



WDC Maintenance Specification

M50: Stormwater Reticulation Maintenance

CONTENTS

1	Scope	1
2	Response times	1
3	Construction of New Connections	2
4	Surface Lids	2
5	Excavation, Backfilling and reinstatement of Trenches	2
	5.1 General	2
	5.2 Excavation and Backfilling	3
	5.3 Surfacing Reinstatement	3
6	Materials and Spare Parts	3
7	Resource Consents	3
8	As-Builts	3
9	Reporting	4
10	Performance criteria	4



WDC Maintenance Specification M50
Stormwater Reticulation Maintenance

1 SCOPE

This Specification covers the maintenance and operation of stormwater reticulation systems (piped gravity reticulation).

Works shall include the inspection and maintenance of:

- Piped stormwater systems within and outside the road reserve
- Outlet leads from sumps
- Piped and open channel outlets to the Wairoa River
- Stormwater manholes

Preventative maintenance works shall include regular inspections of the stormwater system to ensure a pro-active response in the maintenance of the stormwater system.

Reactive maintenance works shall include clearing of pipes, open channels, sumps, manholes and outlets within the stormwater system.

2 RESPONSE TIMES

Unless otherwise instructed by the Engineer, the following response times shall apply:

<i>Works</i>	<i>Response Time</i>
<ul style="list-style-type: none"> • Stormwater system blockages, surcharges or flooding likely to cause damage to public or private property • Damaged or missing surface lid (e.g. Manhole Cover) likely to pose a significant, immediate hazard to the public 	One (1) hour to respond with works to be completed within eight (8) hours of notification
Stormwater system blockages, surcharges or flooding not covered above	Two (2) hours to respond with works to be completed within eight (8) hours of notification
Installation of connections as directed by the Engineer	Within three (3) working days of notification
<ul style="list-style-type: none"> • Installation of new manholes and sumps • Replacement of manhole / sump lids and grates not likely to pose significant, immediate hazard. 	Within 15 working days of notification
Inspection and preventative maintenance of manholes to ensure the lines are clear of any blockages and continuity of flow exists within the system	As specified in the contract documents



Works	Response Time
Inspection and preventative maintenance of stormwater outlets to ensure they are clear of blockage and operating efficiently	As specified in the contract documents
Inspection and preventative maintenance of sump outlet leads within the roading system to ensure the lines are clear of any blockages to the stormwater system.	As specified in the contract documents

3 CONSTRUCTION OF NEW CONNECTIONS

Where no stormwater connection exists, the Engineer may issue an instruction to the Contractor to construct a connection from the stormwater system.

New connections shall be constructed in accordance with standard Plumbing and Drainage Regulations using 110 mm diameter mPVC pipe that extends to the property boundary from the existing stormwater pipe.

Connections shall be thrust under concrete footpaths and sealed roads, unless agreed otherwise by the Engineer.

No cut of sealed roads will be permitted except in exceptional circumstances and then only with the specific approval of the Engineer. In cases where the existing pipe is in the pavement of a street or road, open cut of the sealed road will be approved by the Engineer but the final reinstatement will be completed by the nominated paving subcontractor.

Backfilling and reinstatement shall be as per clause 5 below.

4 SURFACE LIDS

When instructed by the Engineer, the Contractor shall remove existing manhole lids that have significantly settled or become displaced, and reset them so that they are flush with the surrounding surface.

Similarly, manhole covers that require lifting as the result of road reconstruction or similar, shall be lifted to match the surrounding surface or to meet the specification issued by the Engineer.

Broken and/or missing lids and grates to manholes and sumps shall be replaced as instructed by the Engineer

5 EXCAVATION, BACKFILLING AND REINSTATEMENT OF TRENCHES

5.1 General

Only approved materials shall be used.

All backfilling and reinstatement of excavations shall have a defects liability period of the remainder of the Contract or 12 months, whichever is greater.

The Contractor shall make good any subsidence of excavations that occur during the defects liability period



5.2 Excavation and Backfilling

Excavation of trenches shall be completed in accordance with the requirements of Section 13 of the 'Specification for Service Maintenance Operations & New Service Installations within Road Reserve'

Backfilling compaction shall be completed in accordance with the requirements of Section 14 of the 'Specification for Service Maintenance Operations & New Service Installations within Road Reserve'.

The Contractor shall ensure that a 300mm depth of hand rammed backfill material shall be placed around and over any pipe before mechanical compaction commences.

5.3 Surfacing Reinstatement

Surfacing reinstatement shall be completed in accordance with the requirements of Section 15 of the 'Specification for Service Maintenance Operations & New Service Installations within Road Reserve'.

6 MATERIALS AND SPARE PARTS

The Contractor shall select materials for the works that will provide the most cost effective maintenance and ensure that specified requirements can be consistently met. All materials shall comply with the WDC Standard Maintenance Specification M30: Materials or as detailed elsewhere in the specification.

The Contractor shall ensure the availability of spare parts to maintain and repair the reticulation system within the required response times.

The Contractor shall be responsible for the safe keeping of all materials and fittings.

7 RESOURCE CONSENTS

The Principal shall be responsible for the provision of resource consents, where required, for the operation of the stormwater system.

The Contractor shall ensure that the stormwater system complies with all conditions and requirements of the resource consents at any time.

8 AS-BUILTS

The Principal shall make available to the Contractor all plans, maps and the like that cover the stormwater reticulation systems.

At the completion of any works that alter the reticulation position, the Contractor shall accurately measure and record the distances from any permanent structure to the works. Any discrepancies identified with the existing plans shall also be recorded.

Legible, tidy and accurate sketches of the completed works shall be forwarded to the Engineer within one (1) week of completion of the works.



9 REPORTING

The Contractor shall submit a report of all stormwater works undertaken with the monthly claim.

This shall include:

- A summary of all inspections and findings, including location and description
- Schedule of faults with location, description of fault, action taken or works required, as-built plans and any supporting comments

10 PERFORMANCE CRITERIA

The performance of the Contractor during the Contract period will be measured by the following criteria:

- That all work is carried out in accordance with this specification.
- That adequate reports of inspections and work undertaken are submitted to the Engineer.



WDC Maintenance Specification

M51: Maintenance and Operation of Water Supply Reticulation

CONTENTS

1	Scope	1
2	Response times	1
3	Materials and Spare Parts	2
	3.1 Pipework and Fittings	2
	3.2 Minimum Stockholdings	2
4	Hygiene	3
	4.1 General	3
	4.2 Worker Hygiene	3
	4.3 Repairs Under Loss of Pressure or Line Drainage	3
5	Water Supply on Private Property	4
6	Reticulation	4
	6.1 General	4
	6.2 Flushing of Mains	4
	6.3 Disinfection of Mains and Associated Plant and Fittings.....	4
	6.4 As-Builts	6
7	Toby Repairs	7
8	Service Connections	7
	8.1 Installation	7
	8.2 Non-Standard Service Connections	7
	8.3 Service Line Repairs	8
	8.4 Disconnections and Re-Connections.....	8
9	Fire Hydrants	8
	9.1 Supply and Install Fire Hydrant Lids	8
	9.2 Fire Hydrant Repairs	9
10	Water Valves	9
	10.1 Valve Maintenance / Repacking	9
	10.2 Installation of Valves	9
11	Excavation, Backfilling and reinstatement of Trenches	9
	11.1 General	9
	11.2 Excavation and Backfilling	10
	11.3 Surfacing Reinstatement	10
12	Entry onto Private Property	10
13	Sale of Water	10
14	Continuity of Supply / Shutdowns	11
	14.1 Planned Shutdowns	11
	14.2 Emergency Shutdowns	11
15	Reporting	12
	15.1 Drawings and As-Builts	12
	15.2 Water Supply Works Report.....	12
	15.3 Damage Report.....	12
16	Performance criteria	12



WDC Maintenance Specification M51
Maintenance and Operation of Water Supply Reticulation

1 SCOPE

This specification covers the maintenance and operation of the Water Supply Reticulation.

For each of the scheduled water supply systems, works shall typically include:

- Investigation of faults within the specified response times.
- Water pipe and pumping main repairs and maintenance.
- Reservoir maintenance
- Valve and hydrant repairs and maintenance.
- Service connection repairs and maintenance.
- Meter repairs and/or replacements. This work is non-exclusive and new installations may be carried out by other contractors. (Refer WDC Maintenance Specification M52: Water Meter Maintenance and Reading)
- Resolving dirty water problems.
- Prevention of contamination of the water supply.

The Contractor shall record and schedule all inspections, maintenance and repair work undertaken as specified in the contract documents, including provision of as-built data.

2 RESPONSE TIMES

Unless otherwise instructed by the Engineer, the following response times shall apply for water supply operation and maintenance:

<i>Works</i>	<i>Response Time</i>
<p>Non-routine Investigations:</p> <p>The Contractor shall, upon request, investigate faults to the water reticulation system. Such faults that fall into this category include leaks on privately owned pipes and gate valves accidentally turned off and the like. Generally such work will only result in a site visit with no physical works required.</p>	As instructed
<p>Urgent Works</p> <p>Urgent works include:</p> <ul style="list-style-type: none">• Burst pipes or major leakages likely to affect the water supply or cause damage to pavements or property.• No water.• Possible serious health risk (life threatening) water quality problems.	<p>Contractor to be mobilised within one (1) hour of notification.</p> <p>Water supply to be provided/reinstated within four (4) hours of notification</p>



Works	Response Time
Priority Works Works that fall into this category are medium magnitude leaks deemed unlikely to cause damage but significant enough to warrant prompt action	Works to be completed within one (1) working day of notification
Minor Works Works that fall into this category are: <ul style="list-style-type: none">• Minor leaks including from fittings (valves, hydrants, bends), connections, meters and the like• Assured non serious water quality problems including dirty water, poor pressure and flow.	Works to be completed within three (3) working days of notification
Programmed Works Work that falls into this category must be programmed to meet the times specified in the contract documents. Such works are: <ul style="list-style-type: none">• hydrant pressure and flow testing.• hydrant and valve box repainting.• water meter repairs and replacements.	Works to be programmed and to be carried out within response times on approved monthly programme or as instructed.

3 MATERIALS AND SPARE PARTS

The Contractor shall select materials for the works that will provide the most cost effective maintenance and ensure that specified requirements can be consistently met. All materials shall comply with the relevant WDC standard specification, appropriate Standard or as detailed elsewhere in the contract documents.

3.1 Pipework and Fittings

Where possible the Contractor shall use similar materials to carry out repairs. Should repairs need to be undertaken on a fibrolite main, the Contractor shall use a PVC pipe of the same nominal bore diameter and the relevant adaptor fittings.

3.2 Minimum Stockholdings

The Contractor shall ensure that the supply of spare parts and backup equipment is sufficient to maintain and operate the reticulation within the response times specified.

The Engineer may direct the Contractor to hold a minimum stockholding of some sizes of pipe and fittings.

Costs for the storage of materials are to be included in the cost of repair work and recovered at the time of repair.

The Contractor shall be responsible for the safe keeping of all materials and fittings.



4 HYGIENE

Any occurrence of loss of positive pressure or draining and opening of reticulation systems may result in contamination of the water supply system.

4.1 General

A chain of cleanliness is to be established for all equipment and fittings prior to use on all works. The chain of cleanliness requires that all materials used in the construction or maintenance of the main and that can come into contact with the treated water have either been:

- sealed by the manufacturer under hygienic conditions and are not uncovered until immediately before use, or
- swept clean to remove soil and debris and thoroughly cleaned in a chlorine solution of 100mg/L concentration prior to use.

A bacterial lubricant is to be used on all rings and gaskets coming into contact with the reticulation water.

Good trade practice is employed in repair procedures.

Standing water should be kept drained from trenches. Vehicles, plant, tools and protective clothing are to be kept clean and may require regular disinfection.

4.2 Worker Hygiene

Steps are to be taken to minimise the potential for reticulation workers to be the source of contamination. Such steps are to include:

- ***Totally separate vehicles and tools for water and sewer reticulation work.***
- ***Maintenance staff are not be employed on both sewer and water supply work***
- ***A high standard of cleanliness is to be applied to the maintenance vehicle interiors.***

Maintenance staff are to immediately report the onset of any gastrointestinal illness. Such a worker is immediately to be placed on work not involving the handling of distribution system components until free of such illness for 48 hours, and with specific conditions (including Hepatitis A, Shigella, Typhoid and Chlorea), a medical certificate of clearance is obtained.

All maintenance staff are to be offered immunisation for Hepatitis A and B.

Any worker suspected of having come in contact with case of Shigella, Typhoid or Chlorea and may have become affected, is to be removed from handling water reticulation components until a medical certificate clearing them of the disease is obtained.

All costs involved in the immunisation programme and medical clearance by a General Practitioner shall be borne by the Contractor.

4.3 Repairs Under Loss of Pressure or Line Drainage

These repairs are to be undertaken in accordance with clause 4.1 and 4.2 above

The main to be repaired is to be isolated and drained through the break.

The Contractor shall undertake disinfection of all pipes, fittings and trenches were contamination has occurred or is likely to have occurred.



5 WATER SUPPLY ON PRIVATE PROPERTY

The Contractor is responsible for the maintenance of:

- reticulation mains,
- associated fittings and connections
- toby valve (gate valve) at the boundary of each consumer

Any reticulation within private property is not included. Payment for any such works will not be made unless otherwise agreed in writing by the Engineer.

The Contractor shall be responsible for any faults downstream of the property boundary and/or the toby valve, caused as a result of works on the reticulation. The Contractor may also be responsible for reimbursement of associated costs to the consumer.

The Engineer reserves the right to make whatever arrangements deemed to be appropriate in the circumstances to have consumer faults repaired expeditiously and to hold the Contractor responsible for the costs of doing so where he determines that the fault was the responsibility of the Contractor.

6 RETICULATION

6.1 General

Only competent and well trained staff, approved by the Engineer, shall be employed to carry out works on the water supply system.

Under no circumstances shall any mud, dirt, stones or nay other debris enter the reticulation system during repairs. If such an event occurs the Contractor shall immediately isolate the mains and commence a mains flushing procedure.

All reasonable precautions shall be taken to ensure work undertaken on any part of the system will not introduce pollutants/contaminants of any kind into the system.

6.2 Flushing of Mains

Whenever a section of the reticulation system is disturbed, isolated, or suffers a drop in pressure to below 100kPa, that section of the reticulation shall be flushed from the nearest available hydrant for a minimum of one minute or until the water runs clear (whichever is the longer), before putting the section back into service.

When flushing mains, the Contractor shall open sufficient hydrants to ensure that scour velocities are fully developed. Hydrants shall be closed slowly enough to prevent water hammer and significant pressure surges. Hydrants shall be checked generally for deficiencies and shall be tested for pressure and flow

All mains shall be sterilised during the process of completing the repair works in accordance with the procedures set out below.

6.3 Disinfection of Mains and Associated Plant and Fittings

Disinfection of the mains is required in the following situations:

- The installation of new mains to existing mains
- Repairs maintained under positive pressure to existing watermains



- Repairs where there is pressure loss to public watermains of full draining of the line
- Plant, tools, fittings and equipment introduction

New Mains

- All hygiene requirements given in Clauses 4.1 and 4.2 above to be complied with.
- Prior to disinfection, mains are to be thoroughly cleaned. Such cleaning to be by flushing, swabbing or other approved mains cleaning protocols.
- The main should then be drained and refilled with potable water to which sufficient free chlorine has been added to provide a concentration of 50 mg/l (milligrams per litre). (The easiest way to do this is to add chlorine to a water tanker of known volume). A sample must then be tested to ensure the 50 mg/l level has been reached.
- The main should be left for 24 hours and the water tested again. This time the residual chlorine must not be less than 10 mg/l. If the test shows that less than 10 mg/l, the test must be repeated until a pass is achieved.
- Once a pass is achieved the line must be drained and refilled with potable water and again tested and the chlorine level must now be between 2 mg/l and 0.2 mg/l.
- A test certificate is required from the testing authority to confirm the pipe passed, the three tests.
- The Contractor should be aware if any regulations or restrictions regarding the discharge of chlorinated water into water courses and stormwater pipes. If in doubt chlorinated water should be tankered away from site for safe disposal.
- Newly chlorinated lines shall only be connected to existing mains after thorough flushing with clean water.

Repairs maintained under positive pressure

- All hygiene requirements given in Clauses 4.1 and 4.2 above to be complied with.
- Excavate a minimum 500 mm below the pipe invert and ensure the trench water is kept below this level.
- Following the repair, the main or connections are to be thoroughly flushed.

Repairs under loss of pressure or line drainage

- All hygiene requirements given in Clauses 4.1 and 4.2 above to be complied with.
- Excavate to a minimum 500 mm below the invert of the pipe and ensure the trench water is kept below this level.
- Isolate section of main and drain through break.
- Apply chlorine solution to pipes and fittings and flush as above (New Mains)

Plant, Tools, Fittings and Equipment Introduction

- All plant, tools, fittings and equipment must be visibly clean before disinfection.
- All disinfection must be carried out with chlorine based disinfectants. This will normally be sodium hypochlorite solution.
- Concentrated hypochlorite solution kept at stores or depots should be used within specified use-by dates and be checked for strength at regular intervals.



- If concentrated sodium hypochlorite solution has to be used on site it must be transported in the smallest quantity necessary and handled taking appropriate health and safety precautions.
- Hand tools for reassembling plant or equipment used for pipework must be cleaned and disinfected by dipping or spraying with chlorine solution.
- All fittings shall be disinfected by spraying or drenching in a 100 mg/l chlorine solution immediately before installation.
- Equipment to be left in direct contact with treated water must be disinfected if practical by immersing in a bucket of 100 mg/l chlorine solution for 30 minutes. If this is not possible then equipment must be liberally swabbed or sprayed with 1,000 mg/l chlorine solution ensuring that all parts likely to come into contact with treated water are well disinfected.
- After disinfection, items should be allowed to drain in a clean area and installed as quickly as possible.

Preparation of Diluted Chlorine Solutions

Disinfectant	Dilution	Approx Chlorine Equivalent	Uses
Concentrated Sodium Hypochlorite Solution	Neat	100,000 mg/l	For Dilution only (Caution when handling)
1:10 Dilution		10,000 mg/l (10%)	Only used for further Dilution
1:100 Dilution	½ cupful to two gallon bucket or 10 ml to 1 litre sprayer	1,000 mg/l	Swabbing, disinfection of large items, footbaths for boot washing
1:1000 Dilution	1ml to 1 litre	100 mg/l	Soak disinfection for 30 minutes, spraying, drenching
Rapid-release tablets	Use as per manufacturers instructions for preparation of concentrations given above		

Notes:

- 1) Chlorine solutions will deteriorate after one week.
- 2) Wear gloves and safety goggles when preparing diluted solutions from concentrated sodium hypochlorite.
- 3) Care must be taken before disposing of used chlorine solutions, which must not be allowed to enter streams or watercourses. Chlorine solutions can be neutralised by the use of sodium thiosulphate according to instructions and flushed thoroughly.

6.4 As-Builts

The Principal shall make available to the Contractor all plans, maps and the like, held by WDC, which cover the reticulation. Any reasonable request for copies of this information shall be met at no cost to the Contractor. The Principal does not guarantee the accuracy or completeness of these plans.

At the completion of any works that alter the existing reticulation system, the Contractor shall accurately measure and record the distances from any permanent structure to the new works.



Sketch plans of these “in field” as-builts shall be forwarded to the Engineer within one (1) week of the repairs being completed.

7 TOBY REPAIRS

The Contractor shall locate, repair and replace tobies and toby boxes / lids as required. All works must comply with WDC standard drawings and specifications.

Works shall include excavation, removal of existing toby, supply and installation of new toby valve with associated fittings, and backfill of excavation as necessary.

Where the Contractor finds an existing service lead to be substandard, he shall immediately advise the Engineer of his concerns and proceed with repairs or replacement as directed.

8 SERVICE CONNECTIONS

All new service connections and repairs shall have a defects liability period of the remainder of the Contract or 12 months, whichever is greater.

8.1 Installation

New standard water connections shall be constructed using medium density polyethylene or copper pipes of 20mm nominal bore (NB).

The pipe shall be joined using proprietary plastic couplers such as “pushlok” or “plasson” for medium density polyethylene in accordance with the manufacturer’s printed instructions, or crox type brass compression fittings for copper pipe. Agricultural type fittings shall not be used.

Each service connection to a principal main or ridermain shall be by means of a cast iron or gunmetal tapping band and ferrule. Drilling of all service connections up to diameter 25mm shall be effected with an under pressure tapping machine without shutting down the water supply.

If no preferred position is shown by the Engineer, the tapping band shall be located at the central point of the front boundary, or in the case of rear lots, on the house side of and clear of the driveway.

The connection shall terminate with a bronze or brass stopcock valve housed in a 90mm diameter cast iron toby box or approved equivalent and a swing check valve located 300mm from the boundary (road side).

Connections shall be thrust under concrete footpaths and sealed roads.

No cut of sealed roads will be permitted except in exceptional circumstances and then only with the specific approval of the Engineer. In cases where the existing main is in the pavement of a street or road, open cut of the sealed road will be approved by the Engineer but the final reinstatement will be completed by the nominated paving subcontractor.

8.2 Non-Standard Service Connections

On receipt of an instruction from the Engineer, the Contractor shall construct non-standard Service Connections in the size specified using medium density polyethylene pipe, proprietary couplings, cast iron or gunmetal tapping band and ferrule of that size.



The connection shall terminate with a brass or bronze female gate valve housed in a 90 mm diameter cast iron toby box or approved equivalent.

8.3 Service Line Repairs

As directed by the Engineer, the Contractor shall repair the service lines.

For service connection repairs the Contractor shall isolate the service at the Talbot on the mains tapping, and only resort to a mains shutdown where this is not possible. Any mains shutdown shall be in accordance with Clause 14.

Works may include repairs to either the service line or the connection to the main as follows:

Service Line Connection: Works shall include excavation, removal and replacement of existing tapping band and talbot ferrule and backfilling of excavation.

Service Line: Works shall include excavation, replacement of a nominal 1.5m length of pipe with all required and associated fittings, plus backfilling.

8.4 Disconnections and Re-Connections

As directed by the Engineer, the Contractor shall disconnect or re-connect service lines at the connection to the mains.

Disconnections involve the physical removal of a section of service pipe or the water meter so that the consumer cannot draw water from the reticulation – disconnections shall take place at the main whenever possible.

The procedure to follow in these instances is as follows:

- The Contractor will be issued with a schedule showing the details of disconnections to be carried out on a Friday. The format of this schedule is the standard Water Disconnection form include with this specification.
- Disconnections are to take place on the following Monday week ie 10 days later. Should payment be made within the 10 days then the Contractor will be notified in writing that the disconnection is not to proceed.
- During the process the Contractors staff are not required to communicate with the consumer and shall not stop the disconnection procedure once it has commenced. The Contractor must be aware that some confrontations may occur and his staff must act in a friendly and positive manner at all times.

Disconnections can only be stopped on the specific advice of the Engineer.

9 FIRE HYDRANTS

9.1 Supply and Install Fire Hydrant Lids

Upon instruction from the Engineer, the Contractor shall supply and install hydrant lids.

Lids shall be one-piece heavy duty cast iron and shall be painted yellow.



9.2 Fire Hydrant Repairs

Upon instruction from the Engineer, the Contractor shall undertake repairs to fire hydrants, including supply and installation of new hydrants in the existing reticulation.

The hydrants (including markings) shall meet the requirements of SNZ PAS 4509:2003 'New Zealand Fire Service Fire Fighting Water Supplies Code of Practice'.

All hydrant installations and repairs shall have a defects liability period of the remainder of the Contract or 12 months, whichever is greater.

10 WATER VALVES

All valve installation and repairs shall have a defects liability period of the remainder of the Contract or 12 months, whichever is greater

10.1 Valve Maintenance / Repacking

Upon instruction from the Engineer, the Contractor shall adjust the packing gland bolts in sluice valves to alleviate leakage at the spindle. Where this proves ineffective, the Contractor shall replace the gland packing as necessary. All valve gland packing shall be 100% pure Teflon (PTFE).

Where it is necessary to remove the surface box for this purpose, the box and surrounding ground or pavement shall be reinstated.

10.2 Installation of Valves

Upon instruction from the Engineer, the Contractor shall supply and install valves in the existing network.

Sluice valves shall be Blakeborough type cast iron anti-clockwise closing or approved equivalent to NZS/BS 5163: 1986 and be fitted with spindle caps. Valves shall be installed complete with heavy duty cast iron surface boxes in the road pavement, or light duty type when located in the road verge or footpath. Boxes shall be painted blue in accordance with NZS 4404: 2004

Valve installation works shall include excavation, supply and installation of the appropriate valve and associated fittings, and backfilling of the excavation.

11 EXCAVATION, BACKFILLING AND REINSTATEMENT OF TRENCHES

11.1 General

Only approved materials shall be used.

All backfilling and reinstatement of excavations shall have a defects liability period of the remainder of the Contract or 12 months, whichever is greater.

The Contractor shall make good any subsidence of excavations that occur during the defects liability period



11.2 Excavation and Backfilling

Excavation of trenches shall be completed in accordance with the requirements of Section 13 of the 'Specification for Service Maintenance Operations & New Service Installations within Road Reserve'

Backfilling compaction shall be completed in accordance with the requirements of Section 14 of the 'Specification for Service Maintenance Operations & New Service Installations within Road Reserve'.

The Contractor shall ensure that a 300mm depth of hand rammed backfill material shall be placed over any pipe before mechanical compaction commences.

11.3 Surfacing Reinstatement

Surfacing reinstatement shall be completed in accordance with the requirements of Section 15 of the 'Specification for Service Maintenance Operations & New Service Installations within Road Reserve'.

12 ENTRY ONTO PRIVATE PROPERTY

Refer to WDC Standard Maintenance Specification M40: Utilities Services - General.

The Contractor shall carry out his work in such a manner that disruption to the property occupiers is kept to a minimum.

The Contractor's site representative shall liaise with the property occupiers and keep them fully informed of the timing and nature of any works to be carried out on the property.

Work on residential sites shall only be carried out between 9.00am and 5.00pm Monday to Friday. Work shall only be performed outside these hours with the consent of the property occupiers.

The Contractor shall endeavour to maintain safe vehicle and pedestrian access at all times and shall not leave residential sites with open pits or trenches without a representative of the Contractor being present.

The Contractor shall carry out reinstatement works on residential and commercial property immediately after the trench has been backfilled and compacted to minimise inconvenience to the occupiers.

13 SALE OF WATER

The Contractor shall be responsible for the issuing of bulk water to be sold to outside agencies. Any request for bulk water purchases are to be referred to the Engineer for approval.

Under no circumstances is the Contractor permitted to receive or take payment for bulk water or allow any water to be taken without recording.



14 CONTINUITY OF SUPPLY / SHUTDOWNS

14.1 Planned Shutdowns

Planned shutdowns are those for non-urgent works.

Planned shutdowns should not be carried out during the following times:

- 7.00am – 9.00am 7 days a week
- 3.00pm – 9.00pm 7 days a week
- 7.00am – 11.00 am Saturday, Sunday and public holidays

In each case, all affected properties must be notified by one of the following methods:

- Verbal notification at least one hour in advance, or
- Leaflet notification at least one complete day in advance.
- Verbal advice should also be given to the fire brigade, schools, hospitals, industry, dialysis patients, rest homes, hairdressers and commercial premises.

When a shutdown is for a very short duration and not likely to affect key (sensitive) customers, some discretion will be allowed in respect to pre-notification of affected customers.

Leaflets to be used for notification shall be approved by the Engineer, and delivered to each affected consumer by the Contractor.

WDC must be advised of any shutdown, the expected duration and when water supply is restored.

The Contractor has the responsibility to ensure that the proposed planned shutdown is feasible and that sufficient plant, equipment, materials and skilled labour is available to ensure the job will proceed smoothly, and the length of shutdown is kept to a practical minimum. Work shall proceed without interruption such as meal-breaks.

14.2 Emergency Shutdowns

Emergency shutdowns are required for all repairs outside Clause 14.1 above. These include repair of major leaks that are causing significant property damage or wasting large volumes of water.

For minor emergency shutdowns affecting one or two blocks, some effort should be made to advise the affected residents. Some discretion will be allowed if the shutdown is for a very short duration and not likely to affect key 'sensitive' customers.

Major emergency shutdowns affect larger areas. As for minor emergency shutdowns, some effort must be made to advise affected residents. WDC must be kept informed. The Engineer may dispatch a press release to radio stations depending on the magnitude/duration of the problem. The Contractor should keep the Engineer informed of the situation as it progresses.

WDC must be advised of the expected duration of all emergency shutdowns as soon as it is known that the shutdown will occur.

In the event of damage to any trunk main the Engineer is to be advised immediately. The Contractor is to provide regular updates as to the progress of repairs and estimate the likely time for repairs to be completed.



Where works are likely to affect fire fighting capacity or storage of water, the Contractor shall notify WDC prior to commencement of works.

15 REPORTING

At the end of each month the Contractor shall submit the reports in the standard formats provided to the Engineer in accordance with WDC Maintenance Specification M40: Utilities Services – general.

15.1 Drawings and As-Builts

Where the Contractor becomes aware of an error in the reticulation plans he shall measure up and produce an amended sketch plan with dimensions to at least two boundary pegs. Sketches shall be submitted with the monthly report.

15.2 Water Supply Works Report

On completion of each repair job a standard Water Supply Work Report is to be completed. The completed forms are to be forwarded to the Engineer monthly as supporting documentation for the Contractors claim.

15.3 Damage Report

Where it can be established that damage to pipes or fittings have been caused by another contractor/operator, a damage report is to be completed as well as, wherever possible, written authorisation from the doer of the damage, that the repair of the pipe and fittings shall be carried out by the contractor. Damage Reports are to be submitted to the Engineer, together with the Contractors costs and expenses incurred in rectifying the damage within 5 working days of the fault occurring. The Engineer shall seek recompense from the doer of the damage.

16 PERFORMANCE CRITERIA

The performance of the Contractor shall be measured by the following criteria:

- That the requirements of this specification are met.
- That all maintenance work is scheduled and carried out within the response time specified.
- That the water supply system is maintained with a minimum of inconvenience and disruption to consumers
- That prompt and appropriate action is taken for all emergency call-outs.



WDC Maintenance Specification

M52: Water Meter Maintenance & Reading

CONTENTS

1	Scope	1
1.1	General	1
1.2	Routine Readings.....	1
1.3	Final and Special Readings.....	1
2	Response Times	1
3	Reading of Meters	2
4	Water Meter Repairs and Replacements	2
5	Reporting	3
5.1	Drawings and As-Builts	3
5.2	Water Meter Works Report	3
5.3	Damage Report.....	3
5.4	Water Meter Replacements/Installations	3
6	Performance Criteria	3



WDC Maintenance Specification M52 Water Meter Maintenance & Reading

1 SCOPE

1.1 General

This specification sets out the requirements and standards for the reading and maintenance of water meters within the water supply areas of the Wairoa District, as specified in the contract documents.

Works include:

- Reading of all water meters within the required response times
- Repair/replacement of leaking or faulty meters

1.2 Routine Readings

Routine readings are those meter readings undertaken on a regular basis.

Generally, and unless otherwise instructed, all water meters are read on a three (3) monthly basis (in February, May, August and November of each year).

1.3 Final and Special Readings

Final readings are undertaken as requested by the Engineer and usually coincide with a property changing ownership.

Special readings are other readings not undertaken within the 'routine readings' cycle and will also be undertaken as requested by the Engineer.

2 RESPONSE TIMES

The following response times apply to the reading of water meters.

<i>Reading Type</i>	<i>Response Time</i>
Routine Readings	To be completed within one (1) week of commencement of each cycle of readings
Special or Final Readings	Within 48 hours of request for a reading or as otherwise instructed
Meter Repairs and replacements	To be completed within three (3) working days of notification



3 READING OF METERS

The Contractor shall supply all plant, labour and equipment necessary for the reading of meters.

Water meters shall be read and recorded in Councils Water Meter Books, which shall be uplifted from the Council offices in Queen Street, Wairoa and returned on completion. Should any records be lost or damaged through the Contractor's operations, then the Contractor shall read all meters of the lost records at no cost to the Principal.

Due care must be taken in both reading and recording water meters carefully and a customer advice card shall be left at the property.

The Contractor will be issued with a pad of customer advice cards at the start of the contract. Whenever work of any nature is done at an address, a card needs to be filled in and given to the occupier/property owner or left at the address when no one is present.

Where re-readings are requested by the Engineer and the original reading is proven to be incorrect, no payment shall be made for re-reading.

Adequate comments must be recorded on the sheets to explain notably high or low readings. In the case of zero readings the Contractor must verify that the meter is operating and record this on the sheet or alternatively, where the reason for the zero reading is evident i.e disconnection or vacant property, this should be noted. Legible copies of all meter reading sheets should be provided to the Engineer before returning the books to the Council offices.

At the completion of each meter reading, the Contractor shall ensure that all grass and debris is cleared from the metal surround and its environs and that the meter identification plate is clearly visible.

4 WATER METER REPAIRS AND REPLACEMENTS

The Contractor shall notify the Engineer of any faults where the meters are not working properly.

The Contractor shall repair or replace faulty water meters and/or lids upon instruction by the Engineer. Only Kent type or similar approved by the Engineer water meters up to 25mm diameter shall be installed. Water meters larger than 25mm diameter shall be the Kent Helix type and approved by the Engineer prior to installation.

Unless authorised otherwise, the existing water meter on a property's supply will be reinstalled back onto that property's supply. This is vital to ensure integrity of meter records and water consumption data for possible billing purposes. Meters will only be replaced when the existing one is unreadable, it is stopped and not working, it is leaking, or using it will cause future replacement problems.

Whenever a meter is not reused at a property, the following data will be recorded by the Contractor:

- The street address
- The serial number of meter being removed
- The serial number of the new meter being installed
- The reading of the meter being removed
- The date of the meter change

Water meters once removed from a property shall not be reused at any other location.



All water meter replacements and repairs shall have a defects liability period of the remainder of the Contract or 12 months, whichever is greater.

5 REPORTING

At the end of each month the Contractor shall submit the reports in the standard formats provided to the Engineer in accordance with WDC Maintenance Specification M40: Utilities Services – general.

5.1 Drawings and As-Builts

Where the Contractor becomes aware of an error in the reticulation plans he shall measure up and produce an amended sketch plan with dimensions to at least two boundary pegs. Sketches shall be submitted with the monthly report.

5.2 Water Meter Works Report

On completion of each repair job a standard Water Supply Work Report is to be completed. The completed forms are to be forwarded to the Engineer monthly as supporting documentation for the Contractors claim.

5.3 Damage Report

Where it can be established that damage to water meters or fittings have been caused by another contractor/operator, a damage report is to be completed as well as, wherever possible, written authorisation from the doer of the damage, that the repair of the pipe and fittings shall be carried out by the contractor. The damage report is to be submitted to the Engineer, together with the Contractors costs and expenses incurred in rectifying the damage within 5 working days of the fault occurring. The Engineer shall seek recompense from the doer of the damage.

5.4 Water Meter Replacements/Installations

All water meter repair and replacement works are to be recorded as detailed in Clause 4 above and included in the Contractor's monthly report.

6 PERFORMANCE CRITERIA

The performance of the Contractor will be measured by the following criteria:

- That all work is carried out in accordance with the Specification
- That meters are read correctly
- That meter readings are presented in a neat, clear and legible format



WDC Maintenance Specification

M54: Maintenance and Operation of Sewerage Reticulation

CONTENTS

1	Scope	1
2	Response times	2
3	Materials and Spare Parts	2
4	Hygiene.....	3
5	Telemetry System	3
6	Blockages.....	3
7	Repairs to Damaged Pipes and Manholes	4
8	Overflows and Cleaning Up	4
9	Faults	5
	9.1 General	5
	9.2 Pumps and Equipment Malfunction	5
10	Surface Lids	5
11	Construction of New Connections	5
12	Tankered Effluent.....	5
13	Graffiti Removal	6
14	As-Builts	6
15	Excavation, Backfilling and reinstatement of Trenches	6
	15.1 General	6
	15.2 Excavation and Backfilling.....	6
	15.3 Surfacing Reinstatement	6
16	Entry onto Private Property.....	7
17	Reporting.....	7
18	Resource Consents	9
19	Performance criteria	9



WDC Maintenance Specification M54
Maintenance and Operation of Sewerage Reticulation

1 SCOPE

This specification covers the maintenance and operation of the sewerage reticulation systems.

For each of the scheduled sewerage systems, works may typically include:

General	<ul style="list-style-type: none">▪ Investigation of faults▪ Routine inspection and preventative maintenance of sewerage systems, which may include pump stations, treatment plant, reticulation, pumps, mechanical and electrical plant and equipment▪ Reticulation repairs and maintenance, including pipes, manholes and connections▪ Clearing of blockages within the system/s▪ Attendance to sewerage pump station and other overflows.▪ Flushing of pipelines and manholes as directed
Pump Stations	<ul style="list-style-type: none">▪ Reporting of damage to buildings▪ Testing, servicing and maintenance of pumps and control/alarm equipment▪ Investigation and reporting of any anomalies▪ Removal of large solids from wet well▪ Filling in of pumping station log book on each visit▪ Testing and maintenance of the electrical installations▪ Cleaning of pump station including wet wells, floats, grates, stairwells, comminutor and inlet screens▪ Graffiti removal from pump stations
Sewer Manholes	Regular check of sewer manholes to ensure the lines are clear of any blockages and continuity of flow exists within the reticulation
Wastewater Treatment Plant	<ul style="list-style-type: none">▪ Reporting of damage▪ Testing, maintenance and servicing of mechanical and electrical plant and equipment▪ Attendance to blockages and anomalies in the plant operation▪ Grounds maintenance▪ Wash down lagoon side walls / manhole chambers

The Contractor shall record and schedule all inspections, maintenance and repair work undertaken as specified in the contract documents, including provision of as-built data.



2 RESPONSE TIMES

Unless otherwise instructed by the Engineer, the following response times shall apply for sewerage reticulation operation and maintenance:

Works	Response Time
Urgent Works (A) <ul style="list-style-type: none">▪ Mechanical or electrical faults▪ Any sewage discharge which may be or is contrary to the resource consents▪ Mains blockage affecting continuity of disposal for more than one customer, or a single commercial undertaking, or likely to cause damage to public or private property▪ Damaged or missing surface lid (e.g. Manhole Cover) likely to pose a significant, immediate hazard to the public▪ Telemetry system alarms	Contractor to be mobilised within one (1) hour of notification with works to be completed within eight (8) hours. Contractor to notify Engineer of any faults identified within 30 minutes
Urgent Works (B) <ul style="list-style-type: none">▪ Reticulation or service connection fault likely to significantly affect the continuity of service for a single customer▪ Reticulation Overflows	Contractor to be mobilised within two (2) hours of notification with works to be completed within eight (8) hours Contractor to notify Engineer of any faults identified within two (2) hours
Minor Works <ul style="list-style-type: none">▪ Graffiti removal▪ Location of Services	Works to be completed within 24 hours of notification
Programmed Works <ul style="list-style-type: none">▪ Installation of new manholes and sumps▪ New connections▪ Replacement of manhole / sump lids and grates not likely to pose significant, immediate hazard.▪ Graffiti removal	Works to be completed within 15 working days of notification or as per agreed monthly programme

3 MATERIALS AND SPARE PARTS

The Contractor shall select materials for the works that will provide the most cost effective maintenance and ensure that specified requirements can be consistently met. All materials shall comply with the relevant WDC standard specification, appropriate Standard or as detailed elsewhere in the contract documents.

Where possible the Contractor shall use similar materials to the existing to carry out repairs.

The Contractor shall ensure that the supply of spare parts and backup equipment is sufficient to maintain and operate the reticulation within the response times specified.



The Engineer may direct the Contractor to hold a minimum stockholding of some sizes of pipe and fittings.

Costs for the storage of materials are to be included in the cost of repair work and recovered at the time of repair.

The Contractor shall be responsible for the safe keeping of all materials and fittings.

4 HYGIENE

Staff engaged on any sewerage works are **not** to be used on water reticulation maintenance.

The Contractor shall ensure that the health of the public is not put at risk in any way. Where a discharge of sewage has occurred (including within private property), the contractor shall take immediate corrective action including cleaning up and disinfection of the affected area(s) as appropriate.

No field staff will be permitted to work on any sewerage infrastructure unless appropriate testing and inoculations against Hepatitis A, Hepatitis B, Tetanus and Typhoid have been carried out. Evidence of inoculations of all field staff shall be provided to the Engineer prior to commencement any field staff on this Contract

5 TELEMETRY SYSTEM

Where required in accordance with the Contract Documents, the Contractor shall respond to WDC's telemetry monitoring system, which monitors various points of the sewerage reticulation system, through their paging system.

The Contractor shall advise the Engineer of any incorrect or suspect alarms generated by the Telemetry System including any regular recurrent alarms for which no physical fault can be identified.

A log of alarms calls received shall be submitted with the monthly report in both electronic (Excel) and hardcopy format.

6 BLOCKAGES

The Contractor on being informed of any blockage shall take such action as is necessary to remove the blockage and return the system to an operative condition.

Upon receipt of notification to attend to blocked sewer or stormwater pipes or service connections, the Contractor shall firstly carry out a visual inspection of manholes immediately above and below the affected area to determine whether the problem is located within Council's main.

Where the blockage is found to lie within private property, the Contractor shall advise the Engineer who will liaise with the property owner prior to confirming the extent of works to be undertaken. Blockages within the lateral servicing the property are the responsibility of the property owner. Generally the boundary point for service connection pipes (laterals) maintained by Council is the road reserve boundary or in the case of connections to sewer mains within private property, it is typically 1.5m from the junction of the service connection to that main. Where the contractor has to enter onto private property, the property owner must be given as much prior notice as possible. Any damage to the property shall be repaired to the satisfaction of the owner.

Where the blockage is found to be located within the section of service connection that lies within road reserve, the Contractor shall proceed to clear it.



The following order of works shall proceed for all blockages within the Council systems:

- The Contractor shall firstly attempt to clear the blockage by rodding, or using his own water jetting or other cleaning equipment.
- Where the Contractor is unable to clear any blockage using his own resources within 2 hours of attending the site, he shall seek further instructions from the Engineer before engaging the services of his nominated water jetting sub-contractor, or proceeding with any mechanical excavation.
- Where the Contractor is unable to clear the blockage by rodding, water jetting or other approved system (such as where a pipe is blocked by tree roots, or collapsed pipe), the blocked length of pipe shall be replaced or repaired as directed by the Engineer.

Refer to Clause 8 where overflows/surcharging have or may occur as a result of the blockage..

Backfilling and reinstatement of the excavated area shall be completed in accordance with clause 15.

7 REPAIRS TO DAMAGED PIPES AND MANHOLES

When instructed, the Contractor shall repair damaged pipes or manholes in accordance with the standard specification applicable to the work, or specific directions given by the Engineer.

All repairs shall be made using materials of the same nominal bore and strength as those that they replace or adjoin except that AC pipe shall be replaced with an approved alternative material whenever it is appropriate and practical to do so without notably increasing the cost of the repair. Guidance in this matter should be sought from the Engineer on a site by site basis.

8 OVERFLOWS AND CLEANING UP

Where the blockage of a pipe or some other cause has resulted in surcharging at a manhole or other point (including those within private property), the Engineer may instruct the contractor to take immediate corrective action including cleaning up of affected area(s).

The contractor shall take immediate corrective action to stop the overflow, but where this cannot be achieved, he shall make every effort using bunding, sand bags or other means necessary to prevent the ingress of sewerage or stormwater into or under buildings of any sort, and to minimise the impact of sewage on waterways.

In all cases of sewage overflow the Contractor shall remove, to the satisfaction of the property owner and/or the Engineer, all objectionable solid materials. Materials removed shall be disposed of to another part of the sewerage system, or some other disposal site approved by the Engineer.

In all cases the Contractor shall attend and remain on-site until the work is completed unless exempted from doing so by the Engineer after consultation with the affected parties.

The Contractor shall provide a full written incident report on all overflows. This shall be submitted with his monthly report, or earlier if directed by the Engineer.



9 FAULTS

9.1 General

Where the Contractor receives a paged alarm from Council's telemetry system indicating sewerage pump failure or overflow conditions, he shall immediately attend the site and clear any obstruction. **Every reasonable effort shall be made to prevent sewage overflow.**

9.2 Pumps and Equipment Malfunction

Where an electrical or mechanical fault is noted, the Contractor shall instruct the nominated pump maintenance or electrical sub-contractor to inspect the equipment and report to the Engineer on the extent of remedial work required, together with an estimate of cost(s). In the case of a major fault, the Engineer may request a quotation for the work required, or alternatively, elect to replace the defective item(s).

10 SURFACE LIDS

When instructed by the Engineer, the Contractor shall excavate manhole lids that have significantly settled or become displaced, and reset them so that they are flush with the surrounding surface. Similarly, manhole covers that require lifting as the result of road reconstruction or similar, shall be lifted to match the surrounding surface or to meet the specification issued by the Engineer.

Broken lids and grates to manholes and sumps shall be replaced as instructed by the Engineer.

11 CONSTRUCTION OF NEW CONNECTIONS

Where no sewer connection exists, the Engineer may issue an instruction to the Contractor to construct a connection from the sewer main.

New connections shall be constructed in accordance with standard Plumbing and Drainage Regulations using 110 mm diameter mPVC pipe that extends to the property boundary from the existing sewer main or stormwater pipe.

Connections shall be thrust under concrete footpaths and sealed roads.

No cut of sealed roads will be permitted except in exceptional circumstances and then only with the specific approval of the Engineer. In cases where the existing main is in the pavement of a street or road, open cut of the sealed road will be approved by the Engineer but the final reinstatement will be completed by the nominated paving subcontractor.

Backfilling and reinstatement shall be as per clause 15.

12 TANKERED EFFLUENT

The Contractor shall be responsible for the receipt of bulk transported effluent to be discharged into the sewerage system. Details of approved liquid waste disposal companies will be provided to the Contractor.

The Contractor shall note any effluent discharged that adversely affects the operation of the sewerage system or effluent that contains chemicals or any matter that could adversely affect the operation of the system. The Contractor shall report any overspills to the Engineer.



Under no circumstances is the Contractor permitted to receive or take payment for bulk discharges to be undertaken without recording.

13 GRAFFITI REMOVAL

The Contractor shall be responsible for the removal of graffiti from pump station walls using soapy water, graffiti remover or paint of the same type and colour.

Materials used shall be suitable for exterior conditions and shall be applied in accordance with the manufacturer's recommendations, including surface preparation

14 AS-BUILTS

At the completion of any works that alter the existing reticulation system, the Contractor shall accurately measure and record the distances from any permanent structure to the new works.

Sketch plans of these "in field" as-builts shall be forwarded to the Engineer within 1 week of the repairs being completed or as part of the monthly report.

The Principal shall make available to the Contractor all plans, maps and the like which cover the reticulation. Any reasonable request for copies of this information shall be met at no cost to the Contractor. The Principal does not guarantee the accuracy or completeness of these plans.

15 EXCAVATION, BACKFILLING AND REINSTATEMENT OF TRENCHES

15.1 General

Only approved materials shall be used.

All backfilling and reinstatement of excavations shall have a defects liability period of the remainder of the Contract or 12 months, whichever is greater.

The Contractor shall make good any subsidence of excavations that occur during the defects liability period

15.2 Excavation and Backfilling

Excavation of trenches shall be completed in accordance with the requirements of Section 13 of the 'Specification for Service Maintenance Operations & New Service Installations within Road Reserve'

Backfilling compaction shall be completed in accordance with the requirements of Section 14 of the 'Specification for Service Maintenance Operations & New Service Installations within Road Reserve'.

The Contractor shall ensure that a 300mm depth of hand rammed backfill material shall be placed over any pipe before mechanical compaction commences.

15.3 Surfacing Reinstatement

Surfacing reinstatement shall be completed in accordance with the requirements of Section 15 of the 'Specification for Service Maintenance Operations & New Service Installations within Road Reserve'.



16 ENTRY ONTO PRIVATE PROPERTY

Refer to WDC Standard Maintenance Specification M40: Utilities Services - General.

The Contractor shall carry out his work in such a manner that disruption to the property occupiers is kept to a minimum.

The Contractor's site representative shall liaise with the property occupiers and keep them fully informed of the timing and nature of any works to be carried out on the property.

Work on residential sites shall only be carried out between 9.00am and 5.00pm Monday to Friday. Work shall only be performed outside these hours with the consent of the property occupiers.

The Contractor shall endeavour to maintain safe vehicle and pedestrian access at all times and shall not leave residential sites with open pits or trenches without a representative of the Contractor being present.

The Contractor shall carry out reinstatement works on residential and commercial property immediately after the trench has been backfilled and compacted to minimise inconvenience to the occupiers.

17 REPORTING

The Contractor shall include with his monthly report the following reports:

<ul style="list-style-type: none"> • Inspections & Preventative Maintenance • Blockages 	<ul style="list-style-type: none"> • Location description • reason for the visit • date and time of visit • the fault (if any) as reported • the fault (if any) as found • the action taken • any additional information or comment • Manhole Inspection Forms
<p>Septic Tank Truck Waste</p>	<p>Schedule of tankered waster disposed of into the sewer system</p>
<p>Maintenance Records</p>	<p>Maintenance Record Sheets and Asset Information Diagrams shall be completed whenever:</p> <ol style="list-style-type: none"> 1. works are undertaken on the sewerage assets including pipes, pump stations, mechanical or electrical equipment 2. a pipe, manhole or other asset that is not shown on the plans is located <p>The following information shall be recorded:</p> <ul style="list-style-type: none"> • Asset ID No. • Street address • Position of the pipe or asset – measurements to boundaries or similar (minimum 2 measurements) plus a measurement to the nearest MH on the same line. • Maintenance works undertaken • Digital photographs of extra- ordinary repairs • Depth to top of pipe or asset



	<ul style="list-style-type: none">• Pipe Size or relevant asset description• Pipe or asset Material• Jointing Method• Condition of Pipe or asset
As Built drawings	Sketch plans of "in field" as-builts where works have altered the reticulation system in any way



18 RESOURCE CONSENTS

The Principal shall apply and be responsible for the provision of resource consents required for operation of the sewerage system.

The Contractor shall ensure that the sewerage reticulation system complies with the relevant resource consents at all times.

19 PERFORMANCE CRITERIA

The performance of the Contractor shall be measured by the following criteria:

- That the requirements of this specification are met.
- That all maintenance work is scheduled and carried out within the response time specified.
- That the sewage reticulation system is maintained to a high level of service and reliability