AMENDMENT PART 12 – AS-BUILTS MARCH 2016

Part or Section Number	**Original Page Number**	**New Page Number**	**Description**
12.2	2	2	Change from 4 lots to 2 in the second paragraph Change from A1 to A3 in the third paragraph Sentence added in the fifth paragraph – Statement required when no fill has been included.
12.4.1	3	3	Sentence added to first paragraph – fill certificate Change to closed individual polygons at vertical intervals of 100mm in fifth paragraph Paragraph added – Fill requirements
12.5	11	12	Point 5 added - Fill

PART 12: AS-BUILT RECORDS

CONTENTS

TABLES

12.1 REFERENCED DOCUMENTS

Design

- NZS 4431:1989 *Code of practice for earthfill for residential purposes*

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).

12.2 INTRODUCTION

All subdivisions require sufficient and accurate records of built assets to be kept and given to Council. For subdivisions of 2 to 3 lots, plans shall be on A4 paper, and to scale.

For subdivisions of 2 or more lots, As-builts shall be given in a completed AutoCAD DWG/DXF file format. All layers must comply with Section 12.5 (layers) for naming. An original plan must be supplied on A3 Bond paper or appropriate readable size so that all assets can be seen. As-builts shall also be given in a completed File Format (PDF).The drawing file and PDF's shall be on dvd/memory stick or emailed to Council's Development Engineer.

As built information shall be supplied by the Consultant shown where applicable on the updated A3 construction plan sheets labelled AS BUILT that includes water, sewerage, stormwater utilities and roading, footpath, landscape, water race, fill and irrigation details.

All electronic and paper as-builts need to be verified as accurate by Council staff and acceptable for Council databases. No section 224 certificate will be issued until the work is completed to Council's satisfaction.

Statement of Suitability of Earth Fill is required even if no fill was included. The Statement of Suitability of Earth Fill will state no or yes that fill was required. Any road carriageway and water system and sewer system test results, information on works defects liability periods and any other requirements stipulated shall also be provided at this time unless already done so.

An electronic (xls) schedule of all roading, streetlighting, landscaping, water, sewerage and stormwater installed and being vested to Council shall be provided. Plans shall note the point of supply for water and point of discharge for sewer or differentiate clearly Council and private services. Components detailing areas, metres, pressure, class, diameter and supplier is required at the time of the practical completion. Also complete a schedule of material in the format shown on the attached sheet (Appendix 1) and send with as builts.

Water meter readings that are not reading zero at time of s224 application shall be read and provided to Council along with the water meter numbers.

12.3 AS-BUILT ACCURACY

Provide all as-builts in the X,Y plane to ±100mm. Provide levels as detailed to 1 decimal places e.g. 12.5. All levels for gravity network are to be ±5mm.

For all As-Builts submitted, the digital co-ordinate system must be in terms of New Zealand Transverse Mercator 2000. (NZTM2000)

The origin of datum shall be to Mean sea level, Lyttelton datum.

The measured distances of all water/sewer/stormwater plant (manhole valves, fire hydrants) shall be taken from the centre of the plant or lid.

All pipe sizes are to be shown (OD) outside width, unless unique pipes are used for special purpose.

12.4 AS-BUILT RECORDS

Provide as built plans, in the same form (e.g. scale, size)**,** as the accepted engineering or landscaping plans and to at least the same level of detail. They must show all as-built assets to be taken over by the Council. Provide as built asset schedule of components. Example of information required is shown in Appendix VI.

Where providing paper copies provide: north point, title block and a legend with a key to describe the assets. The longitudinal sections of sewer/stormwater shall show heights to inverts and top levels, grades and distances etc. The colour of yellow or similar shall not be used to show new assets for it is hard to see. All symbols must be of reasonable size so as to be easily recognizable or labelled.

All plans digital and hardcopy must be clearly marked AS-BUILTS and signed and dated. All plans shall include a title block with project name, designer/contractor/, scale or scales being used and amendment box.

All new assets that tie into existing services must have their tie in clearly shown and appropriately labelled. All existing assets that are to be decommissioned must be marked and labelled DECOMMISIONED and dated. The decommissioned asset must be noted if asset is still in the ground (e.g. capped off) or has been removed from the ground.

Typical abbreviations can be used to label common assets, such as WM = water meter SV = Sluice Valve. A legend or key shall be provided to specify each abbreviation use in a drawing.

Each Part of the IDS may have additional requirements or documentation e.g. calculations, planting lists, 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. A Statement of Suitability of Earth Fill is required even if no fill is required. This will be noted on the Statement.

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.

Confirm if earthfill has been placed on the site or not.

If NZS 4431 was applicable to the development, prepare as-built records in accordance with that standard and note on the Statement no fill has been place on site.

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 CLOSED INDIVIDUAL POLYGON that join all points of equal depth of fill at vertical intervals of 100mm. 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.

The digital As-builts must be clearly distinct and layers defined as noted in 12.5. The closed polygon of fill contours shall be on a layer called **Fill**. No other assets, lines or points data to be given on this layer. Fill labels annotation shall be on layer called **FillLabel**. No other text shall be included on this layer.
All other layers used in the digital drawing shall have suitable layer names given. No use if codes or obscure names. There shall be a legend stating the type of fill installed earth or engineered.

12.4.2 Part 5: Stormwater and Land Drainage

Provide as-built records for all pipes and structures to be vested in Council ownership, including the construction cost. The as-built information must conform to the asset features, materials and types listed in Appendix I – As-built data checksheet – stormwater (which generally covers pipes and pipe-related assets) and Appendix II - 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 6, Appendix I and Table 8, Appendix II, 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 pickup sheets or plans. Only one invert level is required where the inlet and outlet inverts are the same. Backfilling of service trenches must not start until as-built information has been taken.

Offsets to pipes, manholes and laterals are to be from the legal boundaries. Measurements taken from fence lines, power poles and trees etc. are not permitted. Laterals for individual lots to have pipe layout shown and a written measurement shown from the boundary line.

Stormwater manholes are to have running distances shown and starting 0 at downstream manhole picking up Y junctions (laterals at main). Upon reaching the next manhole start at 0 again.

Stormwater Features required to be detailed:

- Pipe-Laterals (diameter, material, pipe type/class and position)
- Swale/Open Channel/Drain (size, depth, width and position)
- Manholes-Inspection Chamber-Flush Tanks, (top level, invert level, type, diameter and position)
- Sump/Inlet (type, top level, invert level, pipe type/size for outlet, and position)
- Retention / Rain Basin (volume, levels, outline, special features, and position)
- Stormwater Miscellaneous: Humeceptors, oil traps, filter beds, weirs, headwalls, veristanks, soakhole, and soakpits (include any relevant information associated with the feature along with position of asset shown on the plans)
- Stormwater Valves (size, type, and position)
- Stormwater Pump Station (pump make, model, duty heads, capacities, power, structures and position)

Provide the following additional as-built information for non-pipe stormwater assets (e.g. stormwater treatment device):

- three copies of the product manual (electronically);
- two copies of the master drawings;
- AutoCAD engineering drawings;
- AutoCAD .tif file (or hardcopy) for Building, Reticulation, Pumps, Reservoirs, Cables and Wells;
- Operations & Maintenance Manuals: Electrical, Mechanical;
- pickup 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 conforming to the asset features, materials and types listed in Appendix III – As-built data checksheet – wastewater.

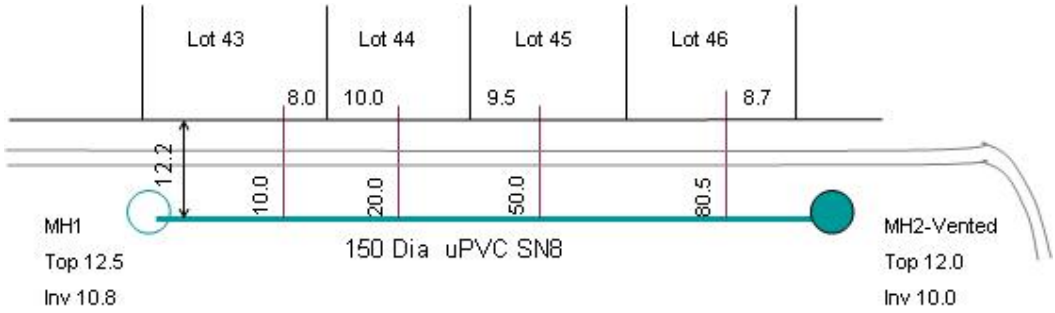
Use the checklists provided in the appendices when compiling field pickup sheets or plans.

Only one invert level is required where the inlet and outlet inverts are the same. Backfilling of service trenches must not start until as-built information has been taken.

Manholes, Inspection Chambers, and Flush Tanks etc. shall have a top level and inverts taken from the centre of the asset. The longitudinal sections of sewer pipes shall show heights to inverts and top levels, grades and distances.

Offsets to pipes, manholes and laterals are to be from the legal boundaries. Measurements taken from fence lines, power poles and trees etc. are not permitted. Laterals for individual lots to have the pipe layout shown and a written measurement shown from the boundary line.
Sewer manholes are to have running distances shown. Starting 0 at downstream manhole picking up Y junctions (laterals at main). upon reaching the next manhole start at 0 again. Show gradients on sewer mains.

Figure 1 Sewer Layout



All sewer reticulation services shall be inspected via CCTV. All data and operator analysis shall be collated on an indexed DVD and a copy supplied to Selwyn District Council for approval to obtain a s224 certificate. This CCTV work is to be carried out at the practical completion of works and at the end of the defects liability period if requested in a format consistent with Councils CCTV Asset Management software.

Provide the following additional as-built information for non-pipe wastewater assets (e.g. pump station, biofilter):

- three copies of the product manual (electronically);
- two copies of the master drawings;
- AutoCAD 2 engineering drawings;
- AutoCAD .tif file (or hardcopy) for Building, Reticulation, Pumps, Reservoirs, Cables and Wells;
- Operations & Maintenance Manuals: Electrical, Mechanical;
- pickup 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

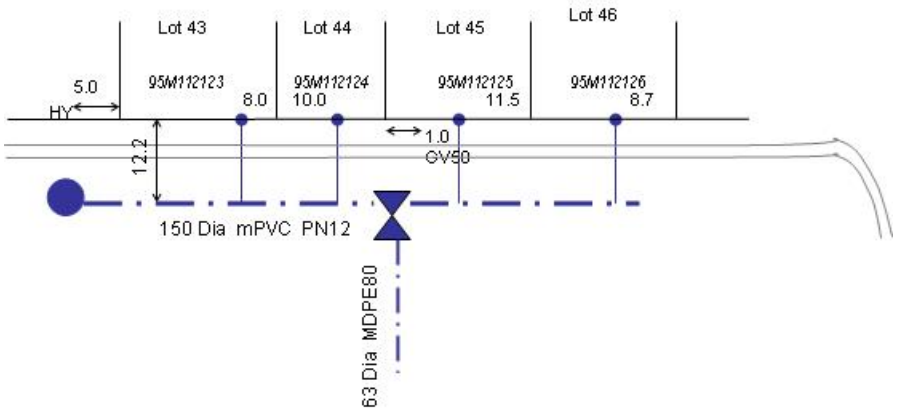
Provide as-built information conforming to the asset features, materials and types listed in Appendix IV – As-built data checksheet – water supply. Specify details of the commercial restrained joint systems on the as-built records, including the location of restrained portions of pipelines, including joints.

The digital drawing shall be clearly defined when a pipe joins in to another pipe or crosses over. Drafting of the water mains shall show this as one continuous line until it ties into another main. The water main shall not be drafted as tiny micro sections.

Offsets are to be shown every 50 meters along a water main or where changes occur in pipe size or bend. Tie in all valves, fire hydrants and laterals etc. in an offset to the nearest boundary. Offsets to pipes, manholes and laterals are to be from the legal boundaries. Measurements taken from fence lines, power poles and trees etc. are not permitted. Laterals for individual lots to have the pipe layout shown and a written measurement shown from the boundary line.

Where water meters are installed the meter number must be provide by showing it on the correct section/ lot e.g. 95M672596. This text is to be on the WTRTXT layer.

Figure 2 Water Layout



Water Features required to be detailed:

- Pipe-Laterals (diameter, material, pipe type/class and position)
- Water Valves (size, type, and position)
- Fire Hydrants (make, model and position)
- Water Meter (make, model, meter number, size, type, and position)
- Water Miscellaneous (BFP, break pressure tank, strainer, flow meters and etc.
- (include any relevant information associated with the feature along with position of asset shown on the plans)

- Water Pump Station-Reservoirs-Intakes-Wells (pump make, model, duty heads, capacities, treatment, structures and position)

Use the checklists provided in the appendices when compiling field pickup sheets or plans.

Provide the following additional as-built information for non-pipe water supply assets (e.g. pump station, reservoir, new well):

- three copies of the product manual (electronically);
- two copies of the master drawings;
- AutoCAD engineering drawings;
- AutoCAD .tif file (or hardcopy) for Building, Reticulation, Pumps, Reservoirs, Cables and Wells;
- Operations & Maintenance Manuals: Electrical, Mechanical;
- pickup 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: Roads and Transport

Provide as-built information conforming to the asset features, materials and types listed in Appendix V – As-built data checksheet – roads and transport.

The as-built information must provide detail of type of kerb and channel, carriageway width and materials used (pavers, ac, chip seal etc.)

Structures within the carriageway such as footpaths, bridges, signs, retaining walls, fencing and etc. shall be shown and labelled with appropriate information given on length, width, area, type, and details.

The as-built information must provide detail of type of kerb and channel, carriageway width and materials used (pavers, a/c, chip seal etc.)

Additional as-built information is provided and inputted in Council's RAMM roading database by its contractors.

12.4.6 Part 10: Reserves, Streetscape and Open Spaces

Provide updated planting plans, with planting schedules amended to record actual plants installed, including source of supply. Include any amendments to structures and furniture. These are to be provided in .dwg, or .dxf electronic format.

Provide an electronic spreadsheet giving details of all assets on reserves to be vested in Council and the associated GIS layers of these assets (where electronic

drawings are provided). A data dictionary will be available on request from the Council, giving particular details required for different asset types.

The information required includes:

- Consent Number associated with asset;
- name of adjoining main street;
- ward name in which the park/reserve is located;
- a sequential unique ID for each new asset collected (e.g. N1, N2, N3 etc);
- location description on-site or global navigation satellite system (e.g. GPS) co-ordinates (latter required only if the former is too difficult);
- measurements (length, area, height etc - see data dictionary for details);
- construction materials (see data dictionary for details);
- manufacturers name;
- date of construction/installation in park/reserve;
- maintenance/warranty period;
- Asset Type (see data dictionary for details).

The list below gives an indication of the types of reserves assets currently owned and managed by the Council:

- Play & Sports Facilities;
- Buildings;
- Bridges & Structures (including walls & fences);
- Plantings (including grass areas);
- Trees;
- Car Parks & Drives;
- Paths & Tracks;
- Artworks & Monuments;
- Furniture;
- Park Utilities (e.g. paddling pool pumps, storage tanks, irrigation systems etc).

Collect each of the above assets recorded within the spreadsheet in GIS. Collect different asset types in different GIS layers. In GIS attribute tables; enter **only** the sequential unique ID and Consent Number captured above for each asset, to identify which GIS feature matches which entry in the spreadsheet.

Data rules around the capture of GIS data will be available on request from the Council. GIS layers must be in GeoMedia format and must be in terms of New Zealand Transverse Mercator 2000.

Where development or landscaping occurs on an existing Council park or reserve, the Council will provide where necessary a spreadsheet and accompanying GIS layers (if available) of the existing assets to update. Capture all new assets constructed or installed as part of the development as above.

12.4.7 Part 11: Lighting

The roading as-built information provided is currently inputted into Council's RAMM roading database by its street-lighting contractor.

12.4.8 Part 13: Water Races

Provide as-built information conforming to the asset features, materials and types listed in Appendix VI – As-built data checksheet – water races.

Specify details of the type of water race channel and its features. Top and bottom invert levels and water race flow direction shall be labelled on the plans. Cleary mark any decommissioned water races on the plan.

12.5 AS-BUILT DIGITAL LAYERS

All AutoCAD dwg/dxf plans shall use the following layer structure:

1. Water:

WTRMAIN	-water pipelines
WTRLAT	-water laterals
WTRTXT	-text pipe details, size, type, dimensions, offsets, etc
WTRHYD	-fire hydrants
WTRVALVE	-water valves
WTRMETER	-water meters
WTRWELL	-water wells
WTRDIAG	-water diagrams, schematic details, cross sections etc.

2. Sewer:

SWRMH	-sewer manholes
SWRMAIN	-sewer main gravity pipeline
SWRLAT	-sewer laterals
SWRPUMP	-sewer rising main pipeline and pump station
SWRTXT	-text pipe details, size, type, gradient, dimensions, offsets, levels etc
SWRDIAG	-sewer diagrams, schematic details, cross sections etc.
SWRLEVELS	-sewer Top and Invert levels, text only

3. Stormwater:

STWMH	-stormwater manholes
STINLET	-stormwater inlet (sumps, intakes)
STSOAK	-stormwater soakhole
STMISC	-stormwater soakhole (headwall, filter, basins, oil traps etc.)
STWMAIN	-stormwater main pipes
STWCHANNEL	-stormwater open drain, channel and/or swale
STWLAT	-stormwater laterals
STWTXT	-text pipe details, size, type, gradient, details, etc
STWDIAG	-diagrams, schematic details, cross sections etc.
STWLEVELS	-stormwater Top and Invert levels, text only

4. Water Races:

WTRMAIN	-water race channel
WTRPIPE	-water race pipe
WTRMISC	-water race structures such as soakholes, gates, weirs, divides, manholes
WTRTEXT	-text details, size, type, gradient

5. Fill:

FILL -closed polygons of fill
FILLLABEL -Fill contour labels

6. Other:

PARCELS -land boundaries
RDNAME -road names
RDEDGE -new kerb and channel, edge of seal
FOOTPATH -footpath, tracks, pathways
WTRIRRIG -Water irrigation, pipes
IRRIGPNT -Water irrigation points, pop-ups, sprinklers, drippers etc.
IRRIGTXT -text pipe details, size, type, control valves, details, etc.
DECOMMISSIONED –assets that are decommissioned

Assets not listed above shall have a clear and precise layer name given in the digital file.

APPENDIX I AS-BUILT DATA CHECKSHEET – STORMWATER

Table 1 Stormwater features

STORMWATER FEATURES	
Stormwater Pipe	**Notes and Explanations**
☐ Nominal Diameter	
☐ Material	refer Stormwater Pipe Material list
☐ Pipe Type	refer Stormwater Pipe Type list
☐ Installation Date	
☐ Upstream Invert Level	
☐ Downstream Invert Level	
☐ Eye Position	
☐ Junction Position	
Stormwater Manhole	
☐ Position X,Y	centre of manhole
☐ Installation Date	
☐ Lid Level	northeast frame corner
☐ Manhole Type	refer Stormwater Manhole Type list
Stormwater Inspection Chamber	
☐ Position X,Y	
☐ Installation Date	
☐ Lid Level	northeast frame corner
Stormwater Inspection Point	
☐ Position X,Y	
☐ Installation Date	
Stormwater Pipe Bend	
☐ Position X,Y	
☐ Angle	e.g. 11.25, 22.5, 45, 60, 90
Stormwater Inlet Sump	
☐ Position X,Y	centre of sump
☐ Installation Date	
☐ Sump Type	refer Stormwater Sump Type list
Stormwater Outlet Sump	
☐ Position X,Y	centre of sump
☐ Installation Date	
☐ Sump Type	refer Stormwater Sump Type list
Stormwater Lateral	
☐ Nominal Diameter	
☐ Material	refer Stormwater Pipe Material list
☐ Installation Date	
☐ Position X,Y	
Stormwater Pumping Station	
☐ Position X,Y	
☐ Installation Date	
☐ Pump Station name	

☐ Pump Make(s) and Model(s)	
☐ Duty heads/capacities	
Stormwater Structure	
☐ Position X,Y and extent	
☐ Installation Date	
☐ Structure Type	refer Stormwater Structure Type list
Stormwater Valve	
☐ Position X,Y	
☐ Installation Date	
☐ Valve Type	refer Stormwater Valve Type list
Stormwater Pipe Protection	
☐ Protection Type	refer Stormwater Pipe Protection Type list
☐ Position X,Y	at each end of protection

Table 2 Stormwater material and type lists

STORMWATER MATERIAL AND TYPE LISTS	
Stormwater Pipe Material	Only use this list. Brand names are not acceptable e.g. Everite. If materials are used that do not appear on this list, contact the Council.
ABS	Acrylonitrile Butadiene Styrene
AC	Asbestos Cement
CI	Cast Iron
CLDI	Concrete Lined Ductile Iron
CLS	Concrete Lined Steel
CONC	Concrete
EW	Earthenware
GALV	Galvanised Iron
HDPE	High Density Polyethylene
MDPE80	Medium Density Polyethylene 80
MDPE100	Medium Density Polyethylene 100
Novaflow	Novaflow
PVC	Polyvinyl Chloride
PVC-M	Modified Polyvinyl Chloride
PVC-U	Unplasticised Polyvinyl Chloride
RCRR	Reinforced Concrete Rubber Ringed
STEEL	Steel
VCP	Vertically Cast Concrete Pipe
WI	Wrought Iron
Stormwater Pipe Type	
Box Culvert	
Culvert	
Field Tile	
Gravity	
Pressure	
Stormwater Manhole Type	
Non-Standard Manhole	
Standard Manhole	
Standard Manhole-Circular	
Stormwater Sump Type	
Double	
Hillside	
Single	
Triple	
Stormwater Structure Type	
Bridge	
Energy Dissipator	
Gauging Weir Chamber	
Head Wall	
Inlet	
Outlet	
Pump Chamber	

Settling Tank	
Silt Trap	
Non Standard Manhole	
Valve Chamber	
Weir	
Stormwater Valve Type	
Flap Valve	
Automatic Restrictor Valve	specify type and/or function
Automatic Shutoff Valve	specify type and/or function
Manual Restrictor Valve	specify type and/or function
Manual Shutoff Valve	specify type and/or function
Stormwater Pipe Protection Type	
Concrete Beam	
Concrete Cover	
Concrete Haunch	
Concrete Surround	
PVC Sleeve	
Reinforced Concrete Surround	
Steel Cover	
Steel Surround	

APPENDIX II AS-BUILT DATA CHECKSHEET - LAND DRAINAGE

Table 3 Watercourse features

WATERCOURSE FEATURES - This includes all open channels, rivers, creeks, swales, ponds, etc.	
Watercourse	**Notes and Explanations**
☐ Position X,Y	
☐ Installation Date	
Watercourse Lining	
☐ Position X,Y	
☐ Installation Date	
☐ Lining Type	refer Watercourse Lining Type list
☐ Top Width	
☐ Bottom Width	
☐ Depth	
Watercourse Basin	
☐ Position X,Y and extent	include contour plan
☐ Installation Date	
☐ Basin Type	refer Watercourse Basin Type list
☐ Invert levels on inlet(s)	lip of sump or pipe invert
☐ Invert levels on outlet(s)	lip of sump or pipe invert
☐ Design volume	
☐ Design return period	
Watercourse Structure	
☐ 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
☐ Installation date	
☐ Reference level	level of a point marked on the as-built plan
Watercourse Valve	
☐ Position X,Y	
☐ Installation Date	
☐ Valve Type	refer Watercourse Valve Type list
ENHANCEMENT FEATURES - This includes all plantings, stabilisation of banks, etc.	
Enhancement	
☐ Start Position X,Y	Upstream
☐ Finish Position X, Y	Downstream
☐ Installation Date	

Table 4 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	

APPENDIX III AS-BUILT DATA CHECKSHEET – WASTEWATER

Table 5 Wastewater features

WASTEWATER FEATURES	
Wastewater Pipe	**Notes and Explanations**
☐ Nominal Diameter	
☐ Material	refer Wastewater Pipe Material list
☐ Pipe Type	refer Wastewater Pipe Type list
☐ Installation Date	
☐ Pressure Class	
☐ Upstream Invert Level	
☐ Downstream Invert Level	
☐ Grade	
☐ Eye Position	
☐ Eye Type	refer Wastewater Eye Type list
☐ Junction Position	
☐ Junction Type	refer Wastewater Junction Type list
☐ Treatment Diameter	internal diameter after reduced by treatment (lining etc.)
☐ Pipe shape	circular/oval
Wastewater Manhole	
☐ Position X,Y	centre of manhole
☐ Installation Date	
☐ Material	brick, concrete
☐ Lid Level	northeast frame corner
☐ Manhole Type	refer Wastewater Manhole Type list
Wastewater Inspection Chamber	
☐ Position X,Y	centre of chamber
☐ Installation Date	
☐ Lid Level	northeast frame corner
Wastewater Inspection Point	
☐ Position X,Y	
☐ Installation Date	
Wastewater Pipe Bend	
☐ Position X,Y	
☐ Angle	e.g. 11.25, 22.5, 45, 60, 90
☐ Upstream Invert Level	
☐ Downstream Invert Level	
Wastewater Flush Tank	
☐ Position X,Y	of the four corners
☐ Position X,Y	centre of the access lid
☐ Installation Date	
☐ Material	brick, concrete
☐ Capacity	volume of flush tank in litres

Wastewater Flush Tank Water Supply Pipe	
☐ Position X,Y	of pipe
☐ Position X,Y	of pipe entry to flush tank
☐ Installation Date	
☐ Material	refer Wastewater Pipe Material list
Wastewater Air Gap Separator	
☐ Position X,Y	
☐ Installation Date	
☐ Diameter	
Wastewater Lateral	
☐ Nominal Diameter	
☐ Material	refer Wastewater Pipe Material list
☐ Lateral Type	refer Wastewater Lateral Type list
☐ Installation Date	
☐ Position X,Y	
☐ Joint Connection	Are multiple dwellings connected to lateral: Yes/No
☐ Height above main	measured in metres (e.g. 0.6m)
Wastewater End Cap	
☐ Position X,Y	
Wastewater Pump	
☐ Position X,Y	
☐ Pump Station Name	
☐ Pump Number	
☐ Installation Date	
Wastewater Structure	
☐ Position X,Y and outline	
☐ Installation Date	
☐ Structure Type	refer Wastewater Structure Type list
Wastewater Valve	
☐ Position X,Y	
☐ Installation Date	
☐ Valve Type	refer Wastewater Valve Type list
☐ Nominal Diameter	
Wastewater Pipe Protection	
☐ Protection Type	refer Wastewater Pipe Protection Type list
☐ Position X,Y	at each end of protection
Wastewater Repair	
☐ Nominal Diameter	
☐ Position X,Y	at each end of repair
☐ Installation Date	
☐ Material	refer Wastewater Repair Material list
☐ Repair Method	refer Wastewater Repair Method list

Table 6 Wastewater material and type lists

WASTEWATER MATERIAL AND TYPE LISTS	
Wastewater Pipe Material	Only use this list. Brand names are not acceptable e.g. Everite. If materials are used that do not appear on this list, contact the Council.
ABS	Acrylonitrile Butadiene Styrene
AC	Asbestos Cement
CERAMIC	Ceramic
CI	Cast Iron
CLDI	Concrete Lined Ductile Iron
CLS	Concrete Lined Steel
CONC	Concrete
EW	Earthenware
GALV	Galvanised Iron
HDPE	High Density Polyethylene
MDPE80	Medium Density Polyethylene 80
MDPE100	Medium Density Polyethylene 100
PVC	Polyvinyl Chloride
PVC-M	Modified Polyvinyl Chloride
PVC-U	Unplasticised Polyvinyl Chloride
RCRR	Reinforced Concrete Rubber Ringed
STEEL	Steel
VCP	Vertically Cast Concrete Pipe
WI	Wrought Iron
Wastewater Pipe Type	
Gravity	
Overflow	
Pressure	
Siphon	
Trunk	
Vent	
AGS Supply	
Wastewater Eye Type	
Dual	
Ramped	
Vertical	
Wastewater Junction Type	
Cross	
Tee	
Y	
Wastewater Manhole Type	
Flush Manhole	
Flush Manhole-Circular	
Non - Standard Manhole	
Standard Manhole	
Standard Manhole-Circular	
Vented Manhole	

Wastewater Lateral Type	
Gravity	
Siphon	
Pressure	
Wastewater Structure Type	
Anchor Block	
Biofilter	
Biofilter Fan Chamber	
Flume	
Gauging Weir Chamber	
Pump Chamber	
Settling Tank	
Pump House	
Non Standard Manhole	
Valve Chamber	
Truck Wash	
Wastewater Valve Type	
Air Release – one way	
Air Valve – two way	
Butterfly	
Flap	
Non-return	
Sluice	
Wastewater Pipe Protection Type	
Concrete Beam	
Concrete Cover	
Concrete Haunch	
Concrete Surround	
PVC Sleeve	
Reinforced Concrete Surround	
Steel Cover	
Steel Surround	
Wastewater Repair Material	
ABS	Acrylonitrile Butadiene Styrene
AC	Asbestos Cement
CI	Cast Iron
CONC	Concrete
DI	Ductile Iron
EW	Earthenware
GRP	Glass Reinforced Plastic
Polymer	
PVC	Polyvinyl Chloride
PVC-M	Modified Polyvinyl Chloride
PVC-U	Unplasticised Polyvinyl Chloride
RCRR	Reinforced Concrete Rubber Ringed
Spiral PVC	Steel

Wastewater Repair Method	
New Pipe	
Cast Insitu	
Grouted	
Patch Lining	
Lining	
Slip Liner	
RibLoc	

APPENDIX IV AS-BUILT DATA CHECKSHEET – WATER SUPPLY

Table 7 Water supply features

WATER SUPPLY FEATURES	
Water Supply Pipe	**Notes and Explanations**
☐ Nominal Diameter	
☐ Material	refer Water Supply Pipe Material list
☐ Installation Date	
☐ Manufacturer	
☐ Date of Manufacture	
☐ Serial Number	
☐ Jointing	
☐ Laying Contractor	
☐ Pressure Class	
☐ Position X,Y	at each end of pipe, and at all tangent points on curved sections of pipe
Water Supply Valve	
☐ Position X,Y	
☐ Installation Date	
☐ Valve Type	refer Water Supply Valve Type list
☐ Activation Pressure	
☐ Nominal Diameter	
☐ Special Function	refer Water Supply Valve Special Function list
☐ Motorised	
☐ Clockwise Close	Yes/No
Water Supply Hydrant	
☐ Position X,Y	
☐ Installation Date	
☐ Orifice Level	
Water Supply Pipe Fitting	
☐ Position X,Y	
☐ Bend Angle	e.g. 11.25, 22.5, 45, 60, 90
☐ Fitting Type	refer Water Supply Fitting Type list
Water Supply Meter	
☐ Position X,Y	
☐ Installation Date	
☐ Meter Serial Number	e.g. 05A123874
☐ Diameter	
Water Supply Rural Restrictor	
☐ Position X,Y	
☐ Installation Date	
☐ Capacity	e.g. 1 unit, 2 units, 3 units
Water Supply End Cap	
☐ Position X,Y	
Water Supply Lateral	

☐ Nominal Diameter	
☐ Material	refer Water Supply Pipe Material list
☐ Pressure Class	
☐ Installation Date	
☐ Position X,Y	
Water Supply Pump	
☐ Diesel Backup	Yes/No
☐ Pump Station Name	
☐ Pump Function	refer Water Supply Pump Function list
☐ Pump Capacity	m^3/hour
☐ Position X,Y	
☐ Pump Number	
☐ Installation Date	
Water Supply Reservoir	
☐ Position X,Y and extent	
☐ Installation Date	
☐ Reservoir Name	
☐ Reservoir Number	
☐ Capacity	m^3
☐ RL	
Water Supply Structure	
☐ Position X,Y and extent	
☐ Installation Date	
☐ Structure Type	refer Water Supply Structure Type list
Water Supply Pipe Protection	
☐ Protection Type	refer Water Supply Pipe Protection Type list
☐ Position X,Y	at each end of protection

Table 8 Water supply material and type lists

WATER SUPPLY MATERIAL AND TYPE LISTS	
Water Supply Pipe Material	Only use this list. Brand names are not acceptable e.g. Everite. If materials are used that do not appear on this list, contact the Council.
ABS	Acrylonitrile Butadiene Styrene
AC	Asbestos Cement
CI	Cast Iron
CLDI	Concrete Lined Ductile Iron
CLS	Concrete Lined Steel
CONC	Concrete
EW	Earthenware
GALV	Galvanised Iron
HDPE	High Density Polyethylene
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MDPE100	Medium Density Polyethylene 100
PVC-M	Modified Polyvinyl Chloride
PVC-U	Unplasticised Polyvinyl Chloride
PVC	Polyvinyl Chloride
RCRR	Reinforced Concrete Rubber Ringed
STEEL	Steel
VCP	Vertically Cast Concrete Pipe
WI	Wrought Iron
Water Supply Valve Type	
Air Release	
Backflow Prevention	
Butterfly	
Gate	
Motorised	
Non-return	
Pressure Reducing	
Pressure Relief	
Pressure Sustaining	
Sluice	
Water Supply Valve Special Function Type	
Bypass	
Fire Service	
Flushing Point	
Irrigation	
Scour	
Tap	
Water Supply Fitting Type	
Cross	
Joiner	
Reducer	
Tee	
Bend	

Water Supply Pump Type	
Booster	
Primary	
Standby	
Water Supply Structure Type	
Non-Standard Anchor Block (large size)	
Break Pressure Tank	
Pump House	
Manhole	
Pump Chamber	
Settling Tank	
Valve Chamber	
Well	
Water Supply Pipe Protection Type	
Concrete Beam	
Concrete Cover	
Concrete Haunch	
Concrete Surround	
PVC Sleeve	
Reinforced Concrete Surround	
Steel Cover	
Steel Surround	

APPENDIX V AS-BUILT DATA CHECKSHEET – ROADS AND TRANSPORT

Table 9 Roading features

ROADING FEATURES	
Carriageway surface	**Notes and Explanations**
☐ Material	Benkleman beam tests
☐ Installation Date	
Pavement basecourse layer	
☐ Material	
☐ Installation Date	
Pavement sub base layer	
☐ Material	
☐ Installation Date	
Subgrade	
☐ Material	CBR tests and pavement base calculations

APPENDIX VI AS-BUILT SCHEUDLE OF COMPONENTS

Table 10 Roading features

As-Built Schedule of Components						
…….Subdivision ……..……..Street……						
Consent Approval Number R……						
Water						
Component	Size (mm)	Pipe length (m)	No of Items	Material	Supplier	Cost $
Pipe	150			PN12 uPVC		
Pipe				PN12 uPVC		
Pipe	63 OD			PN12.5 MDPE80		
Pipe	50 OD			PN12.5 MDPE80		
Pipe	25			PN12.5 MDPE80		
Fire Hydrants				PN16		
Sluice Valves	150			PN16		
Sluice Valves	100			PN16		
30° Bends	150			PN16		
45° Bends	100			PN16		
Equal Tees	150x150			PN16		
Un-Equal Tees	150x100			PN16		
Gate Valves	50			PN16		
Water Meters				PN16		

As-Built Schedule of Components						
…….Subdivision ……..Street…….						
Consent Approval Number R……						
Sewer						
Component	Size (mm)	Pipe length (m)	No of Items	Material	Supplier	Cost $
Pipe	150			SN8 uPVC		
Pipe	100			SN10 uPVC		
Junctions						
Junctions	150x150			SN8 x SN10 uPVC		
Manhole	150x100					
Manhole,vented	1050					

(amend as required)