



Minimum Standard for Quality Management Plans

NZTA Z1:2021

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VERSION 5.0

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If you have further queries, call our contact centre on 0800 699 000 or write to us:

NZ Transport Agency

Private Bag 6995

Wellington 6141

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Specification note

This Specification will be updated periodically to incorporate advances in technology and changes within the industry. Waka Kotahi NZ Transport Agency website should be checked to confirm the most recent edition of the specification.

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FOREWORD

This Minimum Standard is prepared by Programme and Standards, Transport Services, Waka Kotahi NZ Transport Agency.

The objective of this Minimum Standard is to set out performance requirements for Consultants and Contractors preparing Quality Management Plans for contracts.

The main changes that have been incorporated into this Minimum Standard is the addition of a section for maintenance contracts to the existing sections for contractors and consultants, with key focus areas still being:

- Promoting better collaboration between the principal, consultant and contractor, and regular meeting are introduced to foster this.
- Requiring the structuring of work to enable better tracking of work lot progress, quality records and closure through a Work Breakdown Structure (WBS).
- Expectation of clearer definitions around roles for quality assurance, including targeted and risk-based construction monitoring.
- Timeliness and visibility of quality records.

Readers of this specification must also read and be aware of the Contract Manuals for Professional Services, Construction and Maintenance Contracts.

1. SCOPE

The purpose of the Quality Management Plan (QMP) is to enable the supplier to integrate the statutory, technical and performance framework requirements of a Waka Kotahi NZ contract with the supplier's quality systems during delivery of the specified Contract Works.

The supplier is accountable for meeting the quality of work delivered as defined within various applicable specifications and other requirements. And although the supplier is expected to have systems certified to international quality standards (ISO 9001), the supplier must have a project specific QMP that covers quality assurance and control minimum requirements as defined below.

The QMP for a Professional Services contract, a Physical Works contract or a Maintenance Works contract is referenced from the State highway professional services contract proforma manual (SM030), the State highway construction contract proforma manual (SM031), and the State highway maintenance contract proforma manual (SM032) respectively.

Collaboration between Consultants and Contractors is encouraged, starting with mutual access, review and input to each other's QMPs. Where Consultants and Contractors work together as one organisation a combined QMP is recommended.

The Principal, Consultant, and Contractor need to work as a team to produce, as a minimum, the required quality in design and construction that will deliver infrastructure capable of performing its intended function throughout its expected economic life span.

2. RELATED DOCUMENTS

NOTE: Readers should comply with the most current publication of the specification being referenced.

SM030	State highway professional services contract proforma manual
SM031	State highway construction contract proforma manual
SM032	State highway maintenance contract proforma manual
Minimum Standard Z8	Inspection, sampling and testing

3. DEFINITIONS

- **Consultant**

The definition can mean Independent Reviewer, Principal's Advisor / Site Representative or Engineer's Representatives, depending on the Contract Type.

- **Hold Point**

A checkpoint in the construction process beyond which work cannot proceed until compliance with specified requirements has been verified and the hold point has been released by a person with the necessary authority. Usually applies to verification of critical aspects that cannot be inspected or corrected at a later stage in the process (e.g. because they will no longer be accessible).

- **Inspection and Test Plan(s) (ITP)**

The Supplier's detailed plans for inspection and testing of the Contract Works aimed at verifying and confirming with evidence to the Principal that the Contract Works have been delivered to specified requirements.

- **International Accreditation New Zealand (IANZ)**

International Accreditation New Zealand is the accreditation body of the Testing Laboratory Registration Council in New Zealand.

- **Key performance indicator(s) (KPI)**

The compliance limits as stated for each element of the Contract Works.

- **Key Result Areas (KRA)**

The KRAs are put in place to assist the Principal in achieving the Government's strategic objectives, the corresponding Principal's Strategic Intent, strategic priorities, compliance with the Land Transport Management Act and the Resource Management Act.

- **May**

Term used to indicate something that is optional and may be considered for use.

- **Minimum Standard**

In this standard the words "Minimum Standard" shall be interpreted as referring to the NZTA Z1 Minimum Standard for Quality Management Plans.

- **Must**

Term used to indicate something that is mandatory or required by law.

- **Non-conformance reports (NCR)**

Reports about cause, impact and remediation of parts of the Contract Works that have not met specified requirements.

- **Operational Performance Measures (OPM) – (Relates to Maintenance Contracts only)**

There are three OPM types that reflect the agency's priorities. They are described as follows:

- Safety OPMs
- Customer facing OPMs
- Asset condition OPMs

- **Quality Assurance (QA)**

The maintenance of a desired level of quality in a service or product, especially by means of attention to every stage of the process of delivery or production.

- **Quality File**

A repository of indexed quality records in a format that allows access to interested parties and retained after project completion for a defined period.

- **Quality Management Plan (QMP)**

The Plan prepared by the Consultant and/or the Contractor that covers the quality processes particular to the specific Contract.

- **Requests for Information (RFI)**

Formal requests for specific information made by any party to the Contract to any other party to the Contract.

- **Random verification testing (RVT)**

Random verification tests are carried out by an independent party in addition to what is required by the ITP. RVT is risk-based and carried out to confirm inspection and test results or where areas of concerns were identified.

- **Road Assessment and Maintenance Management (RAMM)**

A proprietary system for measuring and recording road condition parameters and asset attributes.

- **Shall**

Term used to indicate something that is mandatory or required by law.

- **Should**

Term used to indicate a recommendation based on industry best practice.

- **Supplier**

A Consultant and/or Contractor engaged to provide the services set out in the contract documents.

- **Standard**

In this specification the word “Standard” shall be interpreted as a Waka Kotahi approved national or international document that has been published by a recognised Standards organisation being used to provide a means of compliance with this Minimum Standard. Standards must be identified by their Standards organisation and number; e.g. AS/NZS 1906.3.

- **Waka Kotahi**

Waka Kotahi in this Contract means the New Zealand Transport Agency established as defined by section 93 of the Land Transport Management Act 2003 with functions as set out in section 95 of that Act

- **Work breakdown structure (WBS)**

The outline of the Contract Works developed in accordance with the template included in Appendix A.

4. CONSULTANT'S QUALITY MANAGEMENT PLAN

In addition to any particular requirements in the contract documents, the Consultant's QMP must be approved by the Principal prior to any work starting, and shall as a minimum address the following Quality Management activities and requirements:

4.1 Lead and Direct Quality:

- a. Define the Consultant's overarching quality policy and objectives, and how these align to the Principal's quality objectives for the Contract;
- b. Identify quality risks for the Contract Works;
- c. Carry out Management Reviews of all information and results from quality assurance and control activities, including external reviews, contract reviews, management system audits, and performance against Quality objectives. Management Reviews must be carried out at least annually and the first review should commence not later than 6 months after Contract award in order to confirm suitability of the QMP;

4.2 Enable the Delivery of Quality:

4.2.1 Quality Management Systems

- a. Mitigate quality risks when detailing the systems, procedures, plans, methods and software (used for designs and independent design verification), to be used by the Consultant and their sub-consultants to deliver the Contract Works (or parts there-of);
- b. Implement and manage the QMP and other supporting documents, including document control;
- c. Engage and include contractors and sub-consultants (where applicable) in the QMP;
- d. Providing procedures describing best design practices.
- e. Provide a system for assuring quality data is collected and maintained for use of effective and efficient asset management decision making.

4.2.2 People

- a. Clearly define roles, responsibilities and authorities of staff across processes, internal and external, that have an impact on the quality of work outcomes;
- b. Implement and manage ongoing staff training in systems, procedures, plans, methods, standards, guidelines and tools that can impact delivery of the Contract works (or parts there-of);
- c. Resource the project sufficiently to achieve planned quality outcomes with staff that have clear and relevant experience in relation to the position they occupy.

4.2.3 Meet and collaborate

- a. Meet and collaborate regularly on Quality matters with the Principal;
- b. On Contracts involving physical works, arrange and participate in Quality meetings, as described below:
 - Weekly Meetings
Quality meetings are held on-site at the start of the week between the Principals' Site Representative and the Contractor's Quality Manager (and their respective support staff) to review expected actions and outcomes from the previous week, and then focus on quality actions needed in the week ahead.

- **Monthly Meetings**

Hold and formally minute quality meetings, chaired by the Principal, with the Principal's Site Representative/s and the Contractor's Quality Manager (and their respective support staff). These meetings are to review and approve reports on the past month's ITP, Quality File completeness, Verification, Certification, Hold Point, status of as-built records, Non-Conformances and remedial action outcomes, to confirm future actions, and alert the contracted parties to overdue remedial actions and legacy risks to asset quality. Record innovations, improvements and mitigation actions.

4.3 Quality Delivery:

4.3.1 Quality Planning and Delivery

- Plan and deliver the Contract Works on time, in accordance with the agreed programme;
- Plan design and development reviews and verifications, including design validation for progressive hand over of completed deliverables, to meet specified project requirements.
- On Contracts involving physical works, collaborate with the contractor in creating a WBS that facilitates the management of the QA process and delivers transparent, progressive verification clearly traceable to as-built records and asset information.
- On Contracts involving physical works, review construction lot packages (QMP sections for WBS elements), which include construction methodology, ITP and other relevant plans such as traffic, health and safety and environmental management plans, permits and binding consents;
- Plan contract specific hold points in conjunction with the Principal and Contractor (when required for a physical works contract).

4.3.2 Reviews and Verification

- Carry out reviews to evaluate the results of design and development in meeting project requirements and ensure by verification that design outputs meet input requirements.
- Undertake and achieve sign-off for contract specific hold points including consideration of feedback from independent review of the design (when required by the Principal), thereby confirming approval to proceed;
- Verify design and construction assumptions, calculations, estimates, drawings, reports, and quantities;
- For contracts involving physical works:
 - Undertake and achieve sign-off for contract specific Hold Points including the necessary evidence from the Contractor, thereby confirming approval to proceed;
 - As Principal's Advisor, implement and manage independent monitoring of the agreed ITP by RVT to confirm that works are being delivered in accordance with the Contract specification and the designer's intent (design validation);
 - Inspection and testing of the physical works by the Contractor and Consultant shall be in accordance with a clear and concise list of referenced regional, national or international standards, completed by suitably skilled and experienced personnel, and include as appropriate IANZ Accredited test results;
 - The release of Hold Points by the Independent Reviewer as part of inspection and test plans must be strictly monitored independently and objectively. Independent Reviewers must report on Hold Points being released and discuss during Quality Meetings;
 - Review Contractor's quality processes and quality files for completeness and compliance on a regular basis, including the standard and status of as-built records;
 - All test records, including test reports from IANZ accredited testing laboratories, shall be sent to the Principal, Contractor and Principal's Advisor by the laboratory/testing agency in real time.

4.4 Measure, Analyse and Improve Quality:

- a. The Consultant must collect, analyse and review quality information generated during contracted works, and report on these for discussion at Quality Meetings. These should include as minimum (where applicable):
 - Design reviews and verification results;
 - Design changes;
 - RFI;
 - Notices to Contractor / Engineer;
 - NCR;
 - ITP testing and RVT, including the review of quality and test data trends from analysis.
- b. Conduct and report on internal and external audits with the purpose of confirming adequacy of quality management system and processes.
- c. Conduct surveys to capture and analyse feedback from relevant stakeholders, including the public.
- d. Report on ongoing contract performance to the Principal against the specified contract deliverables, KPI's, milestones and hold points;
- e. Pursue improvement opportunities.

4.5 Managing Non-Conformances:

- a. The QMP must describe procedures for discovery and control of any work that is not conforming to specified requirements. All non-conformances must be recorded, investigated, remedial action agreed and implemented;
- b. Manage and implement corrective and preventive action, continuous improvement and lessons learnt migration in response to non-conformance when and wherever this occurs;
- c. Acceptance of remedial actions on physical work shall be a Hold Point to be released by the Principal.

4.6 Quality Records:

- a. Keep digital and/or hard copy records from all Contract specific quality assurance and control activities in a Quality File, to thereby provide explicit evidence to demonstrate to the Principal that the quality objectives for the Contract have been met;
- b. Ensure that the Quality File is accessible to the Principal and Contractor (when required for a physical works contract) on the same day that the information is available by way of agreed "Cloud" or "Intranet" based recording system and/or hard copy distribution;
- c. At the end of the Contract, the complete Quality File remains with the Principal.

4.7 Progressive Close-Out and Completion:

- a. Prepare and deliver Design Certificates and/or Producer Statements for Contract deliverables as specified;
- b. At the end of the contract, before Practical Completion is agreed, supply all quality information and records as specified in the contract in acceptable digital and/or hard copy format to the Principal, as the completed Quality File;

5. MAINTENANCE CONTRACT'S QUALITY MANAGEMENT PLAN

In addition to any special requirements in the State Highway maintenance contract proforma manual and or Principal's Minimum Requirements, the Contractor's QMP must be approved by the Principal¹, and should as a minimum address the following Quality Management activities and requirements:

5.1 Lead and Direct Quality:

- a. Define the Contractor's overarching quality policy and specific quality objectives for the contract, and how these will be delivered to achieve Contract outcomes;
- b. Set-out the approach and framework for measuring and reporting on performance;
- c. Identify quality risks for the Contract Works, where the scope of Contract Works are the products and services associated with the operations and maintenance activities set out in maintenance contracts;
- d. Conduct management reviews on results from quality assurance and control activities, including internal reviews, contract reviews, management system audits, and performance against Quality objectives;
- e. Specify requirements for a systematic and measurable process of independent monitoring and reporting of their quality assurance systems and performance;

5.2 Enable the Delivery of Quality:

5.2.1 Quality Management Systems

- a. Detail the systems, processes, procedures, plans, methods and equipment to be used by the Contractor, their Sub-contractors, Designers (as appropriate), and Suppliers to deliver the Contract Works (or parts there-of);
- b. Provide procedures describing best practices for works undertaken within the Contract including but not limited to operations, maintenance, physical works and network and asset management, and include the following;
 - site-specific Quality Plans for pavement rehabilitation and Renewal Quality Plans for the season's resurfacing activities with site specific level consideration detailed for the programme to be delivered;
 - design, design reviews and design verifications for all physical works including handovers;
 - assurance of works carried out by subcontractors and service providers;
 - lessons learned from the above-mentioned processes are reflected back into the QMP;
 - administration processes and procedures for measuring, monitoring and tracking against performance metrics.
 - handover process of records and data post construction, including handover from subcontractors and service providers.
- c. Establish and maintain a suitable Quality File, with relevant records required under the quality management system (including but not restricted to register for non-compliance and opportunities for improvement actions, internal audits, Random Verification Testing results, subcontractor, Independent Reviewer reviews, Principal's audits and reviews),

¹ SM032 NOC Volume 4: Maintenance Specification v3.1 Clause 4.0 Contract Plan

- d. Provide a system for assuring quality data is collected and maintained to allow effective and efficient asset management decision making.
- e. Develop procedures for document control, including Principal review and approval.

5.2.2 Roles & Responsibilities

- a. Clearly define roles, responsibilities and authorities for staff involved in specific quality management, internal and external, and authorities of personnel involved in the Contract;
- b. Implement and manage ongoing staff training in systems, procedures, plans, methods, standards, guidelines and equipment that can impact delivery of the Contract Works;
- c. A Quality Manager may be required to be appointed to act independently of day-to-day activities and to ensure that the requirements of the quality plan are implemented and maintained;
- d. Resource works sufficiently to achieve planned quality outcomes and contract outcomes with staff that have clear and relevant skills and experience in relation to the position they occupy and equipment and plant that are appropriately calibrated and tested.
- e. OPM Compliance Auditor responsible for the monitoring of contract performance and reporting of OPM results shall be independent of the contract delivery team.

5.2.3 Meet and Collaborate

- a. Meet and collaborate regularly on quality matters; clearly outlined in a schedule, including reporting and deliverable requirements of each relevant party involved. Quality meetings are to be held at least monthly.
- b. Involve representative personnel in meetings to promote better collaboration between all involved parties.
- c. Discuss current contract performance with regards to quality objectives.
- d. Identify risks to achieving quality outcomes and measures implemented or needed to control these risks.
- e. Focussed meetings are to be held to discuss significant quality incidents.
- f. Include quality topics during daily prestart meetings.

5.3 Quality Delivery:

5.3.1 Quality Planning and Delivery

- a. Implement and manage quality assurance of physical work activities, including both maintenance and asset renewal works, from site investigation and design through planning and programming to construction and post construction monitoring;
 - Implement the Renewal Quality Plans for pavement rehabilitation and Renewal Quality Plans for the season's resurfacing activities with site specific level consideration detailed for the programme to be delivered;
 - Monitor and manage the Network defect programme and progress of works;
 - Carry out site investigation and failure mode analysis to inform the design process;
 - Undertake designs, design reviews and design verifications for all physical works including handovers;
 - Provide assurance of works carried out by subcontractors and service providers;
 - Undertake continual improvement of the systems and processes from lessons learned, audits, reviews and other quality information;

- Undertake handover of records and data post construction, including handover from subcontractors and service providers.
- b. Deliver the Contract Works on time, in accordance with the agreed programme and specified requirements, including but not limited to progressive hand over of completed deliverables as specified;
- c. Undertake the compilation, review and approval of design and construction stages including but not limited to, issuing of approved for construction documentation, construction methodology, work instructions, best practice guidelines, Inspection and Test Plans, check sheets and verification methods and how they comply with the requirements of the contract documents;

5.3.2 Data Quality

- a. Implement and manage a Data Quality Plan, as an appendix to the QMP, that aligns to best practice standards and agency guidance to assure:
 - Data is correctly captured and maintained
 - Data is utilised for asset management decision making

5.4 Reviews and Verification

- a. Implement checking and verification procedures for all deliverables;
 - i. Evaluating the results of designs against meeting all relevant requirements and ensuring by verification that design outputs meet input requirements for construction;
 - ii. Verify design and construction assumptions, calculations, estimates, drawings, reports, and quantities;
 - iii. Risk profiles for alternative proposed works must be agreed with the Principal and recorded. Quantify (if any) deviations from the Contract post construction design assessment performance requirements;
 - iv. Undertake and achieve sign-off for all relevant work programmes including the necessary evidence from the Contractor, thereby confirming approval to proceed;
- b. Inspection and testing of the physical works by the Contractor shall be in accordance with inspection and test plans to a clear and concise list of referenced regional, national or international standards, completed by suitably skilled and experienced personnel, and include as appropriate IANZ Accredited test results;
 - i. Where specified an Independent Reviewer is to release Hold Points as part of inspection and test plans.
 - ii. All material or construction test records, including test reports from IANZ accredited testing laboratories, shall be made available to the Principal for review prior or during construction.
- c. Obtain Principal's review of Quality Management Systems as input to the KRA reward process.

5.4.1 Independent Monitoring

The Principal reserves the right to engage an independent party or representative to conduct reviews or audits on its behalf, at any time. Reviews and audits could include, but are not limited to:

- a. independent monitoring of the agreed Inspection and Test Plans including through Random Verification Testing to confirm that works are being delivered in accordance with the Contract specification and the designer's intent (design validation);
- b. Review Contractor's quality processes and quality files for completeness and compliance on a regular basis, including the standard and status of as-built records;
- c. Pavement renewal works shall have Independent Reviewers for agreed hold points;

- d. Independent Reviewers must report on Hold Points being released and discuss during Quality Meetings.

5.4.2 Material Traceability

- a. Provide procedures and methods of providing evidence for the approved sourcing, supply, transport, storage and use of materials needed to demonstrate compliance with specified requirements;
- b. All warranties must be in favour of the Principal, where and when applicable;
- c. All material used during construction must be traceable to evidence of compliance held on the Quality File.

5.5 Measure, Analyse and Improve Quality:

- a. The Contractor must collect, analyse and review quality information generated during design and construction, and report on these for discussion at Quality meetings. This should include as a minimum:
 - ITP results, including quality and test data trends from analysis;
 - Results from independent random verification tests (RVT);
 - NCR and outstanding Hold Points;
 - RFI;
 - Notices to Contractor / Engineer;
- b. Implement and manage processes and procedures specifically for managing Post-Construction reporting outcomes;
- c. Report on ongoing contract performance to the Principal against the specified contract deliverables and performance criteria, including agreed quality objectives;
- d. Conduct and report on internal and external audits with the purpose of confirming adequacy of quality management system and processes.
- e. Pursue improvement opportunities for quality management within the Contract and the QMP.

5.6 Managing Non-Conformances:

- a. The QMP must describe procedures for managing and implementing corrective actions, continuous improvement and lessons learned. Included should be the process for how the Contractor will identify, monitor and report this to the Principal.
- b. All non-conformances must be recorded, investigated, remedial action agreed and implemented. Acceptance of remedial work shall be a Hold Point for release by the Principal;

5.7 Quality Records:

- a. Maintain records from all Contract specific quality assurance and control activities in a Quality File, to thereby provide explicit, unambiguous evidence demonstrating to the Principal that the quality objectives for the Contract are being met;
- b. Quality records must be traceable to material and products used during construction and linked to relevant ITP;
- c. Ensure that quality records are structured, appropriately indexed and accessible to the Principal and Consultant by way of agreed "Cloud" or "Intranet" based recording system and/or hard copy distribution.

5.8 Progressive Close-Out and Completion:

- a. Construction records must be certified by the Contractor as complete and compliant for each section of work being completed;
 - **Surfacing Construction Completion Report** - Within 2 months of completing the annual resurfacing programme, the Contractor shall supply to the Principal a Surfacing Construction Completion Report;
 - **1st coat seal** - Within 2 months of the construction of the 1st coat seal, the Contractor shall supply to the Principal a Pavement Rehabilitation Construction Completion Report for each Site;
 - **Chip Seal Post Verification Testing** - within a period of 10 to 15 months after completion of the resurfacing programme, the sealed surfaces shall be assessed in accordance with Transport Agency P/17, and the results reported in an annual Resurfacing Post-Construction Design Assessment Report.
 - **AC Post-Verification Testing** - Post-construction design assessment will be used as the tool for continuous improvement of the actual design process and verification of value assurance. Between 10 and 15 months after construction, the Principal will have undertaken pavement deflection, curvature and other high-speed data surveys over the Network.
- b. Where required, prepare and deliver design validation and construction completion certificates and/or producer statements for specified Contract deliverables;
- c. Handover all relevant records at the end of the Contract or sections of work completed, as specified in the Contract documents² including but not limited to;
 - Quality data, financial records, asset information, physical works records (as-builts, designs etc.), forward works programmes, defect liabilities, unresolved issues, special monitoring needs, databases.
- d. All information and records as specified in the contract must be handed over in acceptable digital and/or hard copy format to the Principal.

² SM032 NOC Volume 4: Maintenance Specification v3.1 Clause 3.7 Handover and Hand backs

6. CONTRACTOR'S QUALITY MANAGEMENT PLAN

In addition to any special requirements in the contract specification(s) and or Principal's Minimum Requirements, the Contractor's QMP must be approved by the Principal prior to any physical works starting, and shall as a minimum address the following Quality Management activities and requirements:

6.1 Lead and Direct Quality:

- a. Define the Contractor's overarching quality policy and objectives, and how these align to the Principal's quality objectives for the Contract;
- b. Identify quality risks for the Contract Works;
- c. Contractor's Management Reviews of all information and results from quality assurance and control activities, including external reviews, contract reviews, management system audits, and performance against Quality objectives. Management Reviews must be carried out at least annually and the first review should commence not later than 6 months after Contract award in order to confirm suitability of the QMP. The results of Management Reviews must be available to the Principal and Consultants, and discussed at a Quality Meeting;

6.2 Enable the Delivery of Quality:

6.2.1 Quality Management Systems

- a. Mitigate quality risks when detailing the systems, procedures, plans, methods and equipment to be used by the Contractor, their Sub-contractors, Designers (as appropriate), and Suppliers to deliver the Contract Works (or parts there-of).
- b. Implement and manage the QMP and other supporting documents, including document control;
- c. Engage and include Sub-Contractors and Consultants in the QMP;
- d. Providing procedures describing best design and construction practices.
- e. Provide a system for assuring quality data is collected and maintained for use of effective and efficient asset management decision making.

6.2.2 People

- a. Clearly define roles, responsibilities and authorities for staff across processes, internal and external, that have an impact on the quality of work outcomes;
- b. Implement and manage ongoing staff training in systems, procedures, plans, methods, standards, guidelines and equipment that can impact delivery of the contract works;
- c. A Quality Manager will be required to be appointed to act independently of day to day construction activities and to ensure that the requirements of the quality plan are implemented and maintained;
- d. Resource the project sufficiently to achieve planned quality outcomes with staff that have clear and relevant skills and experience in relation to the position they occupy.

6.2.3 Meet and Collaborate

- a. Meet and collaborate regularly on quality matters with the Principal and Consultant.
- b. In collaboration with the Principal and Consultant, participate in quality meetings, as described below:
 - Weekly Meetings

Quality meetings are held at the start of the week on-site between the Principals' Site Representative and the Contractor's Quality Manager (and their respective support staff) to

review expected actions and outcomes from the previous week, and then focus on quality actions needed in the weeks ahead.

- Monthly Meetings

Hold and formally minute quality meetings, chaired by the Principal, with the Principals' Site Representative/s and the Contractor's Quality Manager (and their respective support staff). These meetings are to review and approve reports on the past months ITP, Quality File completeness, Verification, Certification, Hold Point, Non-Conformances and remedial action outcomes, to confirm future actions, and alert the contracted parties to overdue remedial actions and legacy risks to asset quality. Record innovations, improvements and mitigation actions.

6.3 Quality Delivery:

6.3.1 Quality Planning and Delivery

- a. Plan and deliver the Contract Works on time, in accordance with the agreed programme and specified requirements, including but not limited to progressive handover of completed deliverables as specified;
- b. Create a WBS that facilitates management of the physical work packages and associated QA process, and delivers transparent, progressive verification and completion of the works. The WBS must be agreed with the Consultant to ensure timely signing-off of discrete work packages. See Appendix A for an example of WBS;
- c. Establish a process for the compilation, review and approval of construction lot packages as per WBS to include, but not limited to, construction methodology, ITP and other relevant plans such as traffic, health and safety and environmental management plans, permits and consents;
- d. Plan and review contract specific hold and witness points in conjunction with the Principal and Consultant and obtaining all necessary approvals to proceed.

6.3.2 Inspection and Testing

- a. Inspection and testing shall be carried out as per Waka Kotahi Minimum Standard Z/8: Inspection, sampling and testing, lot element Technical Specifications, and ITP for that lot;
- b. Inspection and testing shall be in accordance with a clear and concise list of referenced regional, national or international standards, completed by suitably skilled and experienced personnel, and include as appropriate IANZ Accredited test results;
- c. Undertake and report on the outcomes of the Inspection and Testing as per approved ITP in order to provide explicit, unambiguous evidence to demonstrate to the Principal and Consultant that the contract deliverables are being delivered in accordance with the specification and the designer's intent;
- d. Undertake and achieve sign-off for contract specific Hold Points including consideration of feedback from RVT testing, and thereby confirming approval to proceed;
- e. Respond to feedback from the Consultant led RVT to reaffirm that the Contract Works are being delivered in accordance with the specification and the design intent;
- f. All test records, including test reports from IANZ accredited testing laboratories, shall be sent to the Principal, Contractor and Consultant by the laboratory/testing agency simultaneously.

6.3.3 Material Traceability

- a. Provide procedures and methods of providing evidence for the approved sourcing, supply, transport, storage and use of materials needed to demonstrate compliance with specified Contract specification, standards and guidelines;
- b. All warranties must be in favour of the Principal;

- c. All material used during construction must be traceable to evidence of compliance held on the Quality File.

6.4 Measure, Analyse and Improve Quality:

- a. The Contractor must collect, analyse and review quality information generated during construction, and report on these for discussion at Quality meetings. This should include as a minimum:
 - ITP results, including quality and test data trends from analysis;
 - Results from independent random verification tests (RVT);
 - NCR and outstanding Hold Points;
 - RFI;
 - Notices to Contractor / Engineer;
- b. Report on ongoing contract performance to the Consultant against the specified contract deliverables, KPI, milestones, and Hold Points;
- c. Verification of construction assumptions, calculations, estimates, drawings, reports and as-built documentation, including RAMM;
- d. Conduct and report on internal and external audits with the purpose of confirming adequacy of quality management system and processes.
- e. Pursue improvement opportunities.

6.5 Managing Non-Conformances:

- a. The QMP must describe procedures for discovery and control of any work that is not conforming to specified requirements or designs. All non-conformances must be recorded, investigated, remedial action agreed and implemented. Acceptance of remedial work shall be a Hold Point to be released by the Principal;
- b. Manage and implement corrective and preventive action, continuous improvement and lessons learnt migration in response to non-conformance when and wherever this occurs. Remedial action is witnessed and/or confirmed by the Independent Reviewer.

6.6 Quality Records:

- a. Keep digital and hard copy records from all Contract specific quality assurance and control activities in a Quality File, to thereby provide explicit, unambiguous evidence to demonstrate to the Principal and Consultant that the quality objectives for the Contract are being met;
- b. Quality records must be traceable to material and products used during construction and linked to relevant ITP;
- c. Ensure that quality records are accessible to the Principal and Consultant on a real time basis by way of agreed "Cloud" or "Intranet" based recording system and/or hard copy distribution;
- d. At the end of the Contract, the complete Quality File remains with the Principal;

6.7 Progressive Close-Out and Completion:

- a. Prepare and deliver Construction and Design Certificates and/or Producer Statements as applicable for specified Contract deliverables;
- b. Construction records must be certified by the Contractor as complete and compliant for each section of work being completed as part of the Project's progressive closeout procedure;

- c. At the end of the contract, before Practical Completion is agreed, supply all quality information and records as specified in the contract in acceptable digital and/or hard copy format to the Principal, as the completed Quality File.

7. INDEPENDENT REVIEWING

7.1 General:

- The Independent Reviewer is an independent party, confirmed by the Principal, to perform objective and systematic monitoring of Contract Works on a risk-basis approach. They shall follow a measurable process for design validation using a targeted, risk-based approach to QA monitoring and outcome delivery;
- To support this role the Principal and their suppliers shall routinely analyse the Quality File data to provide current, explicit information about the works to support open, informed, collaborative and timely decision making, leading to consistent compliance of physical works outcomes. Data trend analysis shall be used to support proactive risk identification and mitigation to demonstrate that the designer's assumptions are being achieved, or that agreed changes are justified and are in turn being achieved;
- The Independent Reviewer must establish procedures that will ensure all personnel involved in the monitoring services are fully informed of the project requirements to which the services relate.

7.2 Monitoring Services:

The Independent Reviewer must review the following (by general overview and reasonable checking):

- the Supplier's project plans prior to works commencement – to confirm compliance with specified requirements;
- the proposed construction procedures and inspection and test plans – to verify that construction in accordance with these documents will satisfy the project requirements;
- the design documentation, to confirm compliance with project requirements, including identification of assets and asset components and sub-components within the contractor's work breakdown structure;
- The design or construction activities and effective delivery to the respective QMP;
- The progressive closure of lots and the relevant construction records.
- Validate that construction is meeting design intent by confirming specifications and other requirements are being met. If authorisation is delegated, provide Construction Review Producer Statements and/or Certificates.

7.3 Monitoring Plan:

The Independent Reviewer must develop and submit to the Principal a monitoring plan for approval, which includes the following:

- the methodology proposed for each of the review services;
- roles and responsibilities for reviews;
- detailed review procedures;
- a resource schedule showing estimated resources required to undertake the review functions.

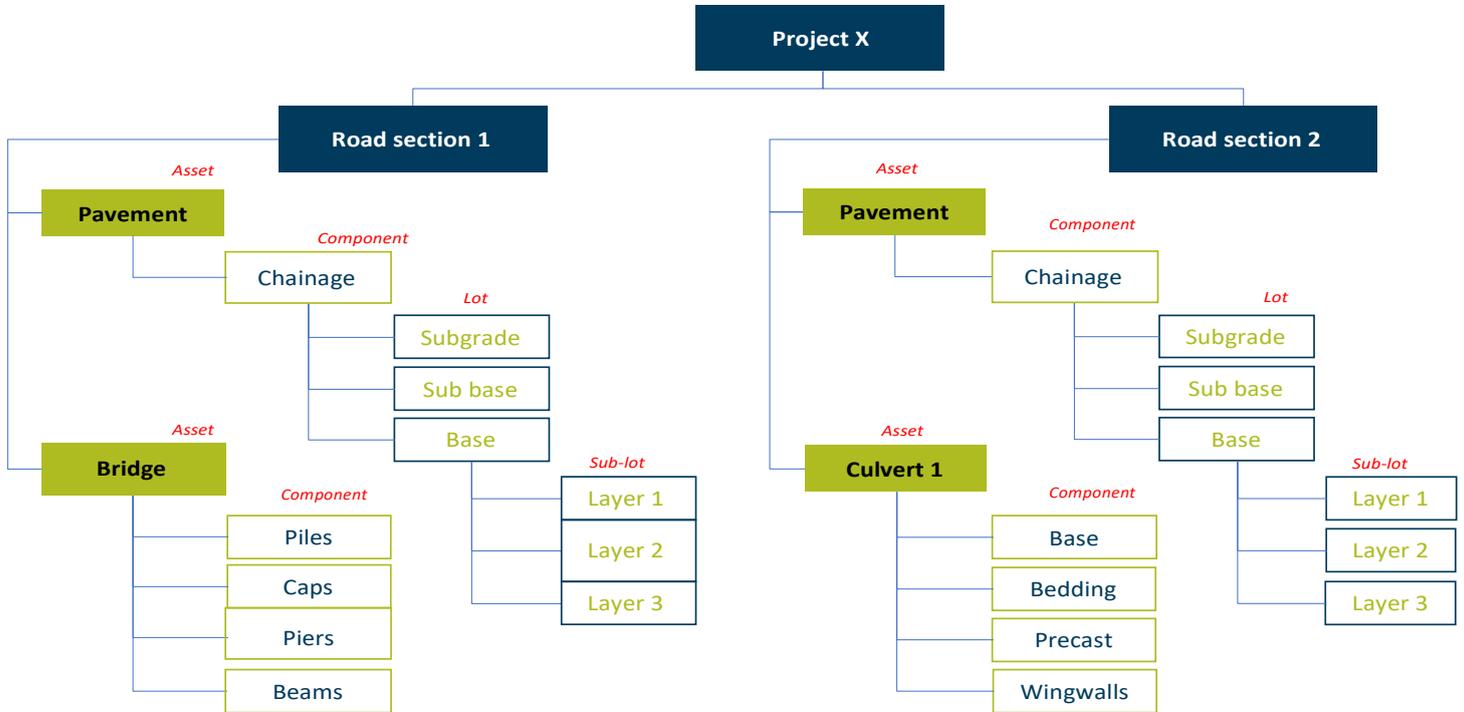
The monitoring plan must define the methodology and procedures that will be used to:

- objectively measure and report on the performance of the supplier's QA system;
- establish construction review activities, priorities and frequency that will satisfy design validation;
- report to the Principal on findings, non-conformances, remedial actions completed and outstanding QA issues of the supplier's quality management systems and delivery outcomes.

The procedures used to establish design and construction review activities, priorities and frequency must consider the likelihood of defects, based on the measured performance of the supplier's QA system, and the consequences of defects considering the nature of the asset components being constructed.

APPENDIX A

Work Breakdown Structure (Example)



The table below may not be exhaustive

Asset types	Asset component types
Section of roadside	Fencing/roadsides/plantations
Section of road carriageway or path	Formation earthworks/edgings and paved areas/pavement
Interchange ramps	Formation earthworks/edgings/pavement/paved areas
Stormwater drainage system	Stormwater drainage line /pits/inlet & outlet structures/water treatment facilities
Subsurface drainage system	Subsoil drainage lines/pits/risers/ lushing points/outlets
Tunnels	Primary support system/tunnel lining/ventilation/lighting/fire safety system/emergency access/incident management system
Bridges	Foundations, piers and abutments/beams/deck/barriers/ railings/approach slabs/bearings/expansion joints
Culverts	Bedding/base slab/culvert units/end-walls
Noise/screen walls	Foundations/support structure/cladding
Retaining Walls	Earth retaining system/subsoil drainage/architectural cladding
Safety barriers	Concrete barriers/guard fences/wire rope barriers
Sign structures	Foundations/superstructure
Delineation and signs	Signs/line-marking/guide posts
Lighting	Street lighting/architectural lighting
ITS	Conduits and pits/fibre optic cables/data loops/CCTV/phones/VMS
Traffic signals	Conduits and pits/poles/lanterns
Utilities	Conduits/pits/equipment