

Part 12: As-Built Records

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12.1 Referenced Documents

Design

- > Christchurch City Council *IDS Survey As-Built Guideline (SAG)* and appendices
www.ccc.govt.nz/consents-and-licences/construction-requirements/infrastructure-design-standards/as-built-survey-and-data-requirements/
- > Christchurch City Council *IDS As-Built Template (CAT)* for the various asset types
www.ccc.govt.nz/consents-and-licences/construction-requirements/infrastructure-design-standards/as-built-survey-and-data-requirements/
- > Christchurch City Council *Pumping Station O&M Manual Template Draft*
www.ccc.govt.nz/consents-and-licences/construction-requirements/infrastructure-design-standards/as-built-survey-and-data-requirements/
- > Christchurch City Council *CWW Tagging Convention*
www.ccc.govt.nz/consents-and-licences/construction-requirements/infrastructure-design-standards/as-built-survey-and-data-requirements/
- > Pump Station Design Specifications www.ccc.govt.nz/consents-and-licences/construction-requirements/infrastructure-design-standards/pumping-station-design-specification
- > Christchurch City Council *Requirements for RAMM Inventory Updates*
www.ccc.govt.nz/consents-and-licences/construction-requirements/infrastructure-design-standards/ramm-and-costing-as-built-requirements/
- > Christchurch City Council *RAMM Inventory for Renewal Assets*
www.ccc.govt.nz/consents-and-licences/construction-requirements/infrastructure-design-standards/ramm-and-costing-as-built-requirements/
- > Christchurch City Council *Buyer Created Tax Invoice Template*
www.ccc.govt.nz/consents-and-licences/construction-requirements/infrastructure-design-standards/ramm-and-costing-as-built-requirements/
- > NZS 4431:1989 *Code of practice for earthfill for residential purposes*
- > NZS 5828:2015 *Playground equipment and surfacing*
- > New Zealand Transport Agency *State Highway Database Operation Manual (SM050)*
www.nzta.govt.nz/resources/state-highway-database-operation-manual/index.html

Where a conflict exists between any Standard and the specific requirements outlined in the Infrastructure Design Standard (IDS), the IDS takes preference (at the discretion of the Council).

Contact Council for access to those Council reference documents available only through TRIM.

12.2 Introduction

Where required by a condition of contract or as a condition of subdivision consent provide as-built records, complying with this part.

Where the developer is not providing the as-built records, provide adequate notice and access to the Council to allow sufficient measurements to be obtained for an accurate record of built assets.

Some asset classes can be maintained by more than one area of the council, e.g. bollards, bridges, footpaths/tracks, lights, etc. This means that different templates may be required as a part of the same project. Engage with the Council representative, e.g. project manager, to ensure the correct as-built template is used to capture asset information before field data collection commences to minimize potential rework.

12.3 As-Built Accuracy

Provide as-built stormwater, wastewater and water supply pipe and pipe-related asset locations and park asset locations to the accuracies specified in the *Survey As-Built Guideline (SAG)*.

Ensure all reference states NZGD2000, Mt. Pleasant.

12.4 As-Built Records

Provide as-built records for all infrastructure to be vested in Council ownership. Use the *Buyer Created Tax Invoice Template* to provide the asset construction cost.

Provide a full drawing set of as-built plans, in the same form (e.g., scale, size) as the accepted engineering or landscape plans and to at least the same level of detail. They must show all built assets to be taken over by the Council. Include details of any decommissioned assets. Provide details of the datum used, in accordance with clause 2.8.1 – Level datum (General Requirements).

Mark any changes from design in red on as-built plans and provide with the associated non-conformance reports in .pdf format. Such changes might include:

- > Reduction in or additional assets installed
- > Change in material type
- > Additional bends in pipe
- > Change in the depth of pipe, e.g. 0.8m changed to 1.5m
- > Change in asset size e.g. 1050mm dia changed to 1200mm
- > Any unexpected findings, e.g. redundant 1m brick barrel sewer
- > Change in structure type

Clearly mark plans as “As-built” by stamping or changing the title block, including where the as-built is built ‘as designed’. Date and sign the as-built records.

Submit as-built word documents digitally in either Microsoft Word .doc or Adobe .pdf format. Submit as-built spreadsheet records digitally in either .xlxs or .csv format. The drawing file format may be Microstation (.dgn), 12Da or AutoCAD (.dwg). Format dates as day/month/year. For all supplied geospatial data, use the Mt Pleasant 2000 projection, New Zealand Geodetic Datum 2000 (NZGD2000). See more at: www.linz.govt.nz/data/geodetic-system/datums-projections-and-heights/geodetic-datums/new-zealand-geodetic-datum-2000-nzgd2000.

Each Part of the IDS may have additional requirements or documentation e.g. calculations, manuals, for that type of work, which must be supplied with the as-built records. Check with each Part for further information.

12.4.1 Part 4: Geotechnical Requirements

Provide the geotechnical completion report and tabulated results, where required.

The geotechnical completion report will be used by the Council to update the Information Register, or property files for LIM or PIM data. To aid in transferring this information into the LIM system, provide the data in a tabulated form, related to lot numbers where possible. Consent Notices under Section 221 of the Resource Management Act (1991) may be required for such sites as a condition of subdivision consent such as:

- > the need for an appropriately qualified specialist to carry out further geotechnical investigations as part of a building consent application.
- > the specific requirements or recommendations that need to be considered.

If NZS 4431 was applicable to the development, prepare as-built records in accordance with that standard.

If NZS 4431 was not applicable, prepare an as-built plan as follows. It must show the extent and depth of fill in the form of lines that join all points of equal depth of fill at vertical intervals, which adequately define the fill. Alternative methods of representing the fill depths may also be acceptable. It must show areas of filling of low density, any fill areas that the geotechnical engineer considers as not complying with the IDS, and areas where the standards have been varied from the original construction specification.

The as-built plan must record the position, type and size of all subsoil drains and their outlets. It must also provide information about any underrunners and springs located.

12.4.2 Part 5: Stormwater and Land Drainage

Provide as-built records for stormwater pipes and pipe-related assets conforming to the SAG. Deliver asset data electronically using the CAT. Refer to IDS 5.4.4 for other Construction Records to be returned to CCC.

Provide as-built records for all open waterway-related assets conforming to the asset features, materials and types listed in Appendix I – As-built data checksheet – land drainage (which generally covers open waterway-related assets). Itemise the construction cost into at least the major asset types from Table 2, Appendix I, and to separate assets (e.g. costs of each of two basins) within the asset types.

Use the checklists provided in the appendices when compiling field CAT sheets or plans. Provide the following additional as-built information for non-pipe stormwater assets (e.g. stormwater treatment device). Provide one hard copy and an electronic copy of:

- > the spare parts, workshop (overhaul) and individual installed plant and equipment product manuals;
- > the master drawings;
- > AutoCAD 2000 engineering drawings;
- > AutoCAD .tif file (or hardcopy) for Building, Reticulation, Pumps, Reservoirs, Cables and Wells;
- > Asset Owners Manuals (AOM) and Operations & Maintenance Manuals: Electrical, Mechanical including Asset (Equipment) Information and Geospatial Information;
- > CAT sheets;
- > diesel generator capacity details;
- > power connection ICP number;
- > digital photos of new assets;
- > grounds maintenance plans (in pdf).

12.4.3 Part 6: Wastewater Drainage

Provide as-built information for wastewater pipes and pipe-related assets conforming to the SAG. Deliver asset data electronically using the CAT. Refer to IDS 6.3.3 for other Construction Records to be returned to CCC.

Provide the following additional as-built information for non-pipe wastewater assets (e.g. pump station, odour treatment). Provide one hard copy and an electronic copy of:

- > the spare parts, workshop (overhaul) and individual installed plant and equipment product manuals;
- > the master drawings;
- > AutoCAD 2000 engineering drawings;
- > AutoCAD .tif file (or hardcopy) for Building, Reticulation, Pumps, Reservoirs, Cables and Wells;
- > SCADA functional descriptions and code. For standard pumping stations, level 1 process description only is required. For pumping stations or processing

plants that differ from standard, submit full level 2 functional descriptions before coding, using the Level 2 functional description template.

- > Piping and instrumentation diagrams for pumping stations and treatment plants, tagged in accordance with CWW Tagging Convention.
- > Asset Owners Manuals (AOM) and Operations & Maintenance Manuals: Electrical, Mechanical including Asset (Equipment) Information and Geospatial Information;
- > CAT sheets;
- > diesel generator capacity details;
- > power connection ICP number;
- > digital photos of new assets;
- > grounds maintenance plans (in pdf).

12.4.4 Part 7: Water Supply

Provide as-built information for water supply pipes and pipe-related assets conforming to the SAG. Deliver asset data electronically using the CAT. Refer to IDS 7.3.3 for other Construction Records to be returned to CCC.

Specify details of the commercial restrained joint systems on the as-built records, including the location of restrained portions of pipelines, including joints.

Provide the following additional as-built information for non-pipe water supply assets (e.g. pump station, reservoir, new well). Provide one hard copy and an electronic copy of:

- > the spare parts, workshop (overhaul) and individual installed plant and equipment product manuals;
- > the master drawings;
- > AutoCAD 2000 engineering drawings;
- > AutoCAD .tif file (or hardcopy) for Building, Reticulation, Pumps, Reservoirs, Cables and Wells;
- > SCADA functional descriptions and code. For standard pumping stations, level 1 process description only is required. For pumping stations or processing plants that differ from standard, submit full level 2 functional descriptions before coding, using the *Level 2 functional description template*;
- > Piping and instrumentation diagrams for pumping stations and treatment plants, tagged in accordance with *CWW Tagging Convention*;
- > Asset Owners Manuals (AOM) and Operations & Maintenance Manuals: Electrical, Mechanical including Asset (Equipment) Information and Geospatial Information;
- > CAT sheets;

- > well information: well consent details, well log, water quality results (in hard copy and electronic template, available from project manager);
- > diesel generator capacity details
- > power connection ICP number;
- > digital photos of new assets;
- > grounds maintenance plans (in pdf).

12.4.5 Part 8: Roading

When collecting hard asset data, load as-built records for the tabulated asset types in the Council's RAMM database using pocket RAMM or use the RAMM Inventory for Renewal Assets template. Base the collection of data on the *State Highway Database Operation Manual* amended by the *Requirements for RAMM Inventory Updates*.

Details of approved contractors, currently able to carry out this work, can be obtained from www.ccc.govt.nz/consents-and-licences/construction-requirements/approved-contractors

Before compiling any as-built RAMM data, obtain the following information from the Council:

- > Road ID;
- > Road name;
- > Start Displacement.

Council RAMM uses the road origin as the zero point so record all Reference Points (RPs) with reference to the origin.

Provide as-built records of any coal tar present on site, including the location, depth and method of treatment e.g. reuse or encapsulation.

Provide an Asset Owner's Manual for retaining walls, using the *Professional Services Guide Asset Owner's Manual* as a template. Include a labelled grid in the as-built drawings.

Provide as-built records conforming to the SAG for all green assets located within, or that are going to be vested with, legal road. Deliver asset data electronically using the Land Improvements Green Assets CAT.

12.4.6 Part 10: Reserves, Streetscape and Open Spaces

Provide as-built records for all landscapes and structures conforming to the SAG. Provide as-built records for all landscapes and structures conforming to the SAG. Deliver asset data electronically using the Land Improvements CATs for those assets located within, or that are going to be vested with, recreation or utility reserve.

Part 12: As-Built Records

Provide the following additional as-built information for built assets e.g. play equipment, buildings, bridges and structures (including walls and fences, artworks and monuments, furniture, park utilities). Provide one hard copy and an electronic copy of:

- > certification as required by *Playground equipment and surfacing*;
- > the Code Compliance certification under any building consent;
- > Asset Owners Manuals (AOM) and Operations & Maintenance Manuals;
- > the spare parts and individual installed plant and equipment product manuals;
- > digital photos of new assets.

Provide planting maintenance plans where they are part of the accepted design.

12.4.7 Part 11: Lighting

When collecting asset data, load as-built records for the roadlighting assets in the Council's RAMM database using pocket RAMM or use the *RAMM Inventory for Renewal Assets template*. Refer to clause 12.4.5 - Part 8: Roading for further information.

APPENDIX I

As-Built Data Checksheet - Land Drainage

Table 1 Watercourse features

Watercourse Features	
- This includes all open channels, rivers, creeks, swales, ponds, etc.	
Watercourse	Notes and Explanations
<input type="checkbox"/> Position X,Y	
<input type="checkbox"/> Installation Date	
Watercourse Lining	
<input type="checkbox"/> Position X,Y	
<input type="checkbox"/> Installation Date	
<input type="checkbox"/> Lining Type	refer Watercourse Lining Type list
<input type="checkbox"/> Top Width	
<input type="checkbox"/> Bottom Width	
<input type="checkbox"/> Depth	
Watercourse Basin	
<input type="checkbox"/> Position X,Y and extent	include contour plan
<input type="checkbox"/> Installation Date	
<input type="checkbox"/> Basin Type	refer Watercourse Basin Type list
<input type="checkbox"/> Invert levels on inlet(s)	lip of sump or pipe invert
<input type="checkbox"/> Invert levels on outlet(s)	lip of sump or pipe invert
<input type="checkbox"/> Design volume	
<input type="checkbox"/> Design return period	
Watercourse Structure	
<input type="checkbox"/> Position X,Y	position of a point marked on the as-built plan if the structure is a point feature, or start and end points if it is a linear feature e.g. retaining wall
<input type="checkbox"/> Installation date	
<input type="checkbox"/> Reference level	level of a point marked on the as-built plan
Watercourse Valve	
<input type="checkbox"/> Position X,Y	
<input type="checkbox"/> Installation Date	
<input type="checkbox"/> Valve Type	refer Watercourse Valve Type list

Enhancement Features	
- This includes all plantings, stabilisation of banks, etc.	
Enhancement	
<input type="checkbox"/> Start Position X,Y	upstream
<input type="checkbox"/> Finish Position X, Y	downstream
<input type="checkbox"/> Installation Date	

Table 2 Watercourse type lists

Watercourse Type Lists	
Watercourse Lining Type	
CON-C	Concrete Slab with Concrete Frame
CON-I	Concrete Cast In-situ
CON-P	Concrete Precast
CON-T	Concrete with Timber Posts
INVT	Concrete Invert
INVT-R	Concrete Invert with Retaining Wall
LTIMB	Low Timber Lined
ROCK	Rock Lining
ROKMTR	Mortared Rock Lining
SPRAY	Sprayed Concrete
TIMB	Timber Lined
TIMB-T	Timber Lined with Top Struts
Watercourse Basin Type	
Detention	
Infiltration	
Lake	
Pond	
Retention	
Silt Trap	
Soak Pit	
Swale	
Watercourse Valve Type	
Gate	
Flap Gate	
Tidal Gate	

