of the Quality Plan, to ensure that QMS requirements are not subordinated to design and productivity.

**Quality register:** The files containing all quality control records such as test results, completed check lists, certificates of compliance, consignment dockets for materials procured.

**Quality management system:** The organisational structure, responsibilities, procedures, processes and resources for implementing quality management.

**Quality management system requirements:** The administrative activities affecting quality that need to be implemented and controlled to make sure that the product or a service meets documented quality requirements.

**Special processes:** Those processes, the results of which cannot be directly examined to establish full conformance. Assurance of satisfactory conformance depends on evidence generated during the process.

**System audit:** An examination of the documented quality management system represented by the quality manual, quality plan and quality register to evaluate their effectiveness in meeting the requirements of Australian Standards and the Contract documents.

**Validation:** Confirmation, through the provision of objective evidence, that requirements for a specific intended use or application have been fulfilled.

**Witness point:** A nominated position in the manufacture/construction stages of the Contract where the option of attendance may be exercised by the Authorised Person, after notification of the requirement.

**Works:** All labour, plant, equipment and materials required to complete a project in conformance with the Contract documents.

## 1.2 Quality management system

### 1.2.1 General requirements

#### 1.2.1.1 Conformance

Work on and off-site: Conform to the QMS described within the Quality Plan including products and services for all works under the contract.

Contract documents: The QMS does not pre-empt, preclude or otherwise negate the requirements of any part of the contract documents.

Responsibility: QMS requirements do not relieve the Contractor of the responsibility to conform to the contract documents.

Subcontractors and Suppliers: Conform to this Specification and *AS/NZS ISO 9001*. This can be achieved by either of the following:

- > Suppliers and Subcontractors operating their own QMS linked to and coordinated under the Contractor's QMS.
- > Suppliers and Subcontractors operating under the Contractor's QMS.

#### 1.2.1.2 System requirements

QMS: Plan, develop and maintain a documented QMS conforming to this Specification, **Annexure A - Project QMS documentation flow chart** and *AS/NZS ISO 9001*.

System purpose: To make sure of the following:

- > The proposed work method is consistent with the specification requirements.
- > ITPs and checklists are adequate and complete.
- > Approved work methods are followed.
- > The Authorised Person adequately checks Hold and Witness Points.

Format: If the format of the QMS documents differ from the format of *AS/NZS ISO 9001*, provide a matrix outlining how the documented requirements are addressed by the QMS.

#### 1.2.1.3 Management responsibility

Commitment: In the development a corporate QMS in conformance with *AS/NZS ISO 9001 section 5*, top management must perform the following:

- > Focus on customer, statutory and regulatory requirements.
- > Define authorities and responsibilities.
- > Appoint QMR.
- > Establish internal communication and review procedures.
- > Make sure resources are available.



## 1.2.2 Documentation requirements

### 1.2.2.1 General

QMS documentation requirements: Include the following:

- > Quality policy and its objectives.
- > Quality manual.
- > Procedure documents.
- > Work instructions.
- > Forms.
- > Quality plans.
- > Specifications.
- > Records.

Changes: Immediately implement changes to the project Quality Plan and QMS if the following occurs:

- > Specification requirements are not adequately addressed.
- > Nonconformity resulting from the Quality Plan or QMS.
- > Audit initiates changes to the QMS.
- > Practices have changed.

Records: Provide copies of any quality records within 14 days of request.

*AS/NZS ISO 9001*: Keep a copy on site at all times.

### 1.2.2.2 Quality manual

Requirement: To *AS/NZS ISO 9001 clause 4.2.2* and *AS/NZS ISO 10013 clause 4.4*. Include the following in the Quality Manual:

- > Responsibility statements.
- > Corporate policy.
- > All applicable system requirement descriptions with reasons for those not regarded as applicable.
- > Standard method statements.
- > Standard ITPs.

### 1.2.2.3 Project Quality Plan

Requirement: Provide and maintain a Quality Plan to *AS/NZS ISO 9001* and *AS/NZS ISO 10005*. Provide the following:

- > Progressive documentation of new procedures as the work types become evident.
- > Planning and control systems: Describe critical processes and activities and provide verification for product control.
- > Coordination with the Contractor's corporate Quality Manual.
- > Project specific quality system: Inform and direct personnel about the specific quality practices, resources, sequence of activities, controls and checks that must be implemented during the works.
- > Contractor's survey system.
- > Source and conformance verification of selected materials.
- > Nominate the Geotechnical Consultant engaged to monitor and endorse Controlled Fill if applicable.
- > Controlled conditions: Documentation to explain how each work process will be carried out.

- > Organisation structure: Include details of the specific responsibilities and authorities of the key personnel nominated for the management of the project.
- > QMR: Include the person's qualifications, technical experience and present position, together with responsibilities and authorities to resolve quality matters.
- > Details of the personnel or contracted testing organisations who will be conducting each type of compliance inspection of testing of completed works, their experience, qualification and responsibilities.
- > Details of the person authorised to change construction processes on site.
- > ITPs to verify the works conform with the contract documents.
- > Purchasing quality requirements:
  - > Critical characteristics of purchased products that affect the quality of the final product.
  - > Method of communication with suppliers.
  - > Methods used to evaluate, select and control suppliers.
  - > The facilities and services that will be outsourced.
- > Material samples: The approved sample is the quality benchmark.
- > Purchasing quality verification.
- > Work health and safety plan.
- > Audit plan.

#### **1.2.2.4 Control of documents**

Document control: Conform to *AS/NZS ISO 9001 clauses 4.2.3 and 4.2.4 and AS/NZS ISO 10005 clauses 5.6 and 5.7.*

Register: Maintain a register of each part of the Quality Plan. Register the number, date and recipient(s). Reissue to all registered when the Quality Plan is changed, superseded or recalled as required.

Requirement: Document within the Quality Plan the method of keeping quality registers, tracking and handling of NCR's, NNC's and site correspondence.

Quality register: Implement and maintain systematic records, indexed and filed so they are retrievable and accessible to the Authorised Person or an appointed quality auditor within one working day of request.

Register of method statements: Provide a register listing all method statements (both standard and job specific) including the title, identifier and revision status.

Location: State in the quality plan where records are to be located.

WAE: Keep records of any amendments to design details for inclusion in WAE drawings.

Quality audit schedule: Include a quality audit schedule with the project quality plan in conformance with *AS/NZS ISO 19011.*

Audit reports: Provide copies to the Authorised Person as requested.

## **1.2.3 Resource management**

### **1.2.3.1 General**

Conformance: Conform to *AS/NZS ISO 9001 section 6* and *AS/NZS ISO 10005 section 5.8*.

Provision of resources: Determine and provide resources for the successful implementation of the project Quality Plan.

Limited availability: If a resource has limited availability, identify how demand from other projects/contracts will be satisfied.

Human resources: Provide personnel with the appropriate education, training, skills and experience for the project.

Infrastructure: Identify, provide and maintain the infrastructure required to achieve product conformity.

Work environment: Establish and manage the work environment to achieve product conformity.

## **1.2.4 Product realisation**

### **1.2.4.1 Planning and design**

Planning: Conform to *AS/NZS ISO 9001*. Determine the following:

- > Quality objectives and requirements for the product.
- > Processes and documents specific to the product.
- > Required verification, validation, monitoring, measurement, inspection, test activities and the criteria for acceptance of the product.
- > Records required as evidence that the realisation processes and resulting products conform.

Design: Design and/or verify the following, to conform with the Technical Specifications and *AS/NZS ISO 9001*:

- > Temporary structures.
- > Checking of permanent structures for construction loadings.
- > Lifting devices for manufactured items.
- > Alternative permanent structures or structural components proposed.
- > Concrete mixes for structures and pavements and asphalt mixes for permanent works.
- > Traffic control, temporary roadways and detours.
- > Environmental management of the site during construction.
- > Permanent works where design is nominated in the contract.

## 1.2.5 Construction and service provision

### 1.2.5.1 Control

Method statements: Detail the construction processes for all activities scheduled in the Construction activities table.

Content: Include the following:

- > Sequence of operations.
- > Documented procedures and work instructions.
- > Types of equipment required, capability, maintenance and calibration.
- > Any special working environment requirements.
- > Personnel competency and skills required,
- > Criteria for workmanship and tolerances.
- > Materials required.
- > Safety requirements.
- > Reference documents.
- > Records produced.
- > Planning.
- > Verification measures.
- > Inspection, test and control points.
- > Monitoring of continuous suitability.
- > Responsibility for implementing and monitoring work process controls and rectifying any deficiencies.

Check list: Provide a checklist, including the relevant inspection and test points, surveying control points, Hold Points, Witness Points and the officer responsible to verify each check point.

System audit: Audit each method statement whilst the process is in effect.

Absence of a method statement: If a method statement for a particular activity is required and there is none submitted, this will generate a Hold Point.

**Table 0B-1 Construction activities table**

Specification	Activity
<b>MITS 09 Landscape</b>	Landscaping
<b>MITS 08 Incidental Works</b>	Installation of proprietary items
<b>MITS 06B Concrete paths driveways medians</b>	Sprayed concrete
<b>MITS 02A Clearing and grubbing</b>	Selective clearing and proposed equipment Work near trees Work within 4 m of tree
<b>MITS 02B Bulk Earthworks</b>	Excavation procedures
<b>MITS 02C Stabilisation</b>	Proposed curing method
<b>MITS 10 Concrete works</b>	Precast barriers Installation
<b>MITS 06B Concrete paths driveways medians</b>	Safe work

### **1.2.5.2 Lot identification**

Lots: Divide all items of work into lots as follows:

- > Limits: Before sampling, choose lots within the limits given in the particular technical specification.
- > Lot size: Not exceeding one day's output for each work process being testing.
- > Lot numbering: Allocate unique lot numbers compatible with the construction program. Use lot numbers to be identifiers on all QMS data.
- > Field identification: Physically identify each lot, clearly identify lot boundaries. Maintain identification until the lot has achieved the specified quality.

Work on a lot: Do not commence work until the field identification is established.

Lot boundaries: When boundaries of a lot change, update the quality register.

Lot identification system: Make sure all site records and sample numbering systems allow easy identification of all test results and the materials incorporated in the works.

### **1.2.5.3 Traceability**

General: Provide and maintain records of components for audit. Include the following traceability in the records:

- > Concrete: Start the trace at the batch plant and finish at the location where the concrete is incorporated in the works.
- > Asphalt: Start the trace at the batch plant and finish at the location where the asphalt is incorporated in the works.
- > Stabilised material: Start trace at the batch plant and finish at the location where the material is incorporated in the works.
- > Steel: Start the trace at the steelworks and finish at the location where the steel is incorporated in the works. Record the steel heat number, testing details and final location of installation.
- > Batch details: Record all batch quantities, mix and dispatch time, testing details and location of placement.

### **1.2.5.4 Control of monitoring and measuring equipment**

Equipment accuracy: Maintain inspection, testing and measuring equipment capable of producing the degree of accuracy specified in the referenced test methods.

Records: Demonstrate accuracy with regular records of calibration.

## 1.2.6 Measurement and analysis

### 1.2.6.1 General

Testing: Unless otherwise specified, all testing is to be undertaken in a Principal Approved Laboratory or equivalent scheme for the appropriate tests and performed in accordance with procedures contained in the relevant Australian Standard, or State Road Authority or Austroads test method. Where practicable, conduct testing by a NATA registered laboratory accredited for those test methods and sampling procedures. Include the latest NATA advice of the terms of registration and current signatories within the quality plan.

Sampling: Conduct by personnel from the NATA registered laboratory which has been accredited for that sampling procedure and supervised by the approved signatory from that laboratory.

Test results: Report on NATA endorsed test documentation which includes a statement by the approved signatory certifying that the correct sampling procedures have been followed.

Reinstatement: Reinstate all core holes, test holes, excavations and any other disturbance resulting from any testing activity to the standard within the Technical Specification.

Lots: All conformance inspections and tests are based on lots. In all cases the samples are considered representative of the lot and all test results are required to meet the appropriate tolerances for the lot.

Sampling locations: Propose sampling locations for approval prior to proceeding.

In-process and conformance inspections: Required for all works to confirm conformance. Performed by a responsible officer nominated in the Check List and certified by the Contractor's QMR

### 1.2.6.2 Frequency of testing

Minimum frequency of testing: Must be not less than that stated in the relevant Specification and as listed within the sub-annexures of **Annexure C - Maximum lot sizes and minimum test frequencies**.

Reduced frequency of testing: Submit proposal for approval with supporting statistical analysis verifying consistent conformance to the quality requirements. Statistical techniques in accordance with RMS Q6 will be accepted within the ACT.

### 1.2.6.3 Inspection and test plans

Document: Include within the quality plan all inspections, tests and documentation necessary to demonstrate that the works conform.

ITP: Establish and progressively maintain a system to demonstrate inspection and testing in conformance with *AS/NZS ISO 9001 clause 8.2.4*.

Minimum information for ITP (or ITP forms): Include the following:

- > Person responsible for carrying out in-progress and final inspections or testing and at what stage of works these are to be carried out.
- > Proposed inspection or test methods and recording of results.
- > Acceptance criteria and frequency of inspection and testing.
- > Specification tolerances.
- > Person responsible for reviewing inspection and test results, evaluating whether work conforms, determining future action when work does not conform and closing out work lots.
- > Measures to control nonconformity.
- > When statistical analysis of test results is required.

- > Person responsible for performing the final review of results to confirm that all inspections and tests have been carried out to verify complete conformity for each lot.
- > Time limits for testing, submission, Hold Points and Witness Points that are nominated in the specifications.
- > Identification of Hold Points or Witness Points.
- > Check list for each lot.

#### **1.2.6.4 Test Register**

Lot identification register: Include the following information:

- > Three dimensional surveyed location of the lot to include the chainage of the start and finish points, lateral location and layer location and/or the particular structure (e.g. pier or abutment number, concrete placement number, etc.).
- > Indication of conformance or non-conformance.
- > Summary of test results.
- > Location of test sites including test identification numbers.
- > For nonconforming lots, allocate a new number to the resubmitted/subdivided lot(s), ensure it also references the original lot number.

Inspection and test status: Show either on the ITP records or physically mark in the field the status of conformance for each lot.

#### **1.2.6.5 Random sampling**

Requirement: Use random sampling techniques for each lot for the control of compaction of each continuous layer of earthworks, flexible pavement and asphalt.

Test locations: Determine test locations for random sampling in conformance with *AS 1289.1.4.1*.

Location restrictions: Do not restrict sampling to locations dimensioned or otherwise defined for setting out the works in the drawings or specification.

### **1.2.7 Monitoring and measurement**

#### **1.2.7.1 Hold points**

Notice of inspection: Notify the Authorised Person in advance of a Hold Point being reached.

Requirements for approval to proceed: In conformance with the following:

- > Provide the information required by the technical specification.
- > Certify that the particular lot/process is conforming.
- > Certify that all underlying and adjacent lots affected by the lot in question are conforming.
- > Submit the appropriate form (Check List, NCR or NNC) at least 24 hours prior to the time the Contractor wishes to proceed with the placement/construction of the next lot, unless some alternative arrangements have been agreed with the Authorised Person.

Witness point: If the Hold Point has resulted from an NCR or NNC, the Authorised Person's approval may be conditional on a Witness Point being included.

#### **1.2.7.2 Audit testing**

Surveillance and Audits: The Authorised Person may elect to undertake audit testing of the works in addition to the Contractor's testing requirements under the Contract. All audit testing by the Principal will be conducted by a laboratory with NATA accreditation for the test methods specified.

## **1.2.8 Surveying control**

### **1.2.8.1 Requirements**

Survey control: A separate system requirement to include all measurement, calculation and recording procedures necessary to:

- > Set out the works.
- > Verify conformance with the drawings and specification in relation to dimensions, tolerances and three dimensional position.
- > Determine lengths, areas or volumes of materials or products, where required for measurement of work.

Method Statement: Describe the control parameters for special processes which cannot be fully verified by inspection and testing. Address all potential errors that could be introduced by survey methods.

Surveyor qualifications: Appoint qualified surveyors to supervise and take responsibility for all surveying control.

Equipment: The procedures and equipment used must be capable of attaining the tolerances nominated in the specification.

Survey locations: Surveying for conformance verification purposes is not restricted to the locations used to set out the works.

Conformance verification surveys: Perform verification surveys as soon as practicable, but not later than one working day after the lot or component has become accessible for survey.

### **1.2.8.2 Control of documentation**

Survey conformance report: Submit a survey conformance report for each lot or component where design levels, position and/or tolerances have been specified. Refer to the relevant Specification of the technical specification to establish if a Hold Point is generated before further works can commence.

Information required: Indicate the difference between actual and specified values for position and level (defined by co-ordinates or chainage and offset) and provide certification by the qualified surveyor responsible for the verification survey.

Survey records: Provide all survey records including equipment calibration records and nonconformity registers.

Field book pages: Include the following, clear labels, date and signature by the surveyor, cross indexed references to equipment used and lot/component identification. Survey conformance reports produced must reference the relevant field book page numbers.

Retain: Retain any automatically recorded data used for verification surveys, including a printout of both raw (field) data and reduced data.

Audit trail: Prepare procedures to describe the records system, to include, the method of storing and indexing of electronic records and the title of any computer software used for the reduction of survey measurements and calculations.



## 1.2.9 Control of non-conforming works

### 1.2.9.1 General

Detection and reporting: Report any works that depart from the documented requirements on a NCR form within two working days of detection, including the proposed disposition. A sample NCR form is included in **Annexure B - Sample Non-conformance report**.

Extension of time: The deliberation on disposition of a non-conformance does not justify an extension of time to the contract period under any circumstances.

Proposed disposition: Include any of the following actions:

- > Proposed additional works to bring the lot up to the specified standard.
- > Proposed replacement of all or part of the lot to bring it up to the specified standard.
- > A request to use the lot for a reduced level of service, if such a clause exists in the relevant Specification of the Technical Specification.
- > For incidental defects, a request that the Authorised Person accept the lot without alteration, as an exception with or without alteration to the respective unit rates.

### 1.2.9.2 Monitoring and measuring

NCR: Generates an automatic Hold Point until conformance has been achieved and the Authorised Person has signed authorisation to proceed.

Progress: Do not cover any nonconforming works until a disposition has been accepted/approved and implemented.

Reworking: If the non-conformance can be overcome by reworking the lot with the original process, an NCR will not be required. However, maintain a record of the non-conformance to aid continual improvement.

Verification: Reworked/replaced lots to conform to the specified requirements.

Discrepancy: The Authorised Person's test results will prevail where there is any discrepancy in test results.

### 1.2.9.3 Control of documentation

CAR: Issued by the Authorised Person for non-conformance to the Contractor's quality system or methods. Unless specifically stated, this will not create a Hold Point.

NNC: Issued by the Authorised Person for product non-conformance. This will immediately create a Hold Point and the Contractor is required to submit an NCR.

NCR form: Example form provided in **Annexure B - Sample Non-conformance report**. If using alternative form it must include the following:

- > Details of non-conformance.
- > Proposed disposition.
- > Provision for attachments.
- > QAR comment/approval/rejection.
- > Completion of disposition.
- > Release of Hold Point.
- > Corrective action to improve quality.
- > Close out of NCR.

Authorised representative: All actions are to be signed off by authorised representatives of the Contractor and Authorised Person as applicable (i.e. QAR and QMR).

Register: Implement and maintain a suitable numbering and registration system for all NCRs and NNCs, including cross referencing as required.

#### **1.2.9.4 Corrective action**

Requirement: Document procedure for corrective action to quality plan in conformance with *AS/NZS ISO 9001 clause 8.5.2*.

Proposed corrective action: Indicate on the NCR form the corrective action appropriate to ensure that the quality plan is effective in avoiding a recurrence of the non-conformance and continues to be effective.

## **1.3 Completion**

### **1.3.1 Work as executed records**

#### **1.3.1.1 Finalisation**

General: The Contractor shall prepare work as executed information, test results summaries and asset lists in the format specified by the relevant asset owner including:

- > *Transport Canberra and City Services Requirements for Work as Executed Quality Records, Issue 2 Revision 3, August 2010 (TCCS Reference Document #AA-Ref-08)*
- > *ICON Water, Water Supply and Sewerage Standards.*
- > *Evo Energy Work As Executed Submissions.*
- > *NBN Co As Built Handover requirements.*

Work as executed records shall show the "as constructed/installed" construction elements, plant, equipment and the like as required. The Contractor shall modify the drawings to indicate any variation from the original Contract Drawings to the as constructed condition. The information shown shall include any variation to the Contract drawings by coordinate or chainage and off-set of all constructed works including invert levels of pipes, ducts and conduits at all structures and terminations.

Digital drawings: Digital contract drawings shall be supplied by Authorised Person at no cost.

Certification: The work as executed information shall be certified by the Contractor's surveyor or engineer and approved by the Authorised Person.

#### **1.3.1.2 Maintenance**

Documents: Provide copies of all:

- > Commissioning records.
- > Operation manuals.
- > Maintenance manuals.
- > Product warranties.

## 2 MEASUREMENT AND PAYMENT

### 2.1 Measurement

#### 2.1.1.1 General

Payments made to the Bill of Quantities: To this Specification, the Drawings and **Pay items**.

#### 2.1.1.2 Methodology

The following methodology will be applied for measurement and payment:

- > Quality verification and control: Allow for all testing and quality assurance requirements to verify that all aspects of the Works conform to the quality assurance provisions of the Contract within each Pay Item and not within this Specification.
- > Progress payments for Quality system documents and records are calculated on the basis of 30% of the Lump Sum when the complete Quality Plan is available and the remainder on pro rata based on the monthly value of work done.
- > Payment for Work as Executed quality items shall be upon completion and approval of the work as executed quality records by the authorities.

### 2.2 Pay items

**Table OB-2 Pay items table**

	Pay Items	Unit of measurement	Schedule rate scope
<b>OB.1</b>	Quality system documents and records	Lump sum	<p>All costs associated with the preparation and submission of the Quality Plan, the provision of the QMR on site and the maintenance of the quality records during the course of the Contract.</p> <p>This pay item shall include all costs associated with the provision of construction records including work as executed documents, asset registers and maintenance manuals required at the completion of the works.</p>
<b>OB.2</b>	Quality verification and control – Additional testing	Provisional Sum	All costs for third-party inspections, conformance surveys and testing where directed by the Authorised Person in addition to the quality assurance provisions of the Contract.
<b>OB.3</b>	Preparation of Works as Executed drawings	Provisional sum	<p>This pay item shall include all drafting services by the consultant(s) engaged by the Contractor. A separate sub-pay item shall be included for each consultant(s). For example;</p> <ul style="list-style-type: none"> <li>OB.4.1.1 Civil</li> <li>OB.4.1.2 Landscape</li> <li>OB.4.1.3 Streetlight</li> <li>OB.4.1.4 NBN</li> </ul>

# ANNEXURE A - PROJECT QMS DOCUMENTATION FLOW CHART

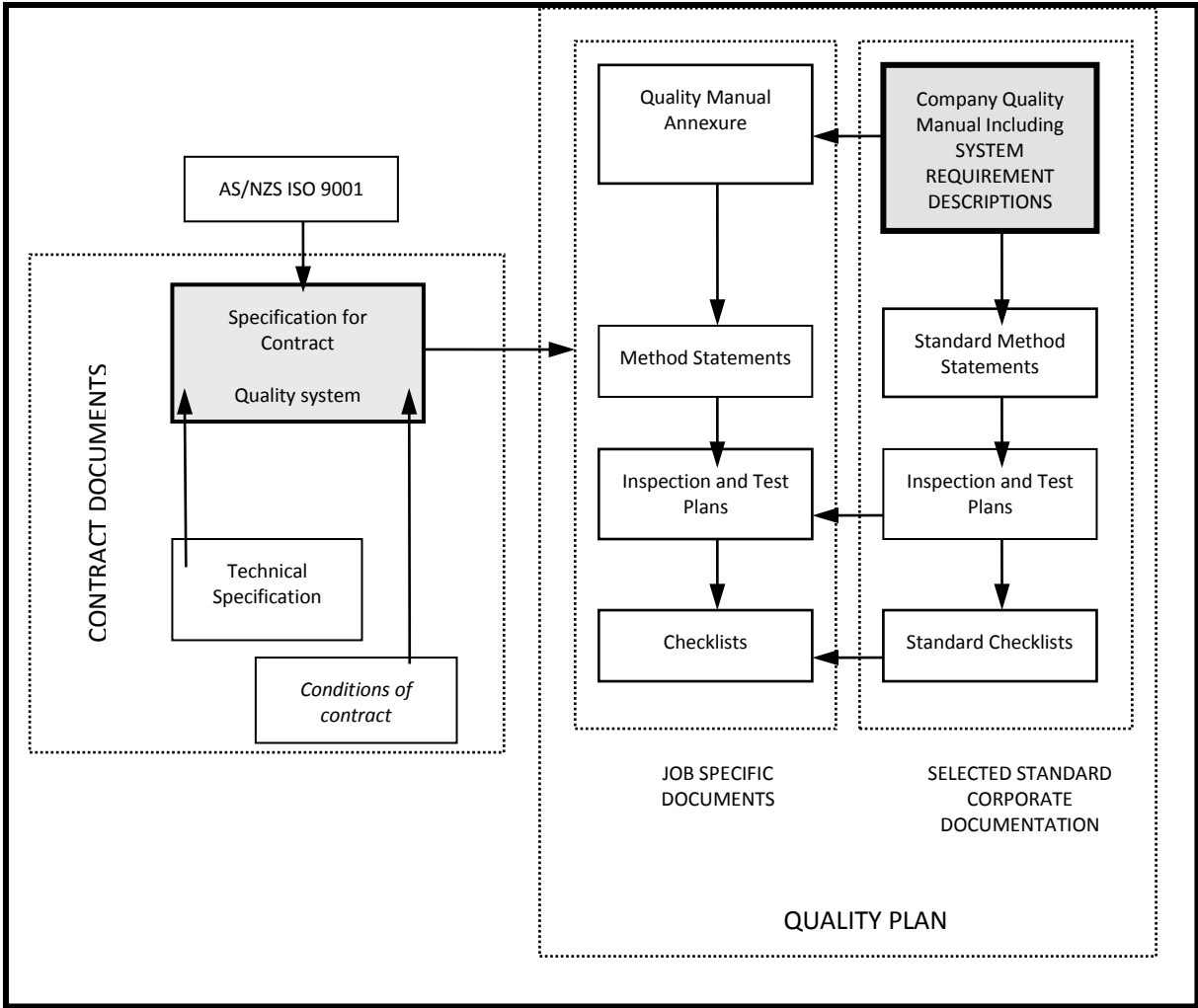


Figure 0B-1 Project QMS documentation flowchart figure

# ANNEXURE B - SAMPLE NON-CONFORMANCE REPORT

**NON-CONFORMANCE REPORT**

**NCR No:** .....  
**Date:** .....

**CONTRACT:** .....  
**PRODUCT OR SERVICE:** .....  
**SUBCONTRACTOR (if appropriate):** .....  
**INSPECTION & TEST PLAN (ITP) No:** .....  
**LOT No AND DESCRIPTION/LOCATION:** .....

**DETAILS OF NON-CONFORMANCE:** .....

**PROPOSED DISPOSITION:** .....

**IS A SUPPLEMENTARY REPORT ATTACHED?:**                      YES                       NO

**PRINCIPAL:**              APPROVED                       REJECTED

**COMMENT:** .....

**PRINCIPAL SIGNATURE:** ..... **DATE:** .....

**DISPOSITION COMPLETED**  
**(Contractor)** ..... **DATE:** .....

**RELEASE OF HOLD POINT**  
**(Authorised Person)** ..... **DATE:** .....

**CLOSE OUT OF NON-CONFORMANCE REPORT**  
**(Contractor QMR)** ..... **DATE:** .....

# ANNEXURE C - MAXIMUM LOT SIZES AND MINIMUM TEST FREQUENCIES

## General

Lot sizes and test frequency: To the following **Sub-annexures**.

Contract requirements summary: To the **Contract requirements summary table**.

Certification: If material/product quality certification can be obtained from the supplier, documented tests need not be repeated.

Large projects: The Authorised Person may relax the testing frequency after the Contractor has demonstrated consistent conformance to the quality requirements, as described within **Measurement and analysis**.

**Table 0B-3 Contract requirements summary table**

Sub-annexure	Reference Specification
<b>C1 Earthworks (Roadways)</b>	MITS 02B Bulk earthworks
<b>C2 Stormwater</b>	MITS 06A Concrete kerbs open drains MITS 03A Trenching for underground services MITS 03B Pipe drainage MITS 03C Precast box culverts MITS 03D Drainage structures MITS 03H Road Opening and Restoration
<b>C3 Pavement moisture control</b>	MITS 03I Subsurface drainage MITS 03J Subsoil and foundation drains MITS 03K Drainage Mats
<b>C4 Stabilisation</b>	MITS 02C Stabilisation
<b>C5 Flexible pavement base and subbase</b>	MITS 04 Flexible Pavement construction
<b>C6 Segmental paving</b>	MITS 07 Segmental paving
<b>C7 Pavement markings</b>	MITS 11 Pavement marking
<b>C8 Signposting</b>	MITS 14 Road signs
<b>C9 Minor concrete works</b>	MITS 06B Concrete paths driveways medians
<b>C10 Landscape</b>	MITS 09A Topsoil
<b>C11 Pathways and cycleways</b>	MITS 06B Concrete paths driveways medians
<b>C12 WSUD Features</b>	MITS 9E Water Quality Vegetation Establishment

Water supply and sewerage: To *ICON Water's Water Supply and Sewerage Standards and Standard Drawings*.

## Sub-annexure C1 - Bulk earthworks

**Table 0B-4 MITS 02B**

Activity	Key quality verification requirements	Maximum lot size	Minimum test frequency	Test method
<b>Stripping topsoil</b>	Surface levels	10,000m <sup>2</sup>	1 Cross Section per 25m	Survey
<b>Excavation</b>	Geometry	10,000m <sup>2</sup>	1 Cross Section per 25m	Survey
<b>Floor of cuttings</b>	Material quality: - CBR	5,000m <sup>2</sup>	1 per 1,000m <sup>2</sup> *	AS 1289.6.1.1
	Compaction	10,000m <sup>2</sup>	1 per 500m <sup>2</sup>	AS 1289.5.4.1 or AS 1289.5.7.1
<b>Blasting</b>	Ground vibration/noise control	1 day's blasting	Continuous monitoring	
<b>Foundation for Embankments</b>	Compaction	5,000m <sup>2</sup>	1 per 500m <sup>2</sup>	AS 1289.5.4.1 or AS 1289.5.7.1
<b>Embankments - General</b>	Geometry	One layer 10,000m <sup>2</sup>	1 Cross Section per 25m	Survey
	Material quality: - CBR	One layer 5,000m <sup>2</sup>	1 per 800m <sup>3</sup>	AS 1289.6.1.1
	Compaction/Moisture content	One layer 5,000m <sup>2</sup>	1 per 250m <sup>3</sup>	AS 1289.5.1.1 AS 1289.5.4.1 AS 1289.5.7.1
<b>Embankments - Select zone</b>	Geometry	One layer 10,000m <sup>2</sup>	1 Cross Section per 25m	Survey
	Material quality: - Particle size distribution - CBR	10,000m <sup>2</sup> 10,000m <sup>2</sup>	1 per 1,000m <sup>3</sup> * 1 per 500m <sup>3</sup> *	AS 1289.6.1.1
	Compaction/moisture content	One layer 5,000m <sup>2</sup>	1 per 250m <sup>3</sup> *	AS 1289.5.1.1 AS 1289.5.4.1 AS 1289.5.7.1
<b>Fill adjacent to bridges, wingwalls, retaining walls and culverts</b>	Material quality: - Particle size distribution - Plasticity index	1 Structure 1 Structure	1 per 200m <sup>3</sup> * 1 per 200m <sup>3</sup> *	AS 1289.3.3.1
	Compaction/moisture content	1 Structure	1 per layer	AS 1289.5.1.1 AS 1289.5.4.1 AS 1289.5.7.1

Note: or part thereof, per lot.

## Sub-annexure C2 - Stormwater

**Table 0B-5 MITS 03A, MITS 03B, MITS 03C, MITS 03D, MITS 03H, MITS 06A**

Activity	Key quality verification requirements	Maximum lot size	Minimum test frequency	Test method
<b>Supply of precast units</b>	Precast quality: Suppliers documentary evidence and certification	1 batch	1 per type/size/class per batch	
<b>Siting and Excavation</b>	Geometry	1 drainage line/structure	1 per drainage line/structure	Survey
<b>Excavation by Blasting</b>	Peak particle velocity	1 drainage line/structure	1 per drainage line/structure	Measure
<b>Foundation</b>	Compaction	1 drainage line/structure	1 per 20 lin m *	AS 1289.5.4.1
<b>Material surrounding steel</b>	Material quality: - pH/Electrical resistivity	1 drainage line/structure	1 per material	AS 1289.4.3.1 AS 1289.4.4.1
<b>Bedding</b>	Material quality:  - Particle size	1 contract	1 per 200m <sup>3</sup> *	AS 1141.11.1
	Compaction/moisture content	1 drainage line/structure	1 per layer, per 20 lin m	AS 1289.5.4.1 AS 1289.5.7.1
<b>Concrete bedding or lining</b>	Geometry		1 Cross Section per 25m	Survey and 3m Straight Edge
<b>Installation of precast units</b>	Geometry	1 drainage line/structure	1 per drainage line/structure	Survey
<b>Selected backfill</b>	Material quality:	1 contract	1 per 100m <sup>3</sup> *	AS 1289.3.3.1
	- Maximum particle size	1 contract	1 per 100m <sup>3</sup> *	AS 1289.5.4.1
	- Plasticity index	1 drainage line/structure	1 per 2 layers per 50m <sup>2</sup>	AS 1289.5.7.1
	Compaction/moisture content			
<b>Backfill under paths and driveways</b>	Material quality: - Maximum particle size Compaction/moisture content	1 contract 1 drainage line/structure	1 per 150m <sup>3</sup> * 1 per 2 layers per 30m	AS 1289.3.3.1 AS 1289.5.4.1 AS 1289.5.7.1



Activity	Key quality verification requirements	Maximum lot size	Minimum test frequency	Test method
<b>Rock fill for gabions/ wire mattresses</b>	Material quality:			
	- Wet strength	1 contract	1 per contract	AS 1141.22
	- Wet/dry strength	1 contract	1 per contract	AS 1141.22
<b>Kerb and gutter</b>	Geometry	1 contract	1 Cross section per 25m	Survey and 3m straight edge

\* Note: or part thereof, per lot

## Sub-annexure C3 - Pavement moisture control

**Table 0B-6 MITS 03I, MITS 03J, MITS 03K**

Activity	Key quality verification requirements	Maximum lot size	Minimum test frequency	Test method
<b>Material supply</b>	Material quality—Supplier's documentary evidence and certification of:			
	Pipe	1 contract/size	1 per type/size	
	Filter material:			
	- Grading (Type A, B, C, D)	1 contract/size	1 per type	AS 1141.11.1
	- Coefficient of permeability (Type B)	1 contract/size	1 per type	AS 1289.5.1.1 ASTM-D2434-68
	- Grading variation after Treatment (Type B)	1 contract/size	1 per type	AS 1141.11.1
	- Wet Strength (Type C, D)	1 contract/size	1 per type	AS 1141.22
	- 10% Fines Wet/Dry (Type C, D)	1 contract/size	1 per type	AS 1141.22
	Geotextile	1 contract	1 per type	
<b>Excavation – Trench base</b>	Line and Grade	1 drainage line	1 per 200 lin m	Survey
	Compaction	1 drainage line	1 per 200 lin m*	AS 1289.5.4.1
<b>Bedding and backfill:</b>				
<b>Filter material</b>	Compaction	1 drainage line	1 per drainage line	AS 1289.5.4.1
<b>Selected backfill</b>	Compaction	1 drainage line	1 per 200lin m*	AS 1289.5.4.1
<b>Earth backfill</b>	Compaction	1 drainage line	1 per 200lin m*	AS 1289.5.4.1
<b>Drainage mat</b>	Geometry	2000m <sup>2</sup>	1 Cross Section per 25m	Survey

\* Note: or part thereof, per lot

## Sub-annexure C4 - Stabilisation

**Table 0B-7 MITS 02C**

Activity	Key quality verification requirements	Maximum lot size	Minimum test frequency	Test method
<b>Material supply</b>	Material quality – Supplier's documentary evidence and certification of:			
	- Cement	1 contract	1 per 100t	AS 3972 and AS 2350 (various)
	- Quicklime			
	Available lime (CaO content)	1 contract	1 per 100t	AS 3583.12
	Slaking rate	1 contract	1 per 100t	T432
	Particle size Dist'n	1 contract	1 per contract	AS 1141.11.1
	- Hydrated lime			
	Available Lime (CaOH <sub>2</sub> )	1 contract	1 per 100t	AS 3583.12
	Residue on sieving	1 contract	1 per contract	AS 3583.14
	Ground blast furnace slag	1 contract	1 per month	AS 3583.2 and AS 3582.2
- Flyash	1 contract	1 per month	AS 3583.1 and AS 3582.1	
- Blended stabilising agent	1 contract	1 per month	AS 2350.4	
- Water				
	Chloride ion content	1 contract	1 per contract	AS 3583.13
	Sulphate ion content	1 contract	1 per contract	AS 1289.4.2.1
	Undissolved solids	1 contract	1 per contract	
<b>Mix design</b>	NATA certification—Supplier's documentary evidence and certification	1 mix	1 per mix	
<b>Stationary mixing plant</b>	Application rate of stabilising agent	1 day's production	1 per 100t	
	Compressive strength of product	1 day's production	1 per 100t	AS 1289.6.1.1
<b>In-situ spreading</b>	Spread rate	1 layer 1,000m <sup>2</sup>	1 per lot or 1 per 500m <sup>2</sup>	
	Mix uniformity	1 layer 1,000m <sup>2</sup>	1 per 500m <sup>2</sup>	Visual
<b>Trimming and compaction</b>	Geometry	1 layer 2,000m <sup>2</sup> , max 1 day's placement	One cross section per 25 m	Survey
	Surface quality	1 layer 2,000m <sup>2</sup> , max 1 day's placement	10 per 200m lane length*	3 m straight edge
	Average layer thickness	1 layer 2,000m <sup>2</sup> , max 1 day's placement	1 per lot	Survey
	Average width	1 layer 2,000m <sup>2</sup> , max 1 day's placement	1 per lot	Measure/survey
	Relative compaction/moisture content	1 layer 2,000m <sup>2</sup> , max 1 day's placement	3 per lot	AS 1289.5.7.1 AS 1289.5.8.1

\* Note: or part thereof, per lot.

## Sub-annexure C5 - Flexible pavement base and subbase

**Table 0B-8 MITS 04**

Activity	Key quality verification requirements	Maximum lot size	Minimum test frequency	Test method
<b>Base and subbase supply</b>	Material quality—Supplier's documentary evidence and certification	1 Contract		
	- Particle size distribution		1 per 1,000t	AS 1289.3.6.1
	- Liquid Limit		1 per 1,000t	AS 1289.3.1.1
	- Plasticity Index		1 per 1,000t	AS 1289.3.3.1
	- Linear shrinkage		1 per 1,000t	AS 1289.3.4.1
	- Maximum dry compressive strength		1 per 5,000t	AS 1141.52
	- Particle shape		1 per 1,000t	AS 1141.14
	- Aggregate wet strength		1 per 5,000t	AS 1141.22
	- Wet/Dry strength variation		1 per 5,000t	AS 1141.22
	- Los Angeles value		1 per 1,000t	AS 1141.23
	- CBR		1 per 5,000t	AS 1289.6.1.1
	- Modified Texas Triaxial classification		1 per contract	T171
	- Unconfined compressive strength		1 per 5,000t	AS 5101.4
- Unconfined compressive strength (Bound)	1 Contract	1 per mix design	AS 5101.4	
<b>Placement</b>	Geometry: Alignment & level - Width and Surface Trim	One layer 2,000m <sup>2</sup> or max 1 day's placement	1 Cross Section per 15m 10 per selected 200 lin.m	Survey Measure & 3m Straight Edge
	Compaction/moisture content/ dry density testing	One layer 5,000m <sup>2</sup> or max 1 day's placement	10 per 5,000m <sup>2</sup> layer or 3 per lot if less	T130 AS 1289.5.2.1 AS 1289.5.3.2 AS 1289.5.4.1 AS 1289.5.8.1

## Sub-annexure C6 - Segmental paving

**Table 0B-9 MITS 07**

Activity	Key quality verification requirements	Maximum lot size	Minimum test frequency	Test method
<b>Materials supply</b>	Material quality—Supplier's documentary evidence and certification of:			
	- Concrete segmental paving units	1 contract	1 per contract	
	- Clay segmental paving units	1 contract	1 per contract	
	- Bedding sand Grading	1 contract	1 per contract or change in material	AS 1141.11.1
	- Joint filling sand Grading	1 contract	1 per contract or change in material	AS 1141.11.1
<b>Base</b>	Geometry	One layer 5000m <sup>2</sup> , max 1 day's placement	One cross section per 25m	Survey
	Surface quality	One layer 5000m <sup>2</sup> , max 1 day's placement	10 per 200m <sup>2</sup> or lot	3m Straight Edge
<b>Edge restraints</b>	Refer 'Minor concrete works'	1 day's placement	1 per 10 lin m	Measure/Survey
<b>Laying paver units</b>	Joint width	1 day's placement	All joints	Measure
	Geometry	1 day's placement	One cross section per 15m	Survey
	Surface quality	1 day's placement	10 per 200m <sup>2</sup> or lot	3m Straight Edge

## Sub-annexure C7 - Pavement markings

**Table 0B-10 MITS 11**

Activity	Key quality verification requirements	Maximum lot size	Minimum frequency of testing	Test Method
<b>Surface Friction</b>	Surface Friction (measured by a laboratory (in bPNs) registered for skid resistance testing with the NATA.)	1 contract	Provisional Sum – to be specified by the Authorised Person	<i>RMS T231</i>
<b>Reflectivity</b>	Reflectivity values (millicandelas per lux per square metre (mcd/lux/m <sup>2</sup> ))	1 contract	5 per 200 lin m, including side roads	measured by an MX30 retroreflectometer or approved equivalent
<b>Coloured surface coatings</b>	Binder Thickness	1 contract	1 contract	Measure by micrometer
	Surface Texture	1 contract	1 contract	<i>RMS T240</i> <i>RMS T192</i>
	Surface Friction	1 contract	Provisional Sum – to be specified by the Authorised Person	<i>RMS T231</i>

## Sub-annexure C8 - Signposting

**Table 0B-11 MITS 14**

Activity	Key quality verification requirements	Maximum lot size	Minimum test frequency	Test method
<b>Materials supply</b>	Material quality—Supplier's documentary evidence and certification of:			
	- Sign blanks	1 contract	1 per contract, or change in material	AS 1743
	- Aluminium extrusion backing	1 contract	1 per contract, or change in material	AS 1866
	- Retro-reflective material	1 contract	1 per contract, or change in material	AS 1743
	- Non-reflective paint	1 contract	1 per contract, or change in material	AS 2311
	- Non-reflective sheet material	1 per contract, or change in material		
	- Steel sign support structures		1 per contract, or change in material	
	- Grade	1 contract	1 per contract, or change in material	AS 1627.9
	- Protective treatment	1 contract	1 per contract, or change in material	AS 4680 and AS 1214
<b>Concrete foundations</b>	Refer 'Minor concrete works'			

## Sub-annexure C9 - Minor concrete works

**Table 0B-12 MITS 06B**

Activity	Key quality verification requirements	Maximum lot size	Minimum test frequency	Test method
<b>Subgrade</b>	Compaction	1000 lin m or 1000m <sup>2</sup>	1 per 200 lin m or 200m <sup>2</sup>	AS 1289.5.4.1
<b>Gravel subbase construction</b>	Compaction	1 day's placement	1 per 100 lin m or 100m <sup>2</sup>	AS 1289.5.4.1
	Subbase geometry	1 day's placement	1 per 25 lin m	3m straight edge
<b>Steel supply</b>	Material quality—Suppliers documentary evidence and certification	1 delivery	1 per production batch	
<b>Concrete supply</b>	Refer Sub-Annexure C14: Ready-mixed concrete production and supply			
	Consistency—Slump	15m <sup>3</sup>	1 per load	AS 1012.3.1
	Compressive strength (7 and 28 day)	15m <sup>3</sup>	2 pairs per 15m <sup>3</sup>	AS 1012.1 AS 1012.8.1 AS 1012.9
<b>Concrete placement</b>	Finished Levels	15m <sup>3</sup>	1 cross section per 15m	Survey and 3m straight edge
	Surface dimensions	Single fabrication	As required to confirm design dimensions	measure
<b>Backfilling</b>	Material quality:			
	- Maximum particle size	1 contract/ material type	1 per 200m <sup>3</sup> or lot	
	- Plasticity index	1 contract/ material type	1 per 200m <sup>3</sup> or lot	AS 1289.3.3.1
	Compaction	1 day's work or max 200m <sup>2</sup>	1 per 200m <sup>2</sup> or lot	AS 1289.5.4.1
<b>Sprayed concrete</b>	Test panels and cores	1 contract	3 test panels and 4 cores per mix design	AS 1012.4.2 AS 1012.9 AS 1012.14
	Compressive strength cores	15m <sup>3</sup>	2 per 15m <sup>3</sup>	AS 1012.4.2 AS 1012.9 AS 1012.14
	Curing material quality—Supplier's documentary evidence and certification	1 contract	1 per production batch	



## Sub-annexure C10 - Landscape

**Table 0B-13 MITS 08**

Activity	Key quality verification requirements	Maximum lot size	Minimum test frequency	Test method
<b>Decomposed Granite Gravel</b>	Material quality- sample	1 per contract	1 per contract	
	Subgrade	1000 lin m or 1000m <sup>2</sup>	1 per 200 lin m or 200m <sup>2</sup>	AS 1289.5.4.1
	Base	1000 lin m or 1000m <sup>2</sup>	1 per 200 lin m or 200m <sup>2</sup>	AS 1289.5.4.1
	Geometry	1 day's placement	1 per 25 lin m	
<b>Shade Sail</b>	Material Quality - sample	1 per item	1 per contract	
	Quality of Finish - sample	1 per item	1 per contract	
<b>Playground Equipment</b>	Submission of documents prior to ordering	1 per item	1 per contract	
<b>Playground compliance Inspection and Audit</b>	Certification that playground is compliant with AS4685	1 per item	1 per Contract	AS4685
<b>Organic Softfall</b>	Material Quality - sample	1 per contract	1 per contract	AS4422
	Certification that impact attenuation is compliant with AS4685	As per AS4422	As per AS4422	S4422
<b>Rubber Softfall</b>	Submission of documents verifying installers experience	1 per contract	1 per contract	
	Material Quality – sample	1 per contract	1 per contract	
	Subgrade	500m <sup>2</sup>	1 per 250m <sup>2</sup>	AS 1289.5.4.1
	Sub base	500m <sup>2</sup>	1 per 250m <sup>2</sup>	AS 1289.5.4.1
	Certification that impact attenuation is compliant with AS4685	As per AS4422	As per AS4422	AS4422

**Table 0B-14 MITS 09A**

Activity	Key quality verification requirements	Maximum lot size	Minimum test frequency	Test method
<b>Seed</b>	Certification of authenticity for the prescribed mix	1 contract	Certification for each production batch delivered	
<b>Turf supply source</b>	Certification that turf is free from Madagascan Fireweed	1 per contract	1 per contract	AS1289
<b>Soil Type 1 Soil Type 2</b>	pH and electrical conductivity Saturated hydraulic conductivity Cation exchange capacity Available phosphorous and nitrogen	1000m <sup>3</sup>	1 per 1000m <sup>3</sup>	AS1289
<b>Soil Type 3 Soil Type 4</b>	pH and electrical conductivity Cation exchange capacity Available phosphorous and nitrogen and manganese Texture Organic matter content	500m <sup>3</sup>	1 per 500m <sup>3</sup>	AS1289
<b>Soil Type 5</b>	Filler soil: <ul style="list-style-type: none"> <li>- pH and electrical conductivity</li> <li>- Cation exchange</li> <li>- Available phosphorous, nitrogen and manganese</li> <li>- Texture</li> <li>- Organic matter content</li> </ul> Aggregates: <ul style="list-style-type: none"> <li>- Particle size distribution</li> <li>- Sodium sulphate soundness</li> <li>- Aggregate to filler soil ratio</li> </ul>	1000m <sup>3</sup>	1 per 1000m <sup>3</sup>	AS1289
<b>Soil Type 6</b>	Texture <ul style="list-style-type: none"> <li>- Hydraulic conductivity</li> <li>- Ph and electrical conductivity</li> <li>- Cation exchange capacity</li> <li>- Available phosphorous and nitrogen</li> </ul>	1000m <sup>3</sup>	1 per 1000m <sup>3</sup>	AS1289
<b>Mulch for planting</b>	Material quality	1 per contract	1 per contract	AS 4454

\* Note: or part thereof, per lot

Sampling from stockpile: a bulk soil sample must consist of 20 sub-samples, taken from random locations around the stockpile. Collect at least 2kg of soil using a planting trowel or auger from different locations to a depth of at least 150mm.

## Sub-annexure C11 - Construction of pathways and cycleways

**Table 0B-15 MITS 06B**

Activity	Key quality verification requirements	Maximum lot size	Minimum test frequency	Test method
<b>Subgrade</b>	Compaction	1000 lin m or 1000m <sup>2</sup>	1 per 200 lin m or 200m <sup>2</sup>	AS 1289.5.4.1
	Geometry	10,000m <sup>2</sup>	1 Cross Section per 25m	Survey
<b>Subbase/ Granular base placement</b>	Compaction	1 day's placement	1 per 100 lin m or 100m <sup>2</sup>	AS 1289.5.4.1
	Geometry	1 day's placement	1 per 25 lin m	Survey Measure & 3m Straight Edge
<b>Steel supply</b>	Material quality—Suppliers documentary evidence and certification	1 delivery	1 per production batch	
<b>Concrete supply</b>	Refer <b>Sub-Annexure C14: Ready-mixed concrete production and supply</b>			
	Consistency—Slump	15 m <sup>3</sup>	1 per load	AS 1012.3.1
	Compressive strength (28 days)	15 m <sup>3</sup>	2 pairs per 15m <sup>3</sup>	AS 1012.1 AS 1012.8.1 AS 1012.9
<b>Concrete placement</b>	Finished Levels	15m <sup>3</sup>	1 cross section per 15m	Survey and 3m straight edge
	Surface dimensions	Single fabrication	As required to confirm design dimensions	Measure

## Sub-annexure C12 – WSUD Features

**Table 0B-16 MITS 9E**

Activity	Key quality verification requirements	Maximum lot size	Minimum test frequency	Test method
<b>Establishment inspection</b>	Approved Establishment Inspection Checklist	1 Contract	Monthly inspection (frequency may increase depending on site condition)	<i>MITS09E Water Quality Vegetation Establishment Annexure A</i>
<b>Establishment completion</b>	Approved Establishment Completion Checklist	1 Contract	1 per contract	<i>MITS09E Water Quality Vegetation Establishment Annexure A</i>

## ANNEXURE D – MATRIX FOR COMPLIANCE WITH AS/NZS ISO 9001 AND THIS SPECIFICATION.

Clause	AS/NZS ISO 9001	Records	Project quality plan
2.1	QMS.	<ul style="list-style-type: none"> <li>- Project quality plan.</li> <li>- Quality manual.</li> </ul>	<ul style="list-style-type: none"> <li>- QMS and procedures.</li> <li>- Matrix for QMS.</li> <li>- Subcontractor and supply/deliver Contractors compliance.</li> </ul>
2.2	Control of documents	<ul style="list-style-type: none"> <li>- List of who holds issued documents.</li> <li>- Register of current document issued/revision.</li> </ul>	<ul style="list-style-type: none"> <li>- Description of how quality records will be stored and maintained.</li> </ul>
2.3	Management responsibility	<ul style="list-style-type: none"> <li>- Corporate QMS.</li> </ul>	<ul style="list-style-type: none"> <li>- List of responsibilities and authorities for Quality Assurance activities.</li> </ul>
2.4	Resource management	<ul style="list-style-type: none"> <li>- Provision of resources.</li> </ul>	
2.5	Design and development	<ul style="list-style-type: none"> <li>- Design records.</li> </ul>	
2.5, 2.11 and 2.12	Purchasing	<ul style="list-style-type: none"> <li>- Evaluation of Subcontractors and Suppliers.</li> <li>- Surveillance, audit of Subcontractors.</li> <li>- Subcontractor supplied documentation.</li> <li>- Certificate of testing by Suppliers.</li> </ul>	<ul style="list-style-type: none"> <li>- Method and results of Subcontractor evaluation for process validation.</li> <li>- Supply/delivery/ Subcontractor quality plan.</li> </ul>
2.6	Control of production and service provision	<ul style="list-style-type: none"> <li>- Procedures describing how to control work processes.</li> <li>- Records demonstrating effectiveness of work process controls.</li> <li>- Records of process validation when applicable.</li> </ul>	
2.6	Identification and traceability	<ul style="list-style-type: none"> <li>- Product batch/traceability records.</li> <li>- Lot identification register.</li> </ul>	<ul style="list-style-type: none"> <li>- Method of maintaining traceability.</li> <li>- Method of subdividing the work into lots and allocating lot numbers.</li> </ul>

Clause	AS/NZS ISO 9001	Records	Project quality plan
<b>2.6 and 2.9</b>	Control of monitoring and measuring devices	<ul style="list-style-type: none"> <li>- Calibration certificates.</li> <li>- Survey control.</li> </ul>	
<b>2.7</b>	Inspection and test planning	<ul style="list-style-type: none"> <li>- ITP's.</li> <li>- Records/checklists of inspection and testing.</li> <li>- Conformity reports for each completed lot</li> </ul>	<ul style="list-style-type: none"> <li>- Procedure for inspections, testing and closing out work lots.</li> <li>- How to keep records of inspection and test results.</li> <li>- ITP and forms.</li> <li>- Method for identifying, controlling and verifying inspection and test status.</li> </ul>
<b>2.8</b>	Monitoring and measurement	<ul style="list-style-type: none"> <li>- Hold Point and Witness Point schedule.</li> <li>- Inspection and test records.</li> </ul>	<ul style="list-style-type: none"> <li>- Method for release of Hold Points.</li> </ul>
<b>2.10</b>	Control of nonconforming product	<ul style="list-style-type: none"> <li>- Nonconformity reports.</li> <li>- Notifications of nonconformity register</li> </ul>	<ul style="list-style-type: none"> <li>- Method of registering and closing non-conformance</li> </ul>
	Corrective action	<ul style="list-style-type: none"> <li>- Corrective action reports and register.</li> <li>- Corrective action requests.</li> </ul>	<ul style="list-style-type: none"> <li>- Method of ensuring against corrective action.</li> </ul>



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