

Development Engineering As-built Requirements



MASTERTON
WHAKAORIORI
DISTRICT COUNCIL

Document Controls

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Revision History			
Ver.	Date	Name	Summary of Changes
1		Development Engineering As-Built Requirements	Defines standard requirements for submission of development engineering as-built documentation for council acceptance.
1.1			

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1.Introduction

1.1 Purpose

This document outlines the requirements and standards for the preparation and submission of As-Built documentation for infrastructure works to be vested in Masterton District Council (MDC).

The purpose is to ensure that infrastructure constructed as part of land development or subdivision is accurately documented, constructed in accordance with approved plans (or approved variations), and fit for long-term asset management and maintenance.

Accurate and consistent As-Built records are essential to:

- Maintain reliable asset data within Council's systems.
- Enable efficient future maintenance and upgrades.
- Ensure public health, safety, and environmental standards are met.
- Comply with legislative and regulatory frameworks such as the Resource Management Act 1991.

1.2 Applicability and Reference Standards

This document provides minimum requirements and guidance for the preparation and submission of As-Built documentation for infrastructure to be vested in Masterton District Council (MDC). It is intended to:

- Ensure submissions meet Council's requirements for asset acceptance, management, and maintenance.
- Support compliance with all applicable statutory, regulatory, and engineering standards.
- Serve as a practical guide for developers, consultants, contractors, and other parties involved in the design, construction, and handover of infrastructure.

1.2.1 Mandatory Compliance

- This guide does not override any statutory, regulatory, or higher-order standards as required.
- Where conflicts exist between documents, the most stringent requirement or higher-order standard prevails.

1.2.2 Reference Documents (not exhaustive)

- Engineering Development Standard 2023
- Wairarapa Combined District Plan (Decisions Version 2025)
- Council Bylaws (Water, Wastewater, Stormwater, Trade Waste, etc.)

- NZS 4404:2010 Land Development and Subdivision Infrastructure
- Street Tree Policy and approved planting guidance
- Austroads Guides
- Waka Kotahi standards and RTS 06 Visibility Guidelines
- Greater Wellington Regional Council requirements

Developers must ensure all designs, reports, and as-built submissions comply with the above standards and any other conditions of the relevant consents.

1.3 Scope

This guideline applies to all developers, consultants, surveyors, contractors, and any parties involved in the design and construction, and handover of public infrastructure to MDC.

The requirements apply to a wide range of infrastructure assets, including:

- Transport assets (roads, footpaths, berms, streetlights, road signs, etc.)
- Three waters services (water supply, wastewater, stormwater networks)
- Open spaces and recreational infrastructure (parks, reserves, landscaping assets)
- Utility corridors and ancillary structures (retaining walls, culverts, pump stations, etc.)

This document supports the application process under Section 224(c) of the Resource Management Act, where Council must be satisfied that all conditions of subdivision consent have been met, including the provision of acceptable As-Built information for vested infrastructure.

1.4 Failure to Comply

Failure to comply with the as-built submission requirements may result in delays to Section 224(c) certification, refusal to accept vested assets, and/or the requirement for resubmission of corrected documentation. Non-compliance may also affect the timing of infrastructure acceptance and trigger additional review or inspection fees.

2. As-built Requirements

2.1 General

The following documentation shall be submitted to enable the efficient processing of as-built approvals and completion of engineering approval. Each item includes a brief description of its purpose:

1) As-built drawings

- Drawings and associated attribute data prepared in accordance with NZS4404 Schedule 1D (Form Schedule 1D of NZS 4404:2010).
- Formats: A3 hard copy or A3-printable PDF, and electronic formats (.dwg, .dxf, or .shp).
- Coordinates must be in NZTM; levels in NZ Vertical Datum 2016.
- Purpose: Provide a precise record of the location, dimensions, and attributes of all constructed infrastructure.

2) CCTV inspection reports

- For all new public wastewater and stormwater mains.
- Purpose: Verify the condition, alignment, and quality of installation of underground pipes.

3) Operation and Maintenance (O&M) manuals / maintenance plans

- Include instructions for asset operation, routine maintenance, and emergency procedures.
- Purpose: Enable Council to manage and maintain vested assets efficiently.

4) Asset and Work Manager (AWM) Data Collection Register

- Fully completed register with all relevant checklists and supporting documentation.
- Purpose: Ensure accurate capture of roading and related assets within Council's asset management system.

5) Road surfacing quality assurance (QA) records

- Include sealing sheets and other QA documentation; also ensure relevant entries are included in AWM.
- Purpose: Confirm that road construction meets design specifications and quality standards.

6) Streetlighting records

- Include approved design and details of installed components (pole types, luminaires including make and model, outreach brackets, etc.), with entries in AWM.
- Purpose: Document installed streetlighting assets for compliance and maintenance purposes.

2.2 Process Timing

Masterton District Council will process completion documentation as promptly as possible; however, typical processing times are 10–15 working days once a complete application is received. Delays may occur if incomplete or inaccurate information is provided by the applicant. To help expedite the process, all documentation should be submitted clearly, consistently, and in its entirety. Applicants will be advised promptly if further details are required.

3.Submission Contents

All as-built documentation demonstrating the accurate recording of constructed infrastructure must be submitted in full to Council. This includes plans, drawings, data, reports, and supporting materials that reflect the final constructed works.

All documents must:

- Be clear, complete, and consistent with approved designs, Council standards, and applicable national guidelines (e.g., NZS 4404:2010).
- Be logically structured and formatted to enable efficient review and verification by Council.
- Include both hard copy (A3 or printable PDF) and electronic formats(e.g., DWG, DXF, SHP).
- Accurately reference coordinates in NZTM and levels in NZ Vertical Datum 2016 for all infrastructure assets.

It is the responsibility of the developer or their representative to ensure all required as-built content is provided in full and is accurate, current, and aligned with the scope of the constructed works.

3.1 *As-built Drawings*

As-built drawings must be submitted for all relevant infrastructure types, including roading, three waters, and open spaces. All drawings must accurately reflect the works as constructed and include sufficient attribute data to support asset validation, vesting, and integration, in accordance with Council standards.

3.1.1 General As-built Requirements (All Disciplines)

The following requirements apply to all as-built drawings, regardless of asset type:

1. Identification and Referencing

- Engineering approval / consent reference number.
- Street name(s), street number(s), and locality.
- Clearly identified property boundaries.
- Clearly show the full extent of works and distinguish between public and private assets.
- Clearly identify assets to be vested to Council.

2. Spatial and Survey Requirements

- All asset locations to be shown in NZTM coordinates.
- All levels to be referenced to NZVD2016 (where applicable).
- North point shown on all plans.
- True (surveyed) locations and dimensions to be shown.

3. Drawing Standards

- Drawings must reflect as-constructed conditions, not design intent.
- Any deviations from approved drawings must be clearly identified.
- Revisions to be clearly shown, with a revision table included in the title block.
- Certification details of the as-built preparer (company name, contact details).

4. Asset Status

- Clearly identify assets as:
 - New / existing
 - Public / private
 - Retained / removed / abandoned (where applicable)

3.1.2 Roading As-builts

1. Road Infrastructure

The following features, as constructed, must be shown in the as-built:

- New carriageways / road formation and pavement layers.
- Kerb lines and footpaths.
- Street lighting infrastructure (poles, luminaires, outreach brackets).
- Road drainage features (catchpits, leads, inlets, outlets).
- Road furniture and safety features (signage, markings, pram crossings, bus shelters).
- Retaining walls within road reserve that are to vest to Council.

2. Detailing Requirements

- Kerb lines on curves surveyed at regular intervals (e.g. every 5 m).
- Retaining walls:
 - Location (referenced to adjacent properties or parks)
 - Length, foundation type, structural material
 - Deck/rail material
 - Legal ownership status

3. Catchpit / Drainage Details

For each catchpit (or similar drainage structure), include:

- Centre coordinates (NZTM) of the grate.
- Catchpit dimensions (length, width, depth).
- Invert levels of inlet(s), sump, outlet pipe, subsoil drains (if any).
- Pipe-lead details: true (surveyed) length, diameter, material, class, and grade.

- Connection to receiving system: show where the catchpit lead connects to the existing public stormwater or drainage system.
- Any siphon or special structure details, or a note referring to a standard engineering detail.
- Catchpit leads are to be shown up to the connection with the existing public Stormwater system, and this connecting system must also be adequately identified and surveyed.
- All alterations or additions to public drainage clearly shown.

3.1.3 Water As-builts

1. Water Mains

Location and alignment of all water mains.

- Pipe attributes:
 - Diameter
 - Material
 - Pipe class/pressure rating
 - Length and chainages
 - Joint type (where applicable)
- Depth of cover at key points (especially at road crossings).
- Location coordinates (NZTM) for all pipe nodes and fittings.
- Vertical levels (NZVD2016) for:
 - Invert levels at changes of grade
 - High points and low points (critical for air valve locations)

2. Valves and Hydrants

- Location and coordinates.
- Valve type, size, make/model (if required)
- Hydrant type, depth, lead material and diameter.
- Cover levels and clearance to kerb and boundary

3. Service Connections (Tobies / Laterals)

- Location of all connections to lots.
- Pipe material, diameter, length.
- Meter box location, coordinates, RL
- Meter serial number (if installed).
- Identification of installed, capped, or shared connections.

4. Special Components (If applicable)

- Rider mains, crossings, backflow devices, PRVs, pump stations.
- Chambers or enclosures including internal layouts.

5. Testing and Commissioning (Referenced)

- Pressure testing
- Disinfection and bacteriological results

Clearance certificates and remedial works

3.1.4 Wastewater As-builts

1. Wastewater Mains

- Alignment, length, and coordinates (NZTM).
- Pipe size (diameter), material, and class.
- Chainages along the main.
- Invert levels at each node (NZVD2016).
- Pipe gradient (%) between manholes.
- Details of bends, reducers, junctions, and fittings.
- Abandoned or removed pipes clearly identified.

2. Manholes and Access Points

- Location and unique ID of every manhole.
- Rim level (RL) and all inlet/outlet invert levels.
- Manhole diameter and construction material.
- Manhole type (e.g., precast, cast in situ).
- Drop structures (if present), including:
 - Drop type (internal/external)
 - Levels and material

3. Service Connections (Laterals)

- Location and alignment of all laterals from main to boundary.
- Pipe diameter, material, and slope.
- Invert levels at main and boundary point.
- Lot numbers served
- Clean-out locations, if provided.
- Identification of new, reused, or varied laterals.

4. Pump Stations / Rising Mains (if applicable)

- Location and layout of pump station.
- Wet well levels, inlet/outlet structures.
- Pump model, duty/standby configuration.
- Rising main size, material, and pressure rating.
- Associated valves and chambers.
- Any unauthorised variations must be highlighted and justified.

3.1.5 Stormwater As-builts

1. Pipes

- Pipe lengths: True installed length (not MH centre to centre).
- Diameter, material, and class.
- Grade (%) and alignment.
- Invert levels at all nodes.
- Coordinates for all nodes.
- Connections to existing systems.
- Flow directions.
- Pipe protection measures.
- Drop structures: Include sections showing levels.
- Abandoned or removed pipes clearly identified.

2. Manholes / Catchpits

- Coordinates of structure.
- Inlet and outlet invert levels.
- Lid levels.
- Structure type (manhole/catchpit).
- Sump leads.
- Orientation of grates.
- Pipe connections.

3. Inlets / Outlets

- Coordinates at inlet/outlet pipe.
- Pipe invert levels.
- Structure details (e.g., concrete apron, rip rap, or as per consent drawings).
- Receiving/contributing environment: Identify by name if possible (e.g., local stream).
- Reference to flood levels where applicable.
- Associated regional resource consents.

4. Ponds, Wetlands, and Treatment Devices

- Full asset extents.
- Inlets, outlets, orifices, risers, trash racks: Include dimensions and materials.
- Long and cross-sections: Show water level control devices, storage levels (WQS, AEP, dead water level), general profile, and spillway.
- Dimensions sufficient to confirm storage volumes.
- Erosion control at inflow/outflow.
- Completion report: Document special design features, site clean-up, seeding, fencing, safety/access. Signed statement confirming feature meets/exceeds design.
- Access and safety features: Clearly shown (fencing, tracks, handrails).

5. Re-Lays of Existing Public Stormwater

- Surveyed as-builts not required; drafted plan by registered drainlayer acceptable.
- Required documentation: Engineer's certification, schedule of vested assets, post-construction CCTV, verification inspections by Council Engineer.
- Include pipe length, diameter, material, class, and connection details.
- Reference existing infrastructure: Identify replaced sections using distances from fixed points (boundaries, manholes) or GIS names.

3.1.6 Open spaces (streetscape) As-built

1. Common Asset Types

Street Trees

- Required information typically includes:
 - Asset coordinates
 - Tree type and species
 - Tree age or size at planting
 - Project specific attributes

Street Furniture

- Parks contacts will guide completion to ensure the as-built documentation meets council requirements.

2. Supporting Documentation

- Activity reports: Required for landscaping or street trees; all reports must be submitted along with as-built drawings and Parks sign-off.
- Schedule of vested assets: Required for all parks/open space assets.

3.2 *CCTV Inspection Data and Records*

Pipeline inspection using Closed Circuit Television (CCTV) shall be undertaken prior to acceptance of wastewater and stormwater infrastructure by Masterton District Council. All CCTV inspections and deliverables must comply with the New Zealand Pipe Inspection Manual (NZPIM) and any additional MDC-specific requirements.

The CCTV inspection shall:

- Be performed by qualified operators using equipment capable of recording high-resolution video footage suitable for detailed condition assessment.
- Include a continuous, full-length survey of all pipes and associated structures, ensuring no sections are omitted.
- Record key pipe attributes such as diameter, material type, joint locations, and pipe gradients.

- Identify and classify defects according to NZPIM defect coding (e.g., cracks, fractures, infiltration, joint displacement, deposits, root intrusion).
- Capture start and end points of the inspection, referencing asset IDs and chainages consistent with as-built plans.
- Include calibration and verification of the survey equipment to ensure accurate distance measurement.
- Produce a comprehensive CCTV report that includes:
 - Summary of inspection scope and methodology.
 - Description and classification of observed defects with photographic or video evidence.
 - Recommendations for remediation where defects exceed acceptable thresholds.
 - Correlation with as-built documentation and asset registers.
- Submit all video files in a format compatible with MDC's asset management system along with the inspection report in PDF format.
- Ensure all data is georeferenced or clearly linked to the NZTM coordinate system and referenced to the NZ Vertical Datum 2016 where applicable.

3.3 Operation and maintenance manuals

Where required by the conditions of consent or Council standards, Operation and Maintenance (O&M) Manuals and/or Maintenance Plans shall be provided for all vested infrastructure assets. These documents must:

- Be prepared for each relevant asset type, including but not limited to:
 - Water supply infrastructure (e.g., pump stations, valves, meters)
 - Wastewater systems (e.g., pressure systems, pump stations)
 - Stormwater systems (e.g., treatment devices, detention/retention basins, proprietary devices)
 - Roading infrastructure (e.g., street lighting systems, traffic signals, street furniture)
 - Parks and open space assets (e.g., irrigation systems, playgrounds, landscaping, furniture and fencing)
- Include the following details:
 - General asset description and layout (with references to as-built drawings)
 - Manufacturer's specifications, data sheets, and warranties
 - Recommended maintenance procedures and frequencies
 - Contact information for equipment suppliers or servicing agents
 - Health and safety considerations

- Procedures for emergency response and troubleshooting
- End-of-life replacement information (where applicable)
- Be submitted in both hard copy and digital formats (PDF and editable formats such as Word or Excel, where applicable).
- Clearly identify the responsible party for ongoing maintenance if Council is not taking over responsibility immediately.

The documentation must be of sufficient quality to enable Council's Asset Management and Operations teams to incorporate the new assets into their maintenance regimes without further clarification.

3.4 The Asset and Work Manager (AWM) Data Collection Register

The Asset and Work Manager (AWM) Data Collection Register shall be fully completed and submitted for all roading assets proposed to be vested in Council as part of the subdivision. This register is a critical component for the accurate entry of assets into Council's AWM system.

The register shall:

- Be completed using the Council-provided template, or in a format pre-approved by Council's Asset Management Team
- Include correct spatial references (NZTM coordinates) and NZ Vertical Datum 2016 for level information.
- Be accompanied by relevant asset QA checklists, inspection records, photographs, and any associated compliance certificates.

It is important that the checklist for each relevant asset section (e.g., pavement, surface, street lighting, structures) is completed and included with the AWM Data Collection Register. All supporting documentation must be clearly referenced and attached to ensure completeness and to avoid delays in Council's acceptance of assets.

3.5 Road Surfacing Quality Assurance (QA) Records

Road surfacing QA documentation must be submitted to demonstrate that pavement and surfacing works have been constructed in accordance with the approved design, applicable specifications, and Council's Engineering Development Standards. All surfacing information must also align with the roading asset requirements in the AWM system.

The road surfacing QA submission shall include:

- Sealing sheets for all sealed areas, including chipseal and asphalt surfacing.
- QA test results such as compaction tests, density results, binder application rates, chip application rates, and any relevant laboratory reports.

- Confirmation that pavement and surfacing construction has been completed in accordance with the approved engineering drawings and relevant specifications (e.g., chipseal specifications, asphalt mix standards).
- Photographic records of key construction stages where relevant (e.g., first coat seal, second coat seal, asphalt placement).
- As-built surfacing extents clearly shown on drawings, including layer thicknesses and materials used.

3.6 Streetlighting records

Streetlighting infrastructure must be clearly shown on the as-built drawings, including pole locations, luminaire types, pole types, outreach brackets, and associated electrical components. All streetlighting as-built documentation shall be submitted in accordance with Council's Engineering Development Standards and network operator requirements.

The streetlighting as-built submission shall include:

- Approved Street Lighting Design and a certified PDF as-built plan showing final streetlight locations.
- Confirmation from the Design Engineer that the installation has been completed in accordance with the approved design.
- Electrical Safety Certificate, Record of Inspection, and Certificates of Compliance for each streetlight installation.
- Certificate of Completion and Record of Inspection from the network contractor for all electrical works.

4. Supporting Compliance Documentation

4.1 Geotechnical Completion Report

Where a geotechnical completion report is required as part of the development process, the following must be provided:

A Geotechnical Completion Report prepared by a suitably qualified and experienced geotechnical engineer, documenting all relevant investigations, testing, and construction observations relating to ground conditions and earthworks.

The report shall address key elements including, but not limited to:

- Soil and ground stability assessment
- Foundation conditions and recommendations
- Earthworks and excavation details, including compaction testing and validation
- Retaining structures and their performance

- Site drainage and groundwater management
- Any mitigation or remedial works undertaken
- Confirmation that works comply with approved designs and specifications

A completed Schedule 2A Certification (Form Schedule 2A of NZS 4404:2010) signed by the geotechnical engineer certifying that the geotechnical aspects of the works have been completed in accordance with the consent conditions, design documents, and applicable standards.

Supporting documentation such as:

- Laboratory and field-testing results (e.g., compaction, shear strength)
- Site inspection records and photographs
- Non-conformance and remedial action reports, if applicable

4.2 Post Construction Safe System Audit Report

The purpose of the audit is to identify any residual road safety risks following construction and to recommend mitigation measures where necessary to ensure compliance with Safe System principles. The developer shall arrange and carry out a Post-Construction Safe System Audit Report where required by Council.

The audit must be prepared in accordance with the latest NZTA Safe System Audit Guidelines, using the official template provided by NZTA (available at: [NZTA Safe System Audit Guidelines](#)). The audit must be undertaken by an independent, qualified road safety auditor accredited or recognized by NZTA or relevant authorities.

Council will review the audit report to confirm that all significant safety risks have been addressed satisfactorily. Any outstanding issues may result in conditions on asset vesting or further works. The developer remains responsible for implementing any required remedial actions arising from the audit findings.

4.3 Detailed Schedule of Prices

A detailed schedule of prices shall be provided outlining the actual or estimated construction costs of all infrastructure assets proposed for vesting in Council. This schedule must include an itemised breakdown by asset type and service category, such as water supply, wastewater, stormwater, transport/roading, and open space assets. Each item should specify the description of works, quantity, unit rate, and total value.

Costs must be based on actual construction rates or tendered unit rates and be clearly marked as inclusive or exclusive of GST. The schedule shall be prepared and certified by a suitably qualified professional (e.g., chartered engineer or quantity surveyor), confirming that the valuation represents fair and reasonable market value.

This information is required to support Council's asset valuation and financial reporting obligations.

4.4 Bonds for Uncompleted Works

Council generally does not accept bonds for uncompleted works unless specifically applied for and approved. Where a bond is accepted, the developer shall be responsible for maintaining the bonded works until either the date specified in the bond or, if earlier, until the works are completed to the satisfaction of Council.

The amount of any bond shall be set at 125% of the estimated value of the uncompleted works.

4.5 Evidence of Retentions

Unless otherwise stated in the engineering approval, a defects liability period of twelve (12) months from the date of formal takeover by the Council shall apply.

The developer's responsibility excludes damage caused by other activities (e.g., ongoing building construction on completed sections) and normal wear and tear resulting from public use of infrastructure such as roads.

The developer shall provide formal evidence to Council demonstrating that retentions will be held for the full duration of the defect's liability period. The value of the retention must meet or exceed the minimum requirements specified in NZS 3910:2013.

Evidence may include:

- A retention bond or bank guarantee agreement specifying the amount and duration.
- Confirmation letters or certificates from financial institutions or sureties.
- Documentation detailing the release conditions of the retention upon satisfactory completion of the defect's liability period.

5. Glossary of Terms and Acronyms

Term / Acronym	Meaning / Definition
NZTM	New Zealand Transverse Mercator Coordinate System, used for horizontal survey coordinates.
NZVD2016	New Zealand Vertical Datum 2016, the reference for vertical levels in all infrastructure surveys.
AWM	Asset and Work Manager, MDC's asset management system for recording, tracking, and maintaining infrastructure assets.
CCTV	Closed Circuit Television, used for inspection of pipelines to verify condition, alignment, and installation quality.

O&M Manual	Operation & Maintenance Manual; documentation outlining procedures for the operation, routine maintenance, and emergency response of infrastructure assets.
QA	Quality Assurance; procedures and documentation demonstrating compliance with design and construction standards.
RAMM	Road Assessment and Maintenance Management system; a tool used for road asset data collection and management.
PRV	Pressure Reducing Valve; a device used in water supply systems to manage pressure.
Schedule 1D / Schedule 2A	NZS 4404 standard forms for As-Built certification (1D) and Geotechnical Completion certification (2A).
Safe System Audit	Road safety audit following NZTA guidelines to identify and mitigate residual road safety risks.
Section 224(c)	Part of the Resource Management Act 1991; certification by Council that subdivision conditions, including infrastructure vesting, have been satisfied.
Vested Assets	Infrastructure constructed by developers and formally transferred to Council ownership for ongoing operation and maintenance.
Bylaws	Local laws enacted by MDC covering water, wastewater, stormwater, trade waste, and other infrastructure requirements.
GIS	Geographic Information System, used for mapping and spatial referencing of assets.
Hydrostatic Test	Pressure test performed on pipelines to verify structural integrity and detect leaks.
NZPIM	New Zealand Pipe Inspection Manual; standard for CCTV inspection and defect coding of pipes.
Bond / Retention	Financial security held to cover uncompleted works or defects liability period; ensures completion and compliance.