QP-M-108

Water Operations

Branch Common Water and Wastewater Sampling Manual

Water and Wastewater Sampling Manual QP-M-108

This manual has been designed to show all sampling locations for Water and Wastewater Schemes across Toowoomba Regional Council, Water Operations Branch.

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REVIEW	Frequency and Date
REVIEW FREQUENCY (Internal):	2 Year
REVIEW FREQUENCY (External):	Not Applicable
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DUE DATE FOR REVIEW (External):	Not Applicable

AMENDMENTS Version & Date		Details
1	24-January-2012	Original
2	13-Febuary-2012	Changes made after review
3	28-March-2013	Review Document as part of DWQMP Review and Implementation
4	16-April-2013	Changes made after Southern Districts Sampling Review was Conducted
5	8-October-2013	Changes made to Maps and Schematics after review
6	30-April-2014	Further Changes made to Schematic and sample tap identification numbers added to some schemes
7	24-November-2014	Changes made to various schemes after DWQMP Implementation Audits were conducted
8	17-March-2015	Changes made to various schemes after DWQMP Implementation Audit findings and addition of Toowoomba Dams and Cressbrook WTP after new DWQMP creation for these schemes
8A		Changes made after annual review of document.
8B	13-October-2015	Further Changes made to include Toowoomba Schemes
8C	19-January-2016	Further addition of Toowoomba Reticulation Schematic and sample point locations
8D		

Document Authorisation

Authorisation: The issue of this Sampling Manual is approved by the Manager Water Operations, Toowoomba Regional Council

Signed:

Dated:

Note:

At present not all service centre locations are listed in this manual. Water Operations Branch Support Staff are currently sourcing all data for these schemes and will be updating this manual as information comes to hand.

This manual is under continuous review. This is to allow additional information to be added to the manual as plant/s and associated equipment are added to the HACCP Program. This will mean that parts of the manual are complete, whilst other sections maybe under development.

All inquiries regarding this manual are to be directed to the Manager Water Operations who is responsible for its administration.

Table of Contents

Manual for monitoring Water Operations

Water Quality Monitoring Objectives

Water Quality monitoring of water/waste water treatment processes is necessary:

- To demonstrate that environmental releases comply with EPA license requirements
- To demonstrate that final product complies with Queensland Health and Australian Drinking Water Guidelines (ADWG), Health requirement.
- To demonstrate that final product complies with Toowoomba Regional Council's Aesthetic requirements.
- To ensure that there is minimal pollution to the receiving watercourse
- To provide data for daily plant operations and decisions
- To provide data for the relevant wastewater plant operations
- To provide data for the relevant water operations
- To provide data required by legislation, e.g. NPI, DEHP, DEWS, and the Council.
- To provide data and sampling requirements for approved DWQMP
- To provide data and sampling requirements for approved RWMP
- To provide data and sampling requirements for approved site based management plans

Water Quality Monitoring Scheme

Toowoomba Regional Council reporting requires analysis to be performed at a NATA accredited laboratory

Toowoomba Regional Council uses its own laboratory located at Mt Kynoch or external laboratories holding the appropriate NATA accreditation.

Monitoring points and locations are located as described in the attached maps in the relevant appendices in this manual.

Training

All officers who are required to collect water samples for quality monitoring shall receive training in the correct techniques and equipment for such sampling. Refer to Work Procedure QP-KYN-084 Doc# 3178296

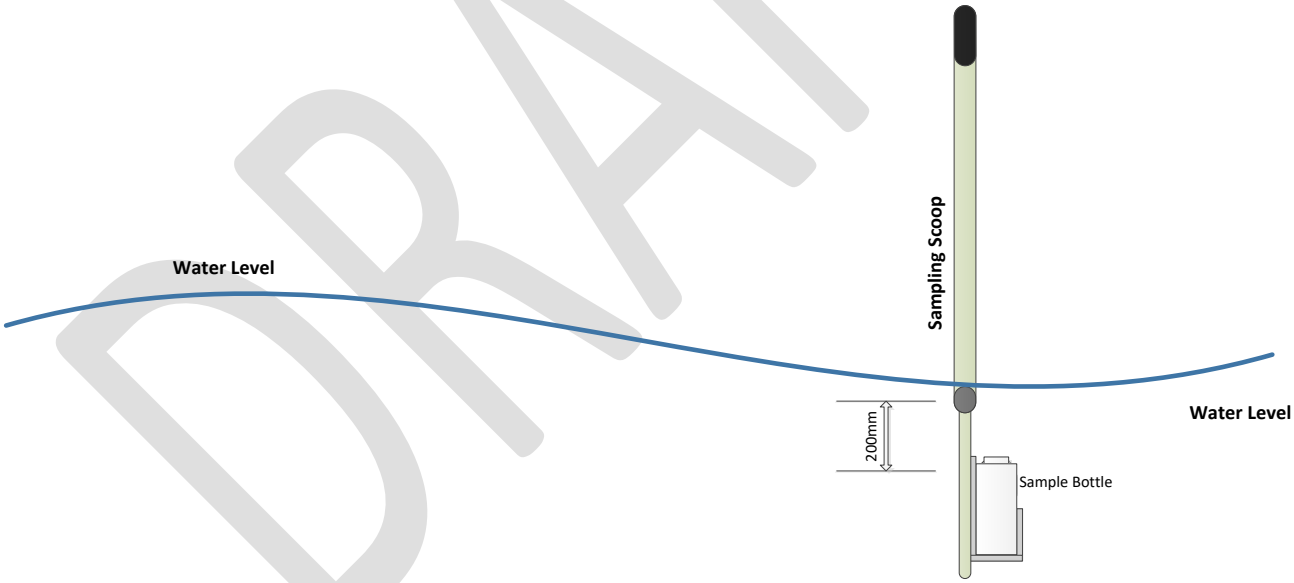
Sample Collection Procedures

Samples for chemical analysis

All officers who are required to collect water samples for quality monitoring shall receive training in the correct techniques and equipment for such sampling. Refer to Work Procedure QP-KYN-084 Doc# 3178296

Collection of samples using sampling scoop

a. Ensure sampling scoop is clean before sampling. If unable to clean sample scoop then rinse scoop with the same liquid as the sample to be collected
b. dip scoop straight down below the water level approximately 200mm and allow it to fill completely
c. lift scoop out of the water
d. ensure you have correctly labelled container
e. pour sample into container leaving approximately 25mm air space in the container
f. Secure lid on container and place in vehicle.



Collection of samples using sampling scoop

Samples for microbiological analysis

All officers who are required to collect water samples for quality monitoring shall receive training in the correct techniques and equipment for such sampling. Refer to Work Procedure QP-KYN-084 Doc# 3178296

References

a. AS/NZS 2031:2001
b. AS/NZS 5667.1:1998 Water Quality – sampling. Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples.

General precautions applying to the collection of samples for microbiological analysis

- Never touch the inside of the cap or bottle
- Keep the cap facing downwards whilst sampling
- Once the sample has been collected store in refrigerator until all samples have been collected. Deliver all samples to the laboratory in an esky with ice bricks to keep cool
- If dipping a sample then make every attempt to collect sample in original container.
- If possible leave an air gap of 20-30mm in the sample bottle.
- Never rinse the bottle. The small amount of liquid in the bottle is a de-chlorinating agent.
- Never overflow the bottle.
- The sample container should be kept capped until immediately before filling. Avoid breathing, sneezing or coughing over the open sample container, or near the sampling point.

Collection of surface samples direct into samples bottle

- Use a clipped handle to place bottle into wastewater. Plunge the bottle under the surface.
- Turn the handle until the neck points slightly upward and the mouth is directed toward the current. If there is no current, create artificially by pushing the bottle forwards horizontally in a direction away from the handle.

Storage and transportation of samples

- Samples shall be processed within 1 hour of collection and should be transported to the laboratory in iced coolers (ideally samples should be held between 4+ and 2°C). If the samples cannot be processed within one hour, it is imperative that the samples are kept between those temperatures. Best practice is to place the sample bottles directly into iced coolers. **Samples are not to be frozen**

Collecting Composite Samples for Algal Counts

Sampling Equipment

The following equipment is required to take dam composite samples;

- Integrated hose pipe sampled – a 5m length of 2.5cm diameter plastic piping with as weighted collar at one end
- A cord to attach to the hose and boat
- A rubber cork to fit one end of the hose
- A bucket
- 1 1000mL class 1 water washed polyethylene bottle and lid.

Sample Collection

In order to obtain a representative sample for species identification and cell count over the surface depth range, each water sample should be collided at the clearly marked sampling point using the 5 m long, 2.5 cm diameter integrated hose-pipe sampler. As mentioned previously it is important to always sample at the same site

The procedure for collecting samples is as follows

Attach a cord to one end of the hose and the boat to prevent accidental loss of the hose.

1. Holding the hose at the top end, rapidly drop the weighted end of the hose-pipe into the water to a depth of 5 m.
2. Return hose to the boat without inserting the rubber cork.
3. Rinse the hose.

Repeat the procedure, but this time insert the cork into top end of the hose (so that the end is held in the hand).

4. Pull the bottom end of the hose to surface using the cord, so the tube is in a U-shape (see figure 1).
5. Lower the weighted end of the hose into a bucket and remove the cork. Ensure that the entire contents of the hose are emptied into the bucket.
6. Mix the contents of the bucket and then transfer part of the contents to a 250 ml polyethylene bottle, leaving a 25 mm gap at the top of the bottle. Discard the rest of the contents of the bucket.
   Complete the relevant details on the Laboratory Sample Sheet, and return with the sample.

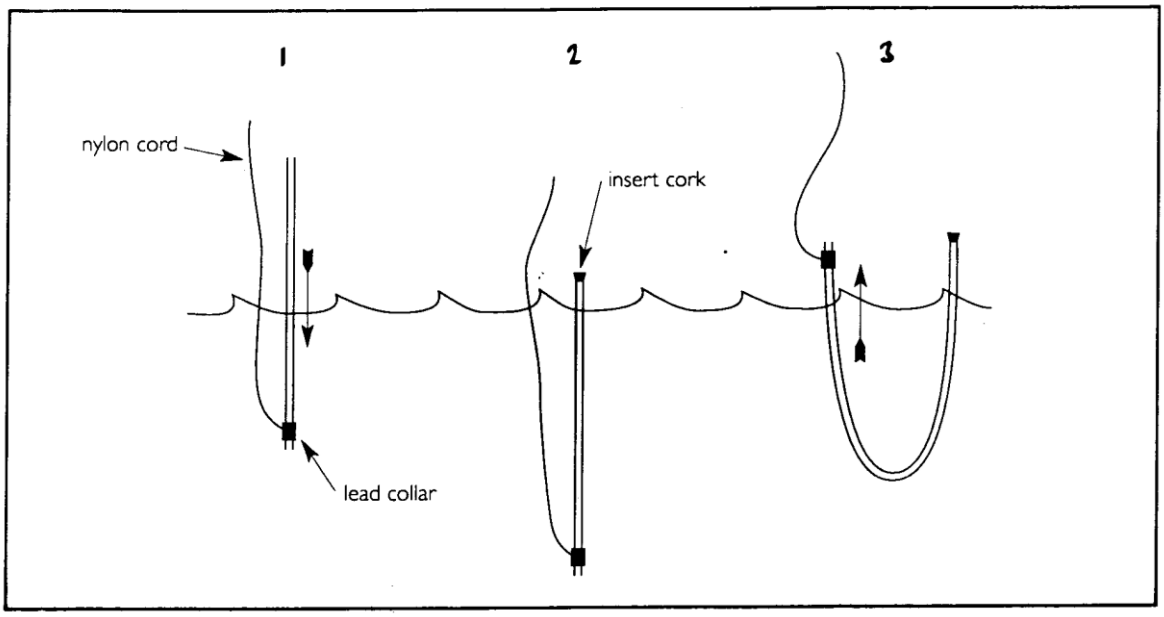
Thick scum algae are hard to count, and should not be included in the water sample. However, if algal scum is present on the storage, make a note in the general comments section of the appropriate sample form, and give some indication of its nature and extent. It is important that all recreation areas be closely examined for scum formation. When the storage reaches Alert Level 3 (i.e. > 15000 cells/mL, see QP-M-002, “Blue Green Algae Event Response Manual” DM#3009724). This inspection should be carried out at least weekly, and more frequently if possible.

BGA can cause skin irritation. If sampling from an area which has a high level of BGA, minimise your contact with the water by wearing appropriate dress. Normal hygiene precautions such as washing off any splashes and washing hands before eating or drinking should be observed at all times. When

not in use, the integrated hose-pipe sampler and bucket should be kept clean at all times and stored in a dark shed or cupboard.

The sampler should aim to make the sample as representative as possible. Avoid including isolated, non-representative clumps of algae. (If identification of algae in clumps is required, collect a separate sample and note accordingly).

Figure 1. *The integrated hose pipe sampler*

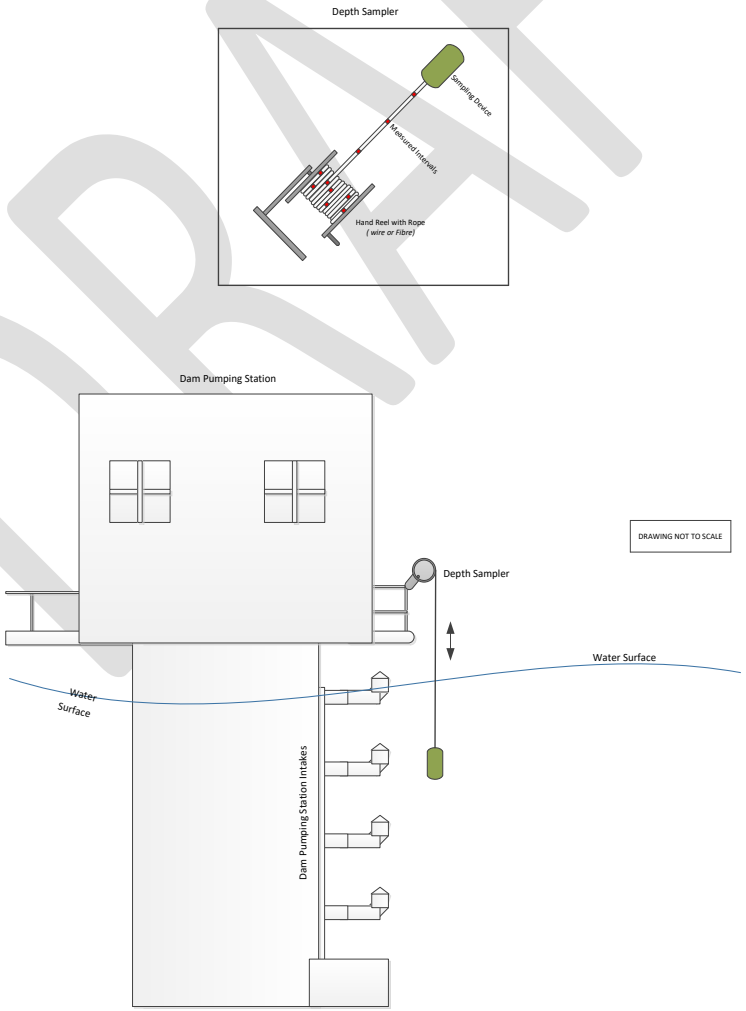


Collecting Dam intake Samples Using Depth Sampler

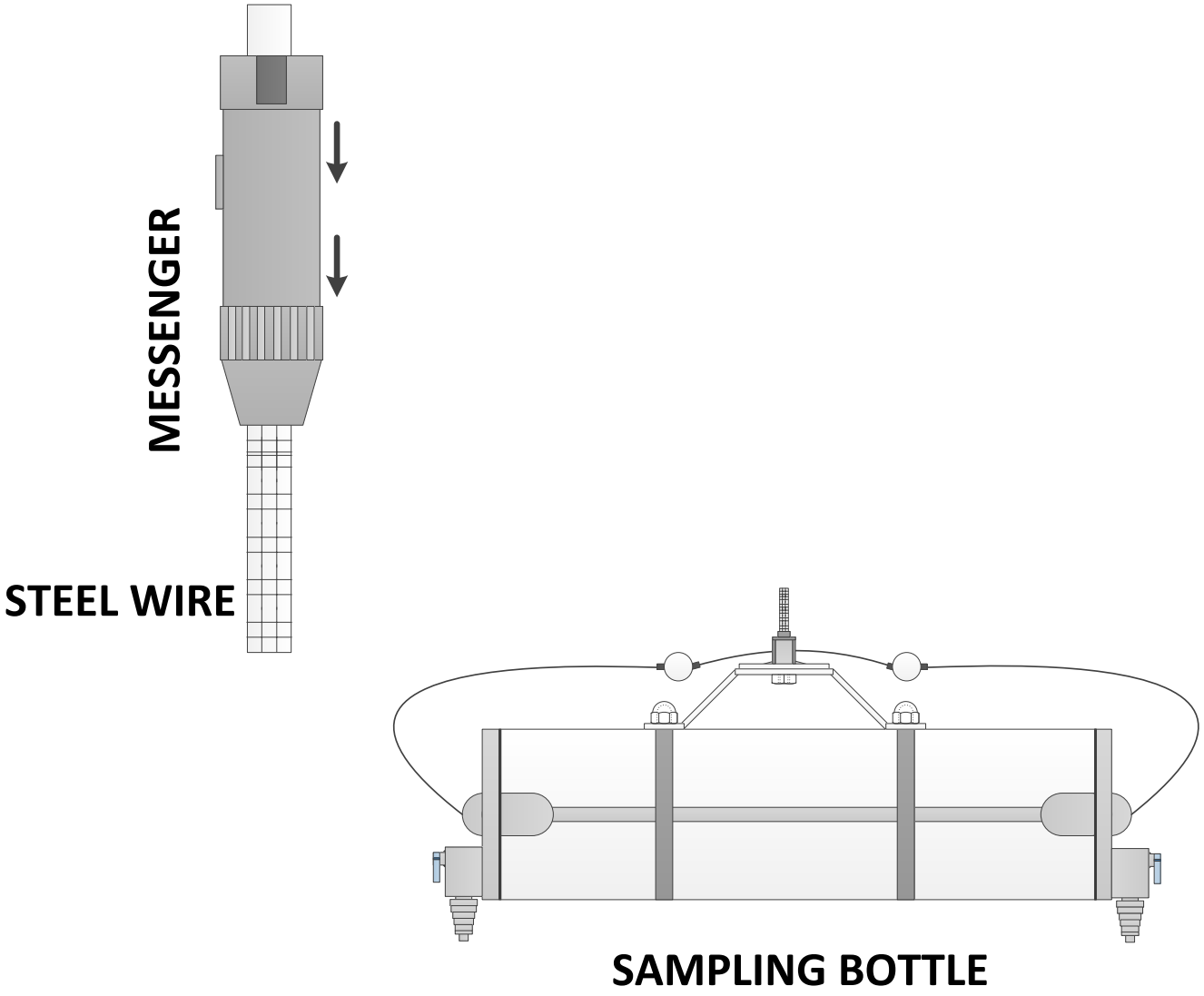
When collecting Dam Pumping Station Intakes operational staff need to use a depth sampler to ensure that the water being sampled is from the correct location (intake), to allow operational staff to make decisions on what intake to use to draw the raw water from.

The depth sampler allows staff the ability to lower the sampling device into the water and collect the water at the desired depth by closing the sampling device once the depth (marked on the wire or fibre rope), has been reached. Operational staff then by either dropping a weight (called a messenger) or pulling upwards on the rope , will seal the sampling device then slowly wind it up using the hand reel that is attached to the pumping station (normally on a hand rail or other suitable affixed structure).

Operational staff, will on an annual basis check the measured the internals on the rope to ensure that the rope hasn't stretched and the intervals are still accurate. If the rope has found to have stretched then the rope will be replace with new rope and newly marked depth intervals will be affixed to the rope.



Current Depth sampler being used at Toowoomba dams



Branch Common References

All branch work instructions, work procedures, forms, and manuals can be found in the Water Operations Quality Document Listing Spread sheet DM# 2231660. The table below lists Branch Common Manuals that will relate directly to this manual. All staff should refer to #2231660 for updates.

QP Number	Document Name	DM#
QP-M-002	Blue Green Algae Event Response Manual	3009724
QP-M-010	WWO Branch Management Manual November 2004	2172951
QP-M-078	Dealing with Environmental Matters	3132868
QP-M-088	Incident Response Manual	3269487
QP-M-102	Water Operations Calibration Manual	3612708
QP-M-103	DEPOLOX Online Chlorine Analyser	3685999
QP-M-110	HACH Pocket Colorimeter II	3993421
QP-M-134	Water Operations Drinking Water Reporting Manual	5527886
NOTE:	Service Centre Sampling Locations	3434130

Individual Scheme References

QP Number	Document Name	DM#
QP-WI-306	Haden Sampling Work Instruction	5175729
QP-M-080	Clifton Operators Operational Wastewater Manual	3176832
QP-M-113	Cecil Plains Wastewater Operations Manual	5457747
QP-M-107	Pittsworth Operators Wastewater Operations Manual	4801454
QP-M-132	Millmerran WWTP Operations and Maintenance Manual	5962124
QP-M-121	Oakey Sewage Pumping Station O&M Manual	5906210
QP-M-122	Kingsthorpe Sewage Pumping Station O&M Manual	5920879
QP-M-123	Gowrie Junction Sewage Pumping Station O&M Manual	5936615
QP-M-124	Westbrook Sewage Pumping Station O&M Manual	5962353
QP-M-125	Kooringa Valley Sewage Pumping Station O&M Manual	5962905
QP-M-128	Highfields Sewage Pumping Station O&M Manual	5936679
QP-M-129	Crows Nest CED Scheme Operations and Maintenance Manual	5998591
QP-M-136	Cressbrook Water Treatment and Wastewater Pumping Station Manual	5718545

Sampling Frequencies

The following explains the terminology for sampling frequencies used throughout the Water Operations Branch.

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Scheme A	Cnr Long and Short Streets	Lions Park Consumer Tap	A01	GRAB

Sampling location shows the name of the Water Supply Scheme in this case it is scheme A. The physical location of the sample tap is on the corner (intersection), of Long and Short Streets in Scheme A.

Sampling ID No. is the unique number that has been assigned to this sample tap location.

Sample Type is the way in which the sample is collected. In this case it is a grab sample.

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID	SAMPLE TYPE	FREQUENCY
Scheme A	WTP	Raw Water – Turbidity	W1	GRAB	Daily (5)
Scheme A	WTP	Raw Water – Turbidity	W1	Online	Continuous

Sampling location shows the name of the Water Supply Scheme in this case it is scheme A. The physical location of the sample tap is located at the Water Treatment Plant in Scheme A.

Description indicated the water (raw, treated, settled), that is being tested and the parameter that is being tested. In this case it's Turbidity that is being tested.

Sampling ID No. is the unique number that has been assigned to this sample tap location.

Sample Type is the way in which the sample is collected. In this case it is a grab sample, for the first row and the second row indicated that sample is being collected online through an Online Instrument

Frequency shows the frequency in which operators collected and test for the parameter listed in the Description. In this case the frequency is Daily (5), which means that the sample is collected tested five days per week as a minimum.

FREQUENCY	Comments
Daily (5)	Operator Samples are collected and analysed a minimum of five days per week Laboratory Samples are collected and submitted for analysis a minimum of five days per week
Daily (6)	Operator Samples are collected and analysed a minimum of six days per week Laboratory Samples are collected and submitted for analysis a minimum of six days per week
Daily (7)	Operator Samples are collected and analysed a minimum of seven days per week Laboratory Samples are collected and submitted for analysis a minimum of seven days per week
Weekly	Samples are collected a minimum of once per week. Samples maybe collected from all sample locations or can be collected on a rotational basis from all sample locations in the individual scheme
Twice Weekly	Samples are collected and analysed a minimum of twice per week. Samples maybe collected from all sample locations or can be collected on a rotational basis from all sample locations in the individual scheme
Monthly	Samples are collected and analysed once per month. Samples maybe collected from all sample locations or can be collected on a rotational basis from all sample locations in the individual scheme
3 Monthly	Samples are collected and analysed once every three months. Samples maybe collected from all sample locations or can be collected on a rotational basis from all sample locations in the individual scheme
6 Monthly	Samples are collected and analysed once every six months. Samples maybe collected from all sample locations or can be collected on a rotational basis from all sample locations in the individual scheme
Annually	Samples are collected and analysed once per year. Sampling normally occurs from a set sample location that does not change, nor is added to a sample location rotation
Event	Samples are collected and analysed once an event has occurred. *****See Glossary for meaning of event**.*** Sampling may continue for the event even after the event has passed.
Incident	Samples are collected and analysed as part of an incident. ***** See Glossary for meaning of incident**.*** Sampling is collected at original sample location where failure/non-conformance occurred as well as at least one sample upstream and at least one sample downstream of original sample location. At times it may not be possible due to sample location to collect an upstream and downstream sample, in this instance either two upstream or two downstream samples are to be collected from original sample location.

Note:

During and event and/or incident operational staff maybe required to shut down infrastructure (i.e. WTP, Bore Station, Reservoir/s, Pump station or chlorine re-dose facilities), whilst returning the infrastructure to service operational staff are to collect appropriate field and laboratory samples for analysis. If any analysis for samples collected shows failure or potential failure to meet;

1. ADWG Health Limits
2. Current DWQMP water quality limits

Then the infrastructure is to be shut down/isolated until such times as the analysis indicates that the water quality complies with the ADWG and/or DWQMP limits. Operational staff will follow at all times return service procedures/work instructions/manuals as provided by Water Operations and/or Water Infrastructure Services

Glossary

TRC

Toowoomba Regional Council

NTU

Nephelometric Turbidity Units – measurement for turbidity

WTP

Water Treatment Plant

WWTP

Wastewater Treatment Plant

AWTP

Advanced Water Treatment Plant

RO Plant

Reverse Osmosis Treatment Plant

GAB

Great Artesian Basin

GAC

Granulated Activated Carbon – used to assist removal of algal toxins during algal blooms in raw water storages

PAC

Powdered Activated Carbon – used to assist removal of algal toxins during algal blooms in raw water storages

THMs

Total Trihalomethanes – By-product of chlorination and chloramination

Incident

An incident is:
The failure to meet a water quality criterion
The detection of a parameter for which there is no guideline value in the ADWG
or
An event or a series of events likely to affect drinking water quality or cause difficulty in adequately treating drinking water.

Event

An event is any sudden or extreme change in water quality, flow or Environmental conditions, for example, excessive rainfall or flood, or equipment failure. An event should raise Concerns that drinking water might be, or could become, contaminated. Disease outbreaks from drinking water may result when the treatment process fails to cope with major fluctuations in source water quality or flow.

HACH

Manufacturer of instruments, meters, reagents and general lab equipment for laboratories, water and waste water treatment providers

THERMOFISCHER SCIENTIFIC

Australian and New Zealand Company who sells and provides equipment and service back and support for HACH

HACCP

Hazard Analysis Critical Control Point is a systematic preventive approach to Food Safety and Pharmaceutical Safety that address physical, chemical, and biological hazards as a means of prevention rather than finished product inspection

BRANCH COMMON LISTING

Document shared across all water and waste water treatment plants in Toowoomba Regional Council e.g. DEPOLOX 4 Online Chlorine Meter. Branch common documents have restricted editing access. Branch Common Documents are reviewed every 12 months and changes if needed are made after review

DM

Toowoomba Regional Council Document Management System. All Corporate documents are saved to this system and are automatically assigned a document number (e.g. DM#3612708)

FLOW METERS

Device used to record the volume of water (treated or raw), that has been moved from one location to another, normally using mains (water pipes)

SHORT BACTERIOLOGY

Microbiological sample collected then analysed at Toowoomba Regional Council Laboratory Services (NATA Accredited). Refer to page 135 of this book for further details

STANDARD BACTERIOLOGY

Microbiological sample collected then analysed at Toowoomba Regional Council Laboratory Services (NATA Accredited). Refer to page 135 of this book for further details

STANDARD CHEMICAL

Standard Chemical Analysis (SCA) is analysed at Toowoomba Regional Council Laboratory Services (NATA Accredited), or external laboratories holding the appropriate NATA accreditation

FULL CHEMICAL

Full Chemical Analysis is analysed at Toowoomba Regional Council Laboratory Services (NATA Accredited), or external laboratories holding the appropriate NATA accreditation. Full chemical analysis is the same as a Standard Chemical Analysis. Refer to Page 132 of this book for further details

GRAB SAMPLE

Single sample collected at a particular time and place that represents the composition of the water only at that time and place (National Health and Medical Research Council (2004) *Australian Drinking Water Guidelines 6*, National Health and Medical Research Council, accessed 15 March 2010 <http://www.nhmrc.gov.au/_files_nhmrc/file/publications/synopses/adwg_11_06.pdf>

LABORATORY TESTING

Laboratory Testing is testing and analysis of water and waste water samples at Toowoomba Regional Council Laboratory Services or an external laboratory holding the appropriate NATA Accreditation

OPERATOR FIELD TESTING

Operator field testing is testing and analysis of water samples collected by water operators for the daily running of water and waste water schemes

SAFETY

Operational staff whilst performing any form of sampling or testing are to ensure that at all times due care and diligence are taken to avoid injury to themselves and others. Operational staff to follow all safety requirements that are required through the Water Operations Branch and also Toowoomba Regional Council Corporate Safety Procedures.

Operational staff can also find more detailed safety advice and work instructions in document QP-M-135 Water Operations Branch Common PPE and Safety Manual DM#5037183

APPENDICES

Appendix A

Clifton Water Sampling

Water Quality Sampling Task list

Table 1,2, and 3 are a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Clifton	Clifton-Leyburn Road	Clifton Bore 2		GRAB
Clifton	Clifton-Leyburn Road	Clifton Bore 3A		GRAB
Clifton	Clifton-Leyburn Road	Clifton Bore 4		GRAB
Clifton	Clifton-Leyburn Road	Clifton Bore 5		GRAB
Clifton	Mowen Street	Low Level Reservoir	CL1	GRAB
Clifton	Gatton-Clifton Road	Elevated Reservoir	CL2	GRAB

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Clifton	Cemetery Road	Cemetery	CL3	GRAB
Clifton	End of Davenport Street	Recreation Grounds	CL4	GRAB
Clifton	Alden Street	Elsie Jones Park	CL5	GRAB
Clifton	Logan Road	Clifton Works Depot	CL6	GRAB

Sampling Locations, identification and types

Table 3: Waste Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
1		Clifton Release Point W1		GRAB

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1, 2, and 3 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Clifton	Raw Water Bores	Turbidity	
	Raw Water Bores	Microbiological	
	Raw Water Bores	Standard Chemical	
	Raw Water Bores	Herbicide and Pesticide	
	Raw Water Bores	Heavy Metals	
Clifton	Low Level Reservoir	Turbidity	
	Low Level Reservoir	Microbiological	
	Low Level Reservoir	Standard Chemical	
	Low Level Reservoir	Heavy Metals	
Clifton	Elevated Reservoir	Turbidity	
	Elevated Reservoir	Microbiological	
	Elevated Reservoir	Standard Chemical	
	Elevated Reservoir	Disinfection By-Products	
	Elevated Reservoir	Heavy Metals	
Clifton	Consumer Taps	Turbidity	
	Consumer Taps	Microbiological	
	Consumer Taps	Standard Chemical	
	Consumer Taps	Disinfection By-Products	
	Consumer Taps	Heavy Metals	

Table 2: Water Samples – Clifton Operator Field Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Clifton	Bore 2 Chlorine Dosing	Free Chlorine	2 x Weekly
Clifton	Consumer Taps	Free Chlorine	Weekly
Clifton	Low Level Reservoir	Free Chlorine	2 x Weekly
Clifton	Elevated Reservoir	Free Chlorine	2 x Weekly

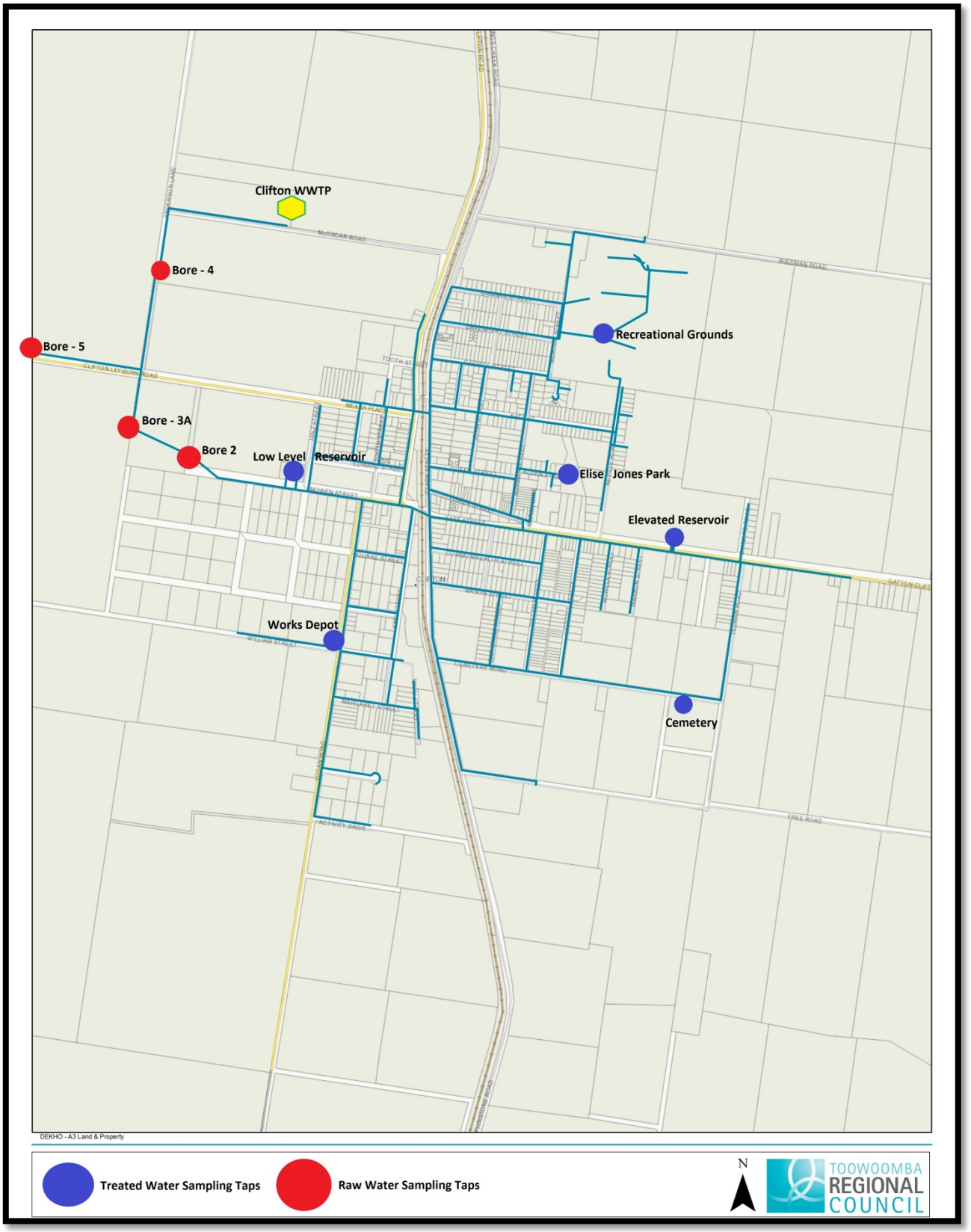
NOTE: Chlorine residuals to be record on QP-FRM-229 Clifton and Nobby Chlorine Residual Record Sheet DM#5591473

Table 3: Waste Water Samples – Laboratory Testing

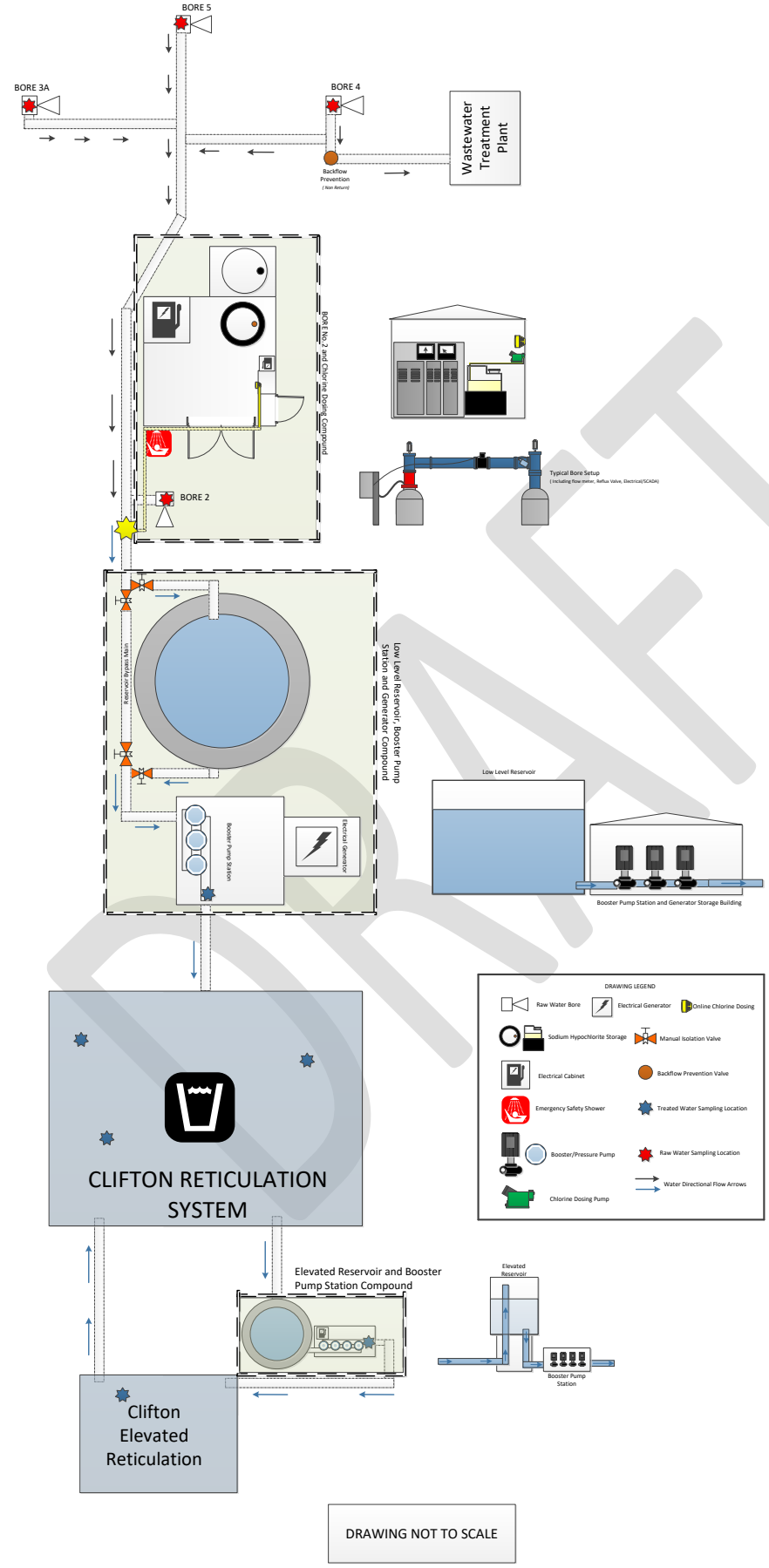
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Clifton	Clifton WWTP Release Point W1	pH	3 Monthly
Clifton	Clifton WWTP Release Point W1	E.coli	3 Monthly
Clifton	Clifton WWTP Release Point W1	Suspended Solids	3 Monthly
Clifton	Clifton WWTP Release Point W1	Biochemical Oxygen Demand	3 Monthly

For Clifton Wastewater Treatment Plant License Limits refer to Clifton Wastewater O&M Manual QP-M-080 DM#3176832

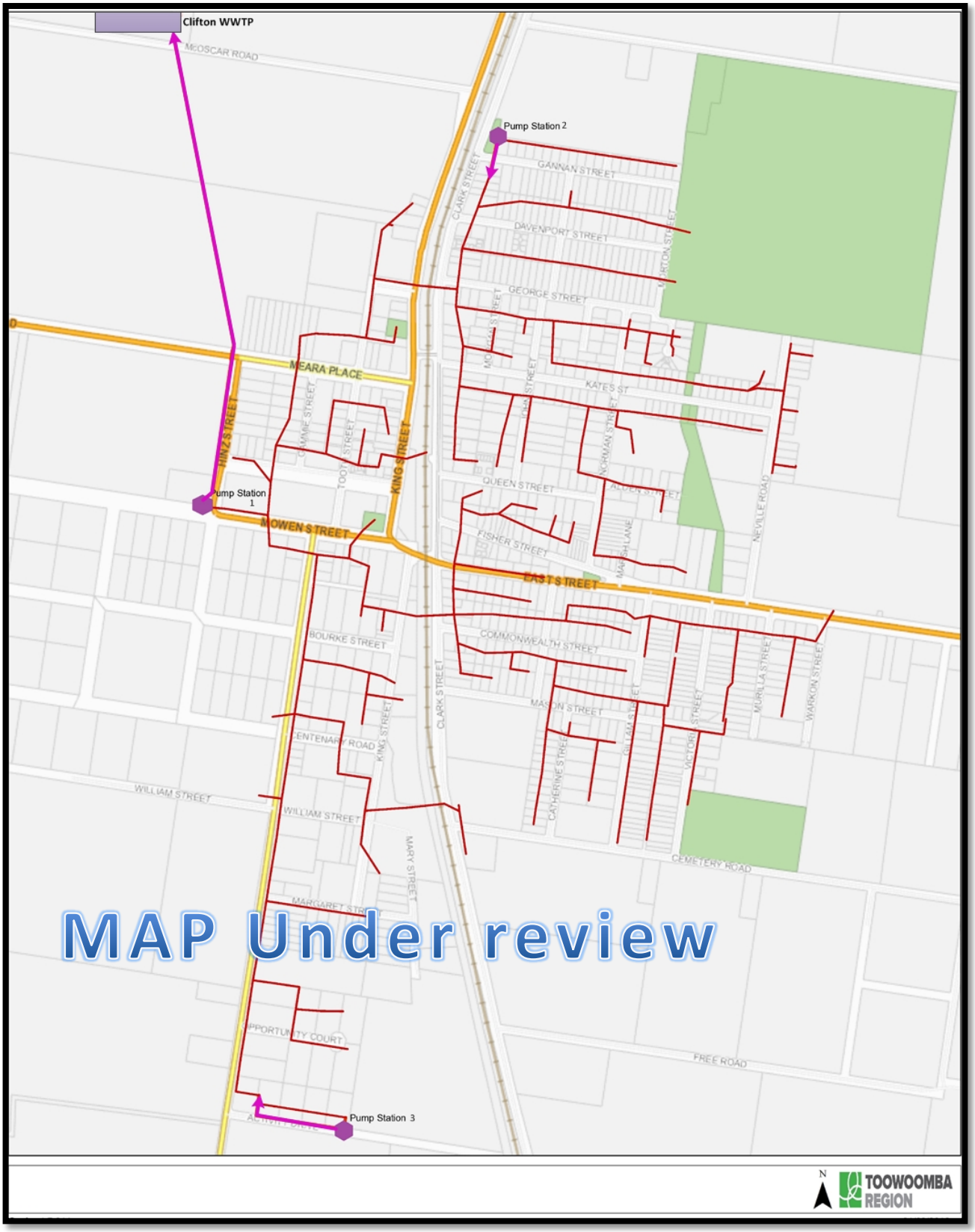
Clifton Reticulation Map



Clifton Water Supply Schematic



Clifton Waste Water Map


Clifton WWTP
MEOSCAR ROAD
Pump Station 2
GANNAN STREET
DAVENPORT STREET
GEORGE STREET
MEARA PLACE
KATES ST
KING STREET
QUEEN STREET
Pump Station 1
MOWEN STREET
FISHER STREET
EAST STREET
BOURKE STREET
COMMONWEALTH STREET
CLARK STREET
MASON STREET
CENTENARY ROAD
WILLIAM STREET
CEMETERY ROAD
MARGARET STREET
OPPORTUNITY COURT
FREE ROAD
Pump Station 3
MAP Under review
N
TOOWOOMBA REGION

Clifton Wastewater Schematic

Nobby Water Sampling

Water Quality Sampling Task list

Table 1 and 2 are a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Nobby	Bore Compound off Fett Road	Nobby Bore 1		GRAB
Nobby	Bore Compound off Fett Road	Nobby Bore 2		GRAB
Nobby	End of Hill Street	Elevated Reservoir	N1	GRAB

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Nobby	Tooth Street	Sister Kenny Park	N2	GRAB
Nobby	Commerford Street	Recreation Grounds	N3	GRAB
Nobby	Davenport Street (past the school on opposite side of street)	School Bus Shelter Shed	N4	GRAB
Nobby	Fett Road	Lutheran Church	N5	GRAB
Nobby	Gilbride Street	Gilbride Street	N6	GRAB

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

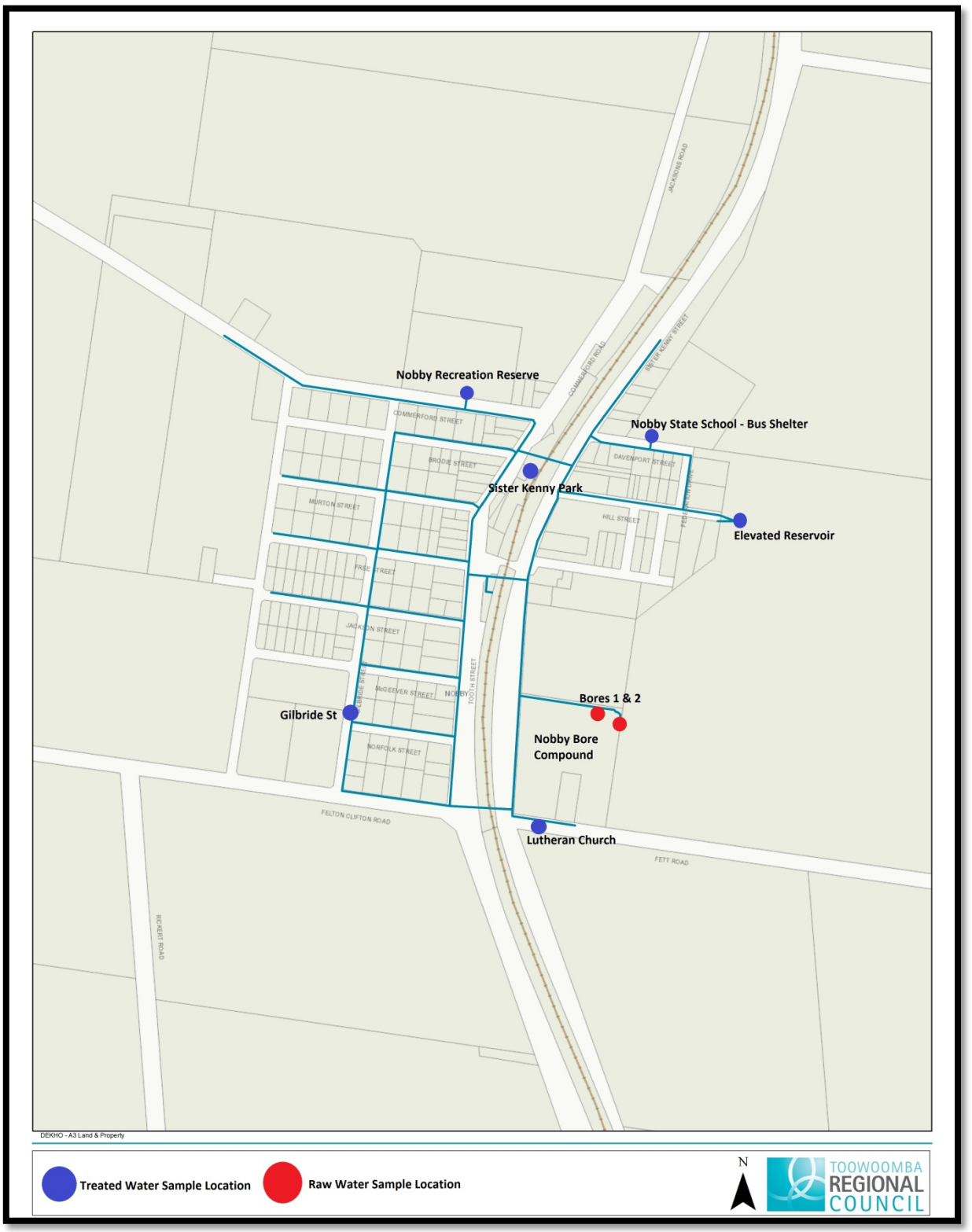
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Nobby	Raw Water Bores	Turbidity	
	Raw Water Bores	Microbiological	
	Raw Water Bores	Standard Chemical	
	Raw Water Bores	Herbicide and Pesticide	
	Raw Water Bores	Heavy Metals	
Nobby	Elevated Reservoir	Turbidity	
	Elevated Reservoir	Microbiological	
	Elevated Reservoir	Standard Chemical	
	Elevated Reservoir	Disinfection By-Products	
	Elevated Reservoir	Herbicide and Pesticide	
	Elevated Reservoir	Heavy Metals	
Nobby	Consumer Taps	Turbidity	
	Consumer Taps	Microbiological	
	Consumer Taps	Standard Chemical	
	Consumer Taps	Disinfection By-Products	
	Consumer Taps	Herbicide and Pesticide	
	Consumer Taps	Heavy Metals	

Table 2: Water Samples – Clifton Operator Field Testing

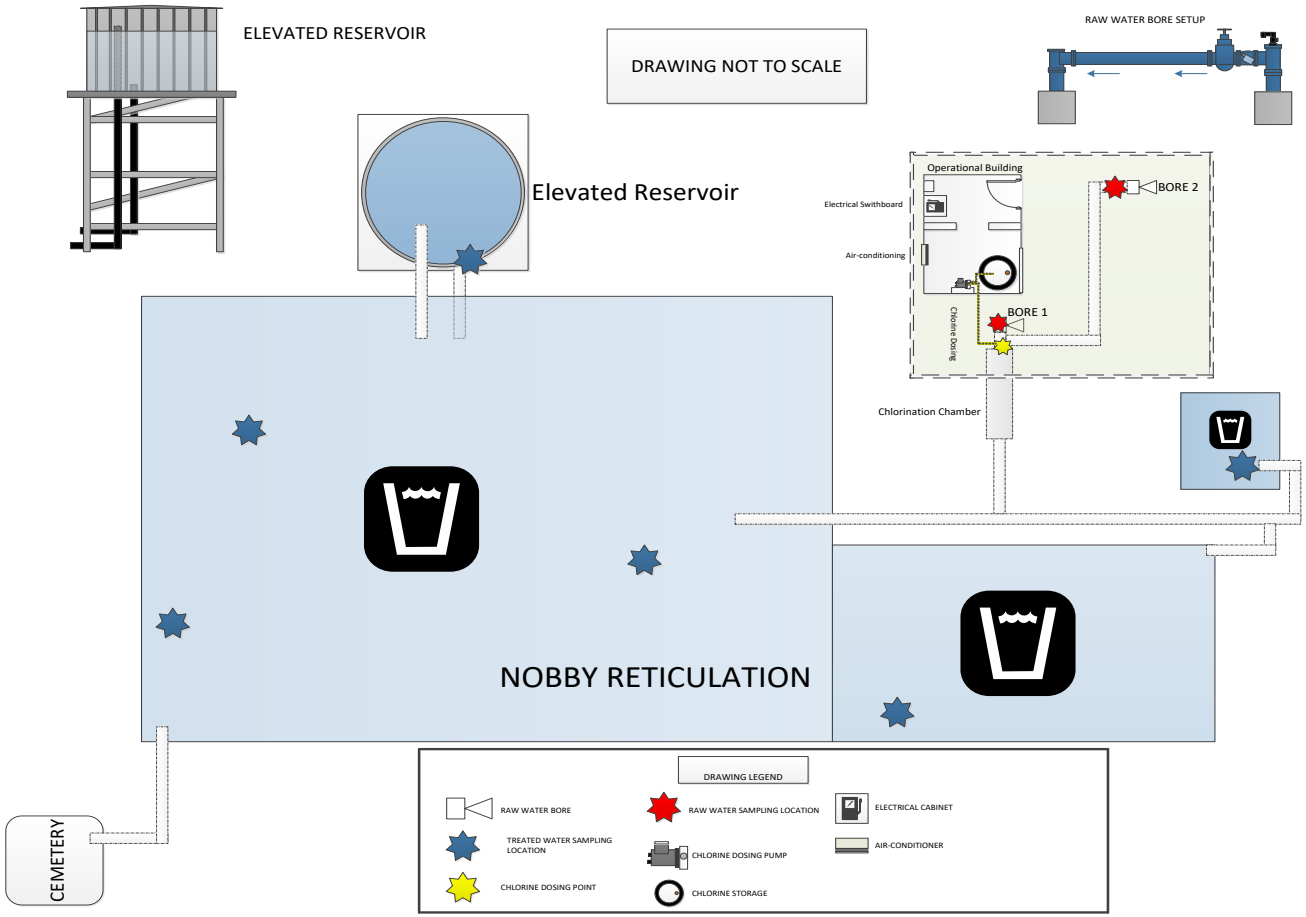
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Nobby	Raw water Bore Dosing	Free Chlorine	2 x Weekly
Nobby	Consumer Taps	Free Chlorine	Weekly
Nobby	Elevated Reservoir	Free Chlorine	2 x Weekly

NOTE: Chlorine residuals to be record on QP-FRM-229 Clifton and Nobby Chlorine Residual Record Sheet DM#5591473

Nobby Reticulation Map



Nobby Drinking Water Supply Schematic



Appendix B

Greenmount Water Sampling

Water Quality Sampling Task list

Table 1 and 2 are a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Greenmount	Haldon Street	Haldon Bore		GRAB
Greenmount	Watts Siding Road	Watts Siding Road Bore		GRAB
Greenmount	At end of Gilbride St in Paddock	Gilbride Street Bores 1 & 2		GRAB
Greenmount	Haldon Street	Low Level Reservoir	G1	GRAB

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Greenmount	Ramsay Street	Bi-Centennial Memorial Park	G2	GRAB
Greenmount	King Street	Jack Derek Park	G3	GRAB

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

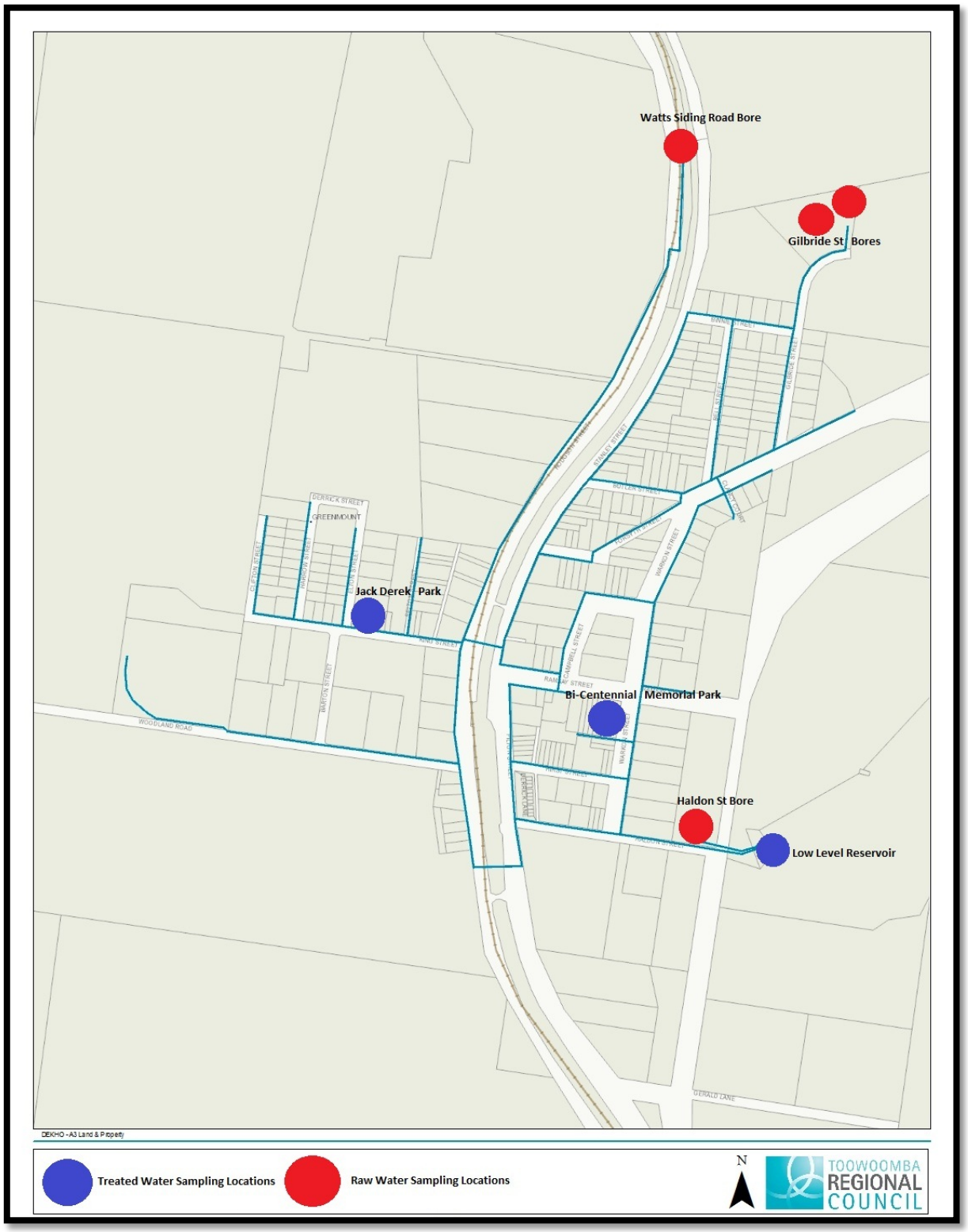
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Greenmount	Raw Water Bores	Turbidity	
	Raw Water Bores	Microbiological	
	Raw Water Bores	Standard Chemical	
	Raw Water Bores	Herbicide and Pesticide	
	Raw Water Bores	Heavy Metals	
Greenmount	Low level Reservoir	Turbidity	
	Low level Reservoir	Microbiological	
	Low level Reservoir	Standard Chemical	
	Low level Reservoir	Disinfection By-Products	
	Low level Reservoir	Herbicide and Pesticide	
	Low level Reservoir	Heavy Metals	
Greenmount	Consumer Taps	Turbidity	
	Consumer Taps	Microbiological	
	Consumer Taps	Standard Chemical	
	Consumer Taps	Disinfection By-Products	
	Consumer Taps	Herbicide and Pesticide	
	Consumer Taps	Heavy Metals	

Table 2: Water Samples – Greenmount Operator Field Testing

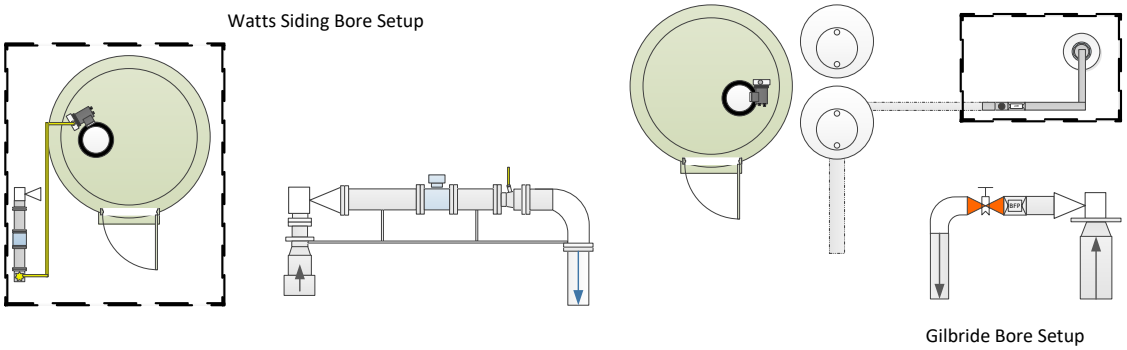
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Greenmount	Raw Water Bores	Free Chlorine	2 x Weekly
Greenmount	Consumer Taps	Free Chlorine	Weekly
Greenmount	Elevated Reservoir	Free Chlorine	2 x Weekly

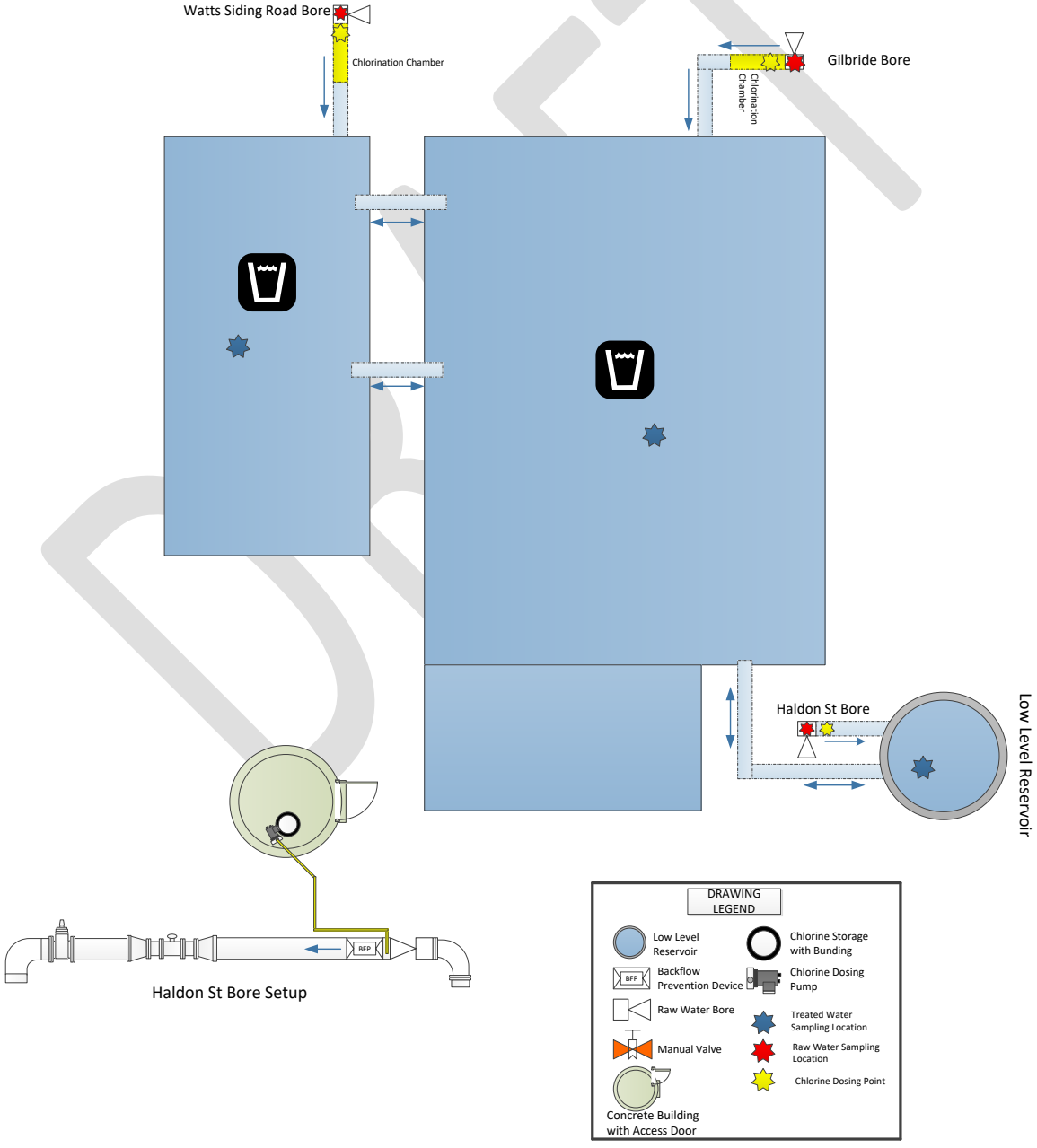
NOTE: Chlorine residuals to be record on QP-FRM-208 Greenmount Operators Chlorine Residual Record Sheet DM# 5164807

Greenmount Reticulation Map



Greenmount Drinking Water Supply Schematic





Cambooya Water Sampling

Water Quality Sampling Task list

Table 1 and 2 are a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Cambooya	George Street	George Street Bore		GRAB
Cambooya	John Street	John Street Bore		GRAB
Cambooya	Hennessy Road	Low Level Reservoir	CB1	GRAB

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Cambooya	Railway Street	Memorial Park	CB2	GRAB
Cambooya	Harrow Street	Williams Way Park	CB3	GRAB
Cambooya	George Street	Paterson Memorial Park	CB4	GRAB
Cambooya	Quarry Street	Rolleston Park	CB5	GRAB

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

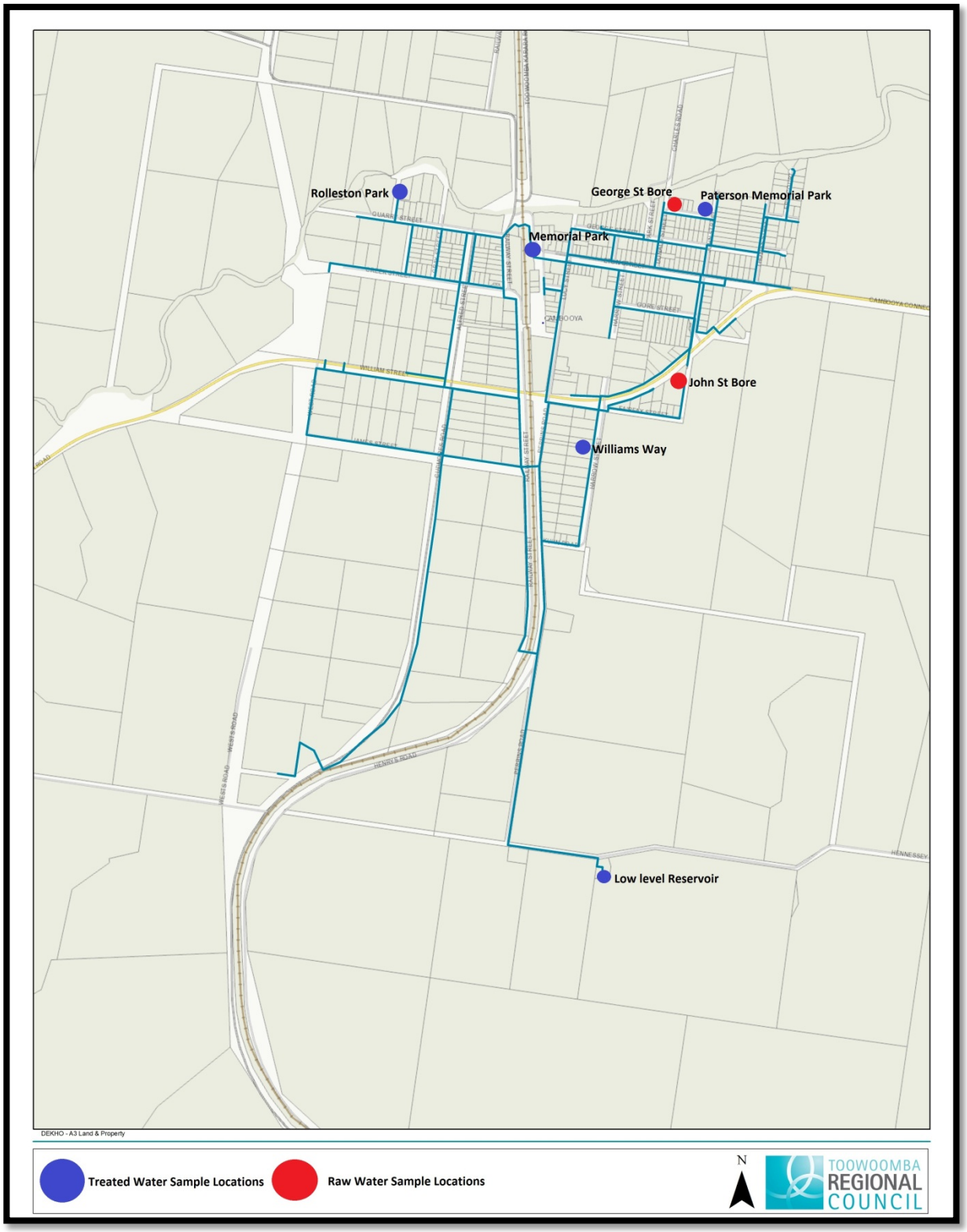
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Cambooya	Raw Water Bores	Turbidity	
	Raw Water Bores	Microbiological	
	Raw Water Bores	Standard Chemical	
	Raw Water Bores	Herbicide and Pesticide	
	Raw Water Bores	Heavy Metals	
Cambooya	Low level Reservoir	Turbidity	
	Low level Reservoir	Microbiological	
	Low level Reservoir	Standard Chemical	
	Low level Reservoir	Disinfection By-Products	
	Low level Reservoir	Herbicide and Pesticide	
	Low level Reservoir	Heavy Metals	
Cambooya	Consumer Taps	Turbidity	
	Consumer Taps	Microbiological	
	Consumer Taps	Standard Chemical	
	Consumer Taps	Disinfection By-Products	
	Consumer Taps	Herbicide and Pesticide	
	Consumer Taps	Heavy Metals	

Table 2: Water Samples – Greenmount Operator Field Testing

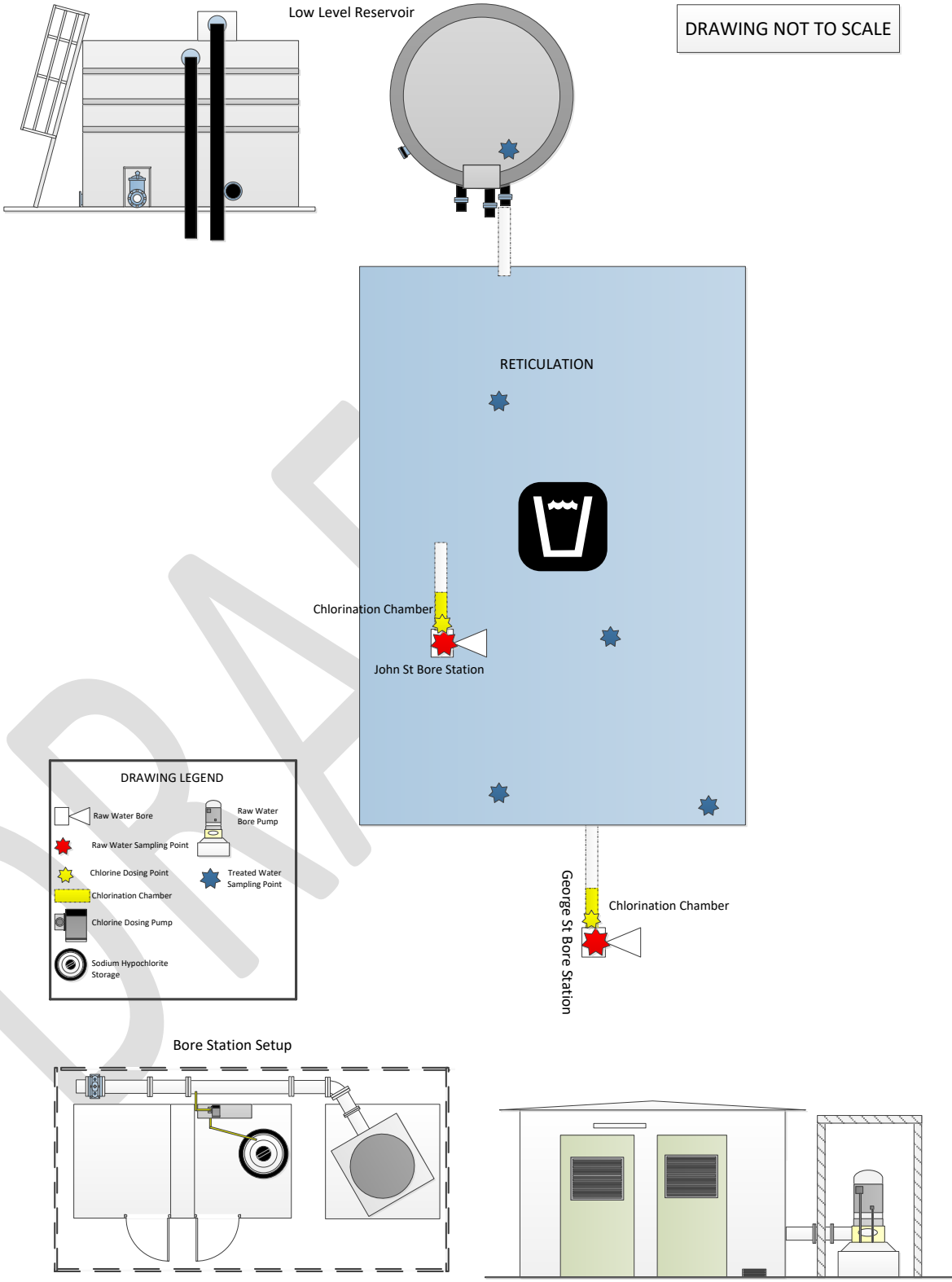
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Cambooya	Raw Water Bores	Free Chlorine	2 x Weekly
Cambooya	Consumer Taps	Free Chlorine	Weekly
Cambooya	Elevated Reservoir	Free Chlorine	2 x Weekly

NOTE: Chlorine residuals to be record on QP-FRM-208 Greenmount Operators Chlorine Residual Record Sheet DM# 5164807

Cambooya Reticulation Map



Cambooya Drinking Water Supply Schematic



Wyreema Water Sampling

Water Quality Sampling Task list

Table 1,2 and 3 are a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Wyreema	Newmann Road	Newmann Road Bore		GRAB
Wyreema	Hartvigsen Road	Hartvigsen Bore		GRAB
Wyreema	Love Road	Loves Road Bore		GRAB
Wyreema	Compound off Newmann Road	Low Level Reservoir	WY1	GRAB
Wyreema	Compound off Newmann Road	Elevated Reservoir		GRAB

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Wyreema	Umbiram Road Near Tennis Courts	Obst Park	WY2	GRAB
Wyreema	High Street	Wyreema Park	WY3	GRAB
Wyreema	Stratford Drive near toilet block	Stratford Park	WY4	GRAB
Wyreema	McDougall Court	Barton Park	WY5	GRAB

Table 3: Waste Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

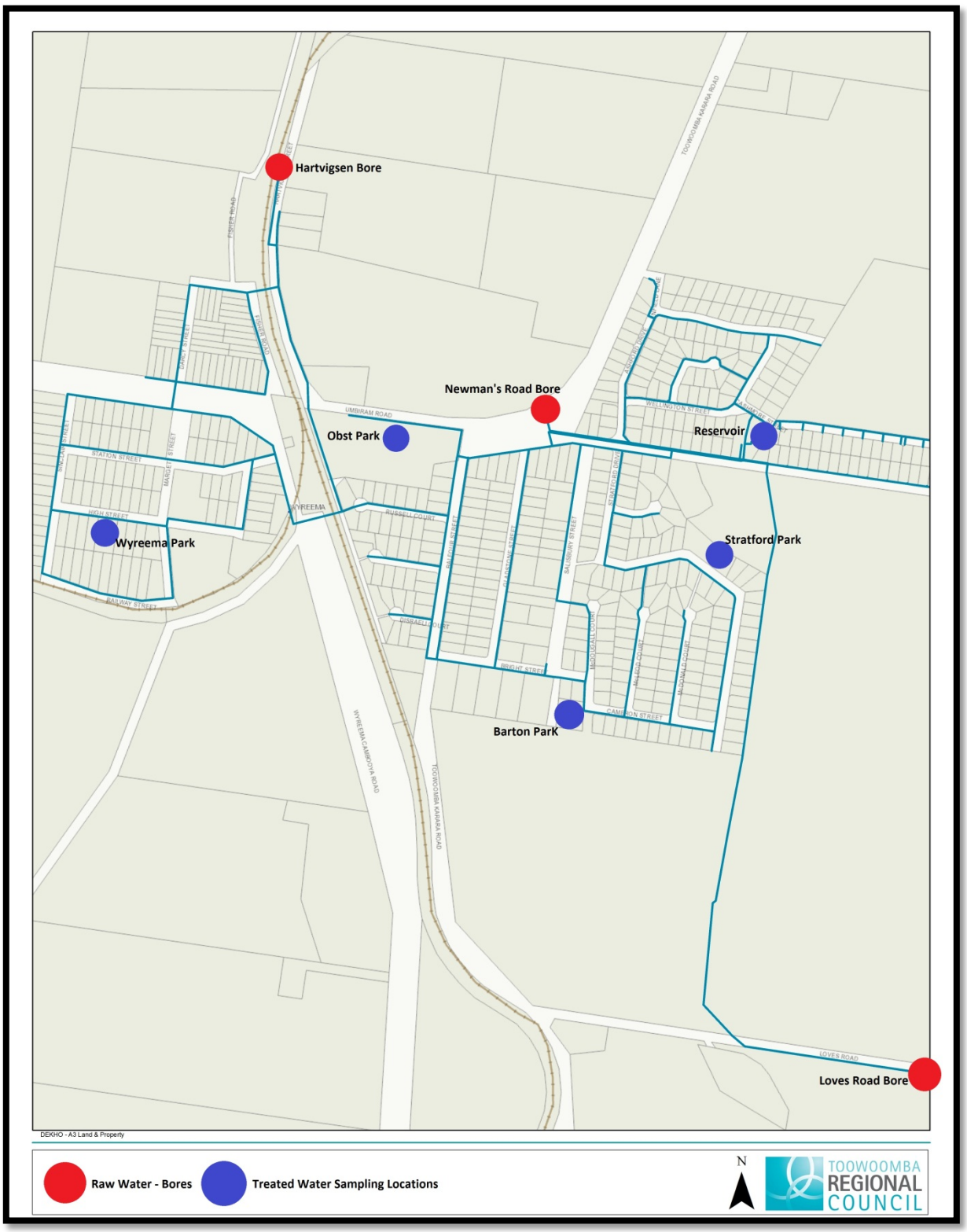
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Wyreema	Raw Water Bores	Turbidity	
	Raw Water Bores	Microbiological	
	Raw Water Bores	Standard Chemical	
	Raw Water Bores	Herbicide and Pesticide	
	Raw Water Bores	Heavy Metals	
Wyreema	Low level Reservoir	Turbidity	
	Low level Reservoir	Microbiological	
	Low level Reservoir	Standard Chemical	
	Low level Reservoir	Disinfection By-Products	
	Low level Reservoir	Herbicide and Pesticide	
	Low level Reservoir	Heavy Metals	
Wyreema	Consumer Taps	Turbidity	
	Consumer Taps	Microbiological	
	Consumer Taps	Standard Chemical	
	Consumer Taps	Disinfection By-Products	
	Consumer Taps	Herbicide and Pesticide	
	Consumer Taps	Heavy Metals	

Table 2: Water Samples – Greenmount Operator Field Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Wyreema	Raw Water Bores	Free Chlorine	2 x Weekly
Wyreema	Consumer Taps	Free Chlorine	Weekly
Wyreema	Elevated Reservoir	Free Chlorine	2 x Weekly

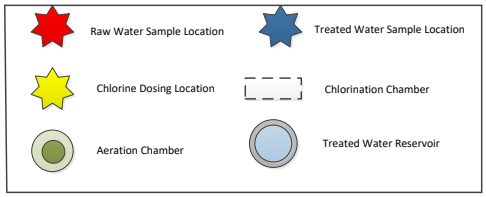
NOTE: Chlorine residuals to be record on QP-FRM-208 Greenmount Operators Chlorine Residual Record Sheet DM# 5164807

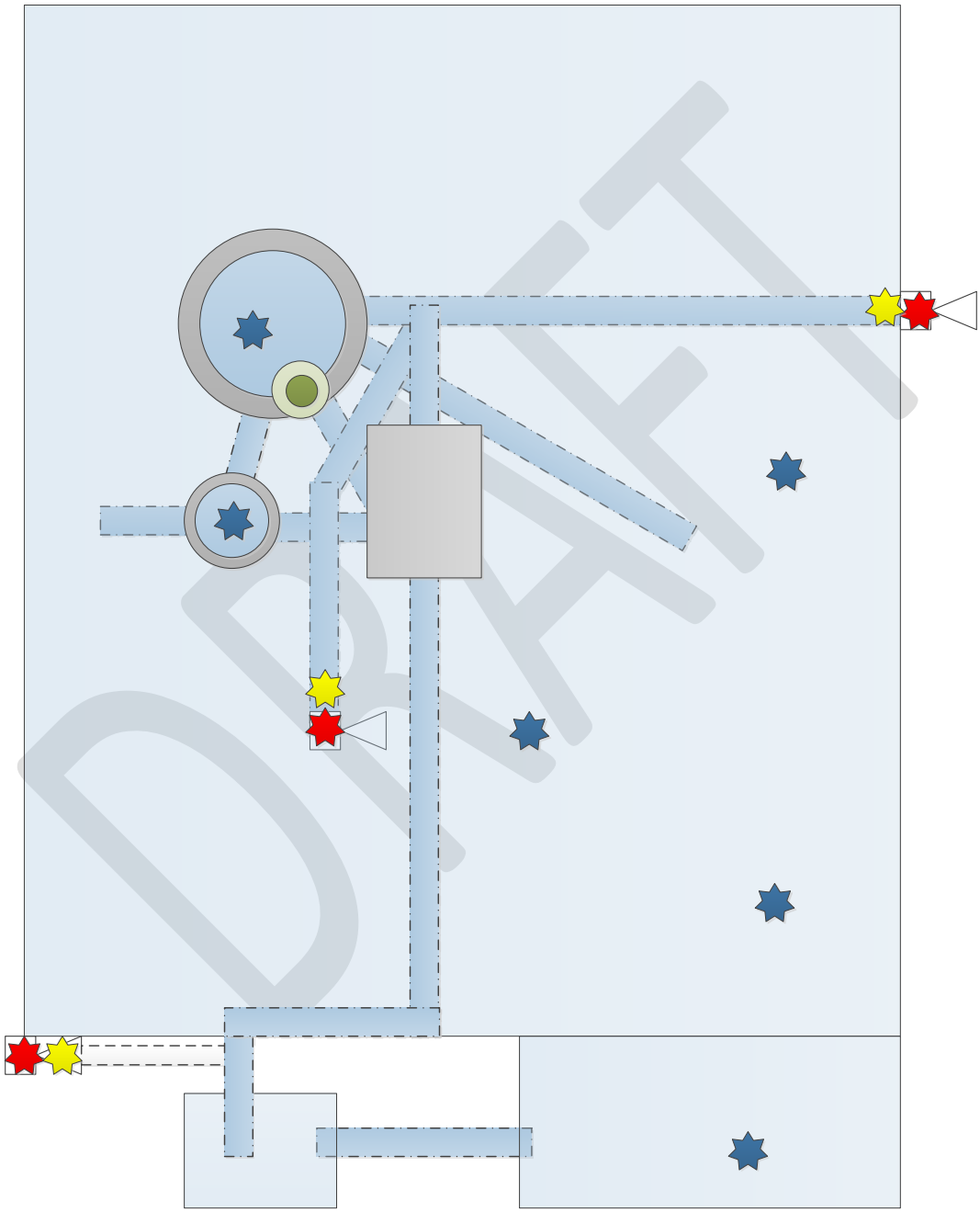
Wyreema Reticulation Map



Note: Reticulation Map to be updated once new treated water transmission main is commissioned and operational.

Wyreema Drinking Water Supply Schematic

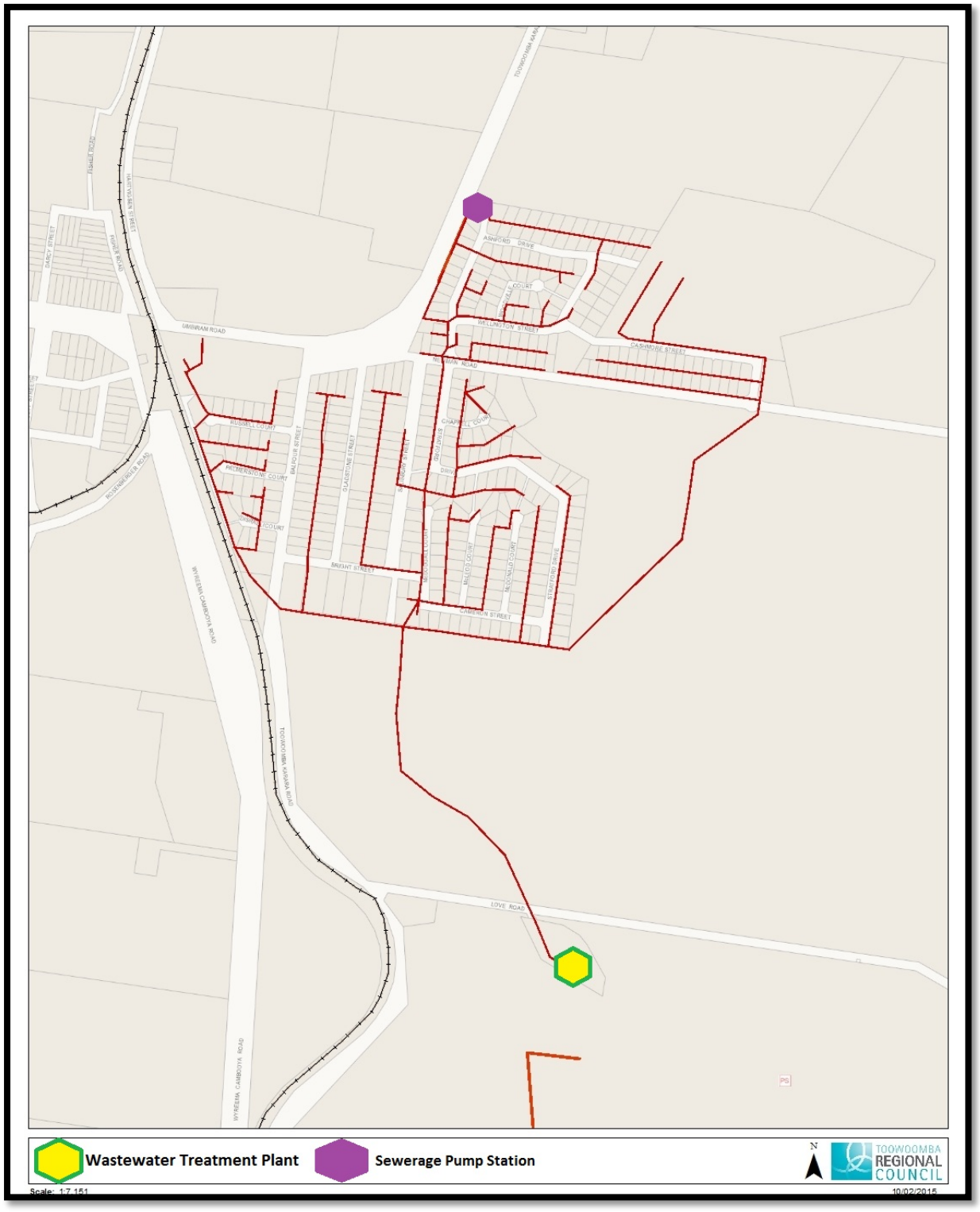




DRAWING NOT TO SCALE

NOTE: Schematic to be updated once new treated water transmission main is commissioned and operational

Wyreema Wastewater Map



NOTE:

Wastewater map to be updated once new Sewage Pump Station has been commissioned and fully operational

Vale View Water Sampling

Water Quality Sampling Task list

Table 1 and 2 are a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Vale View	Stark Drive	Stark Drive Bore		GRAB
Vale View	Smith Creek Road in middle of creek	Smith Creek Bore		GRAB
Vale View	At end of Timothy Drive	Low Level Reservoir	VV1	GRAB

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Vale View	Stark Drive Bore Station	Stark Drive	VV2	GRAB
Vale View	Federation Park	Federation Park	VV3	GRAB
Vale View	End of Stark Drive in Old Pump Station Compound	Old Pump Station	VV4	GRAB

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

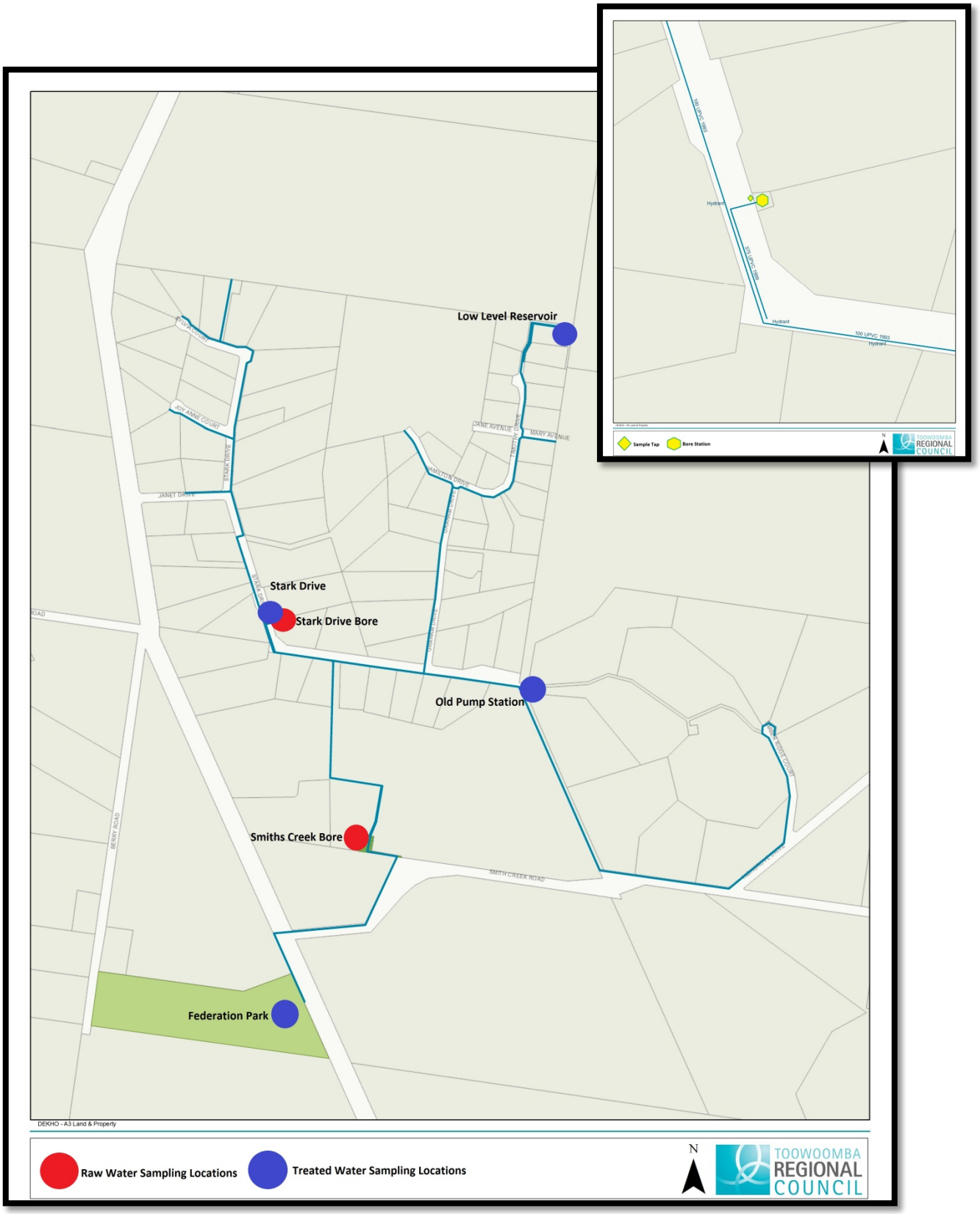
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Vale View	Raw Water Bores	Turbidity	
	Raw Water Bores	Microbiological	
	Raw Water Bores	Standard Chemical	
	Raw Water Bores	Herbicide and Pesticide	
	Raw Water Bores	Heavy Metals	
Vale View	Low level Reservoir	Turbidity	
	Low level Reservoir	Microbiological	
	Low level Reservoir	Standard Chemical	
	Low level Reservoir	Disinfection By-Products	
	Low level Reservoir	Herbicide and Pesticide	
	Low level Reservoir	Heavy Metals	
Vale View	Consumer Taps	Turbidity	
	Consumer Taps	Microbiological	
	Consumer Taps	Standard Chemical	
	Consumer Taps	Disinfection By-Products	
	Consumer Taps	Herbicide and Pesticide	
	Consumer Taps	Heavy Metals	

Table 2: Water Samples – Greenmount Operator Field Testing

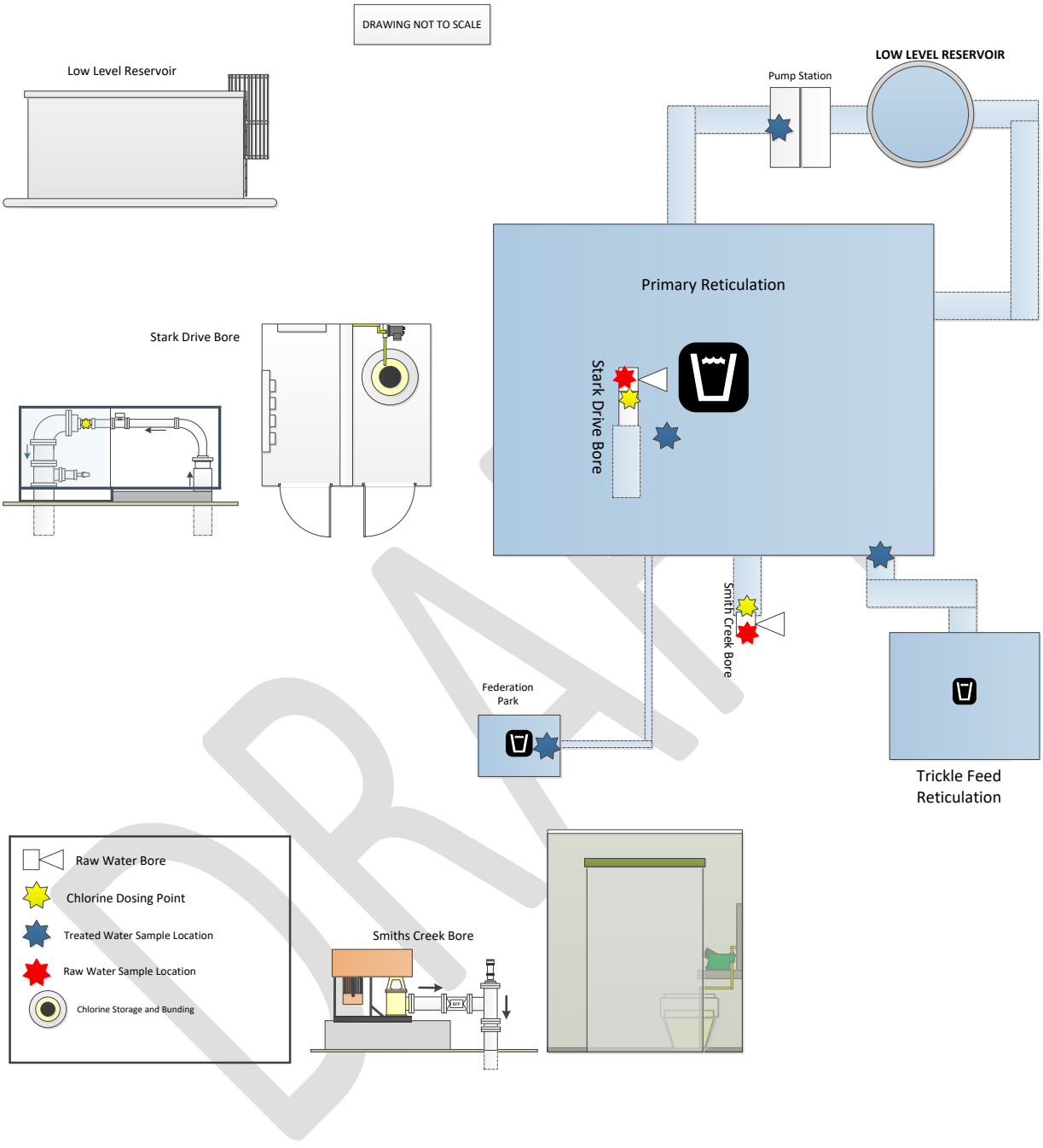
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Vale View	Raw Water Bores	Free Chlorine	2 x Weekly
Vale View	Consumer Taps	Free Chlorine	Weekly
Vale View	Low Level Reservoir	Free Chlorine	2 x Weekly

NOTE: Chlorine residuals to be record on QP-FRM-208 Greenmount Operators Chlorine Residual Record Sheet DM# 5164807

Vale View Reticulation Map



Vale View Drinking Water Supply Schematic



Hodgson Vale Water Sampling

Water Quality Sampling Task list

Table 1 and 2 are a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Mt Rascal	Hamblin Court	Hamblin Bore		GRAB
Hodgson Vale	New England Highway	Geddes Bore		GRAB
Hodgson Vale	Pendoma Drive	Pendoma Bore		GRAB
Hodgson Vale	Freyling Road	Freyling Bore		GRAB
Hodgson Vale	Andrews Court	Clearview Bore		GRAB
Hodgson Vale	Claudia Court	Claudia Court Reservoirs	HV1	GRAB
Top Camp	Wisemann Road	Top Camp Low Level Reservoir	HV2	GRAB
Hodgson Vale	Panoramic Drive	Big Hill Low Level Reservoir	HV3	GRAB

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Hodgson Vale	New England Highway	Lions Park	HV4	GRAB
Mt Rascal	Hamblin Court, outside Bore Station	Hamblin Court	HV5	GRAB
Hodgson Vale	Grayson Court	Garden at top of Grayson Court	HV6	GRAB
Hodgson Vale	Maydean Place	Community Sports Centre	HV7	GRAB

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

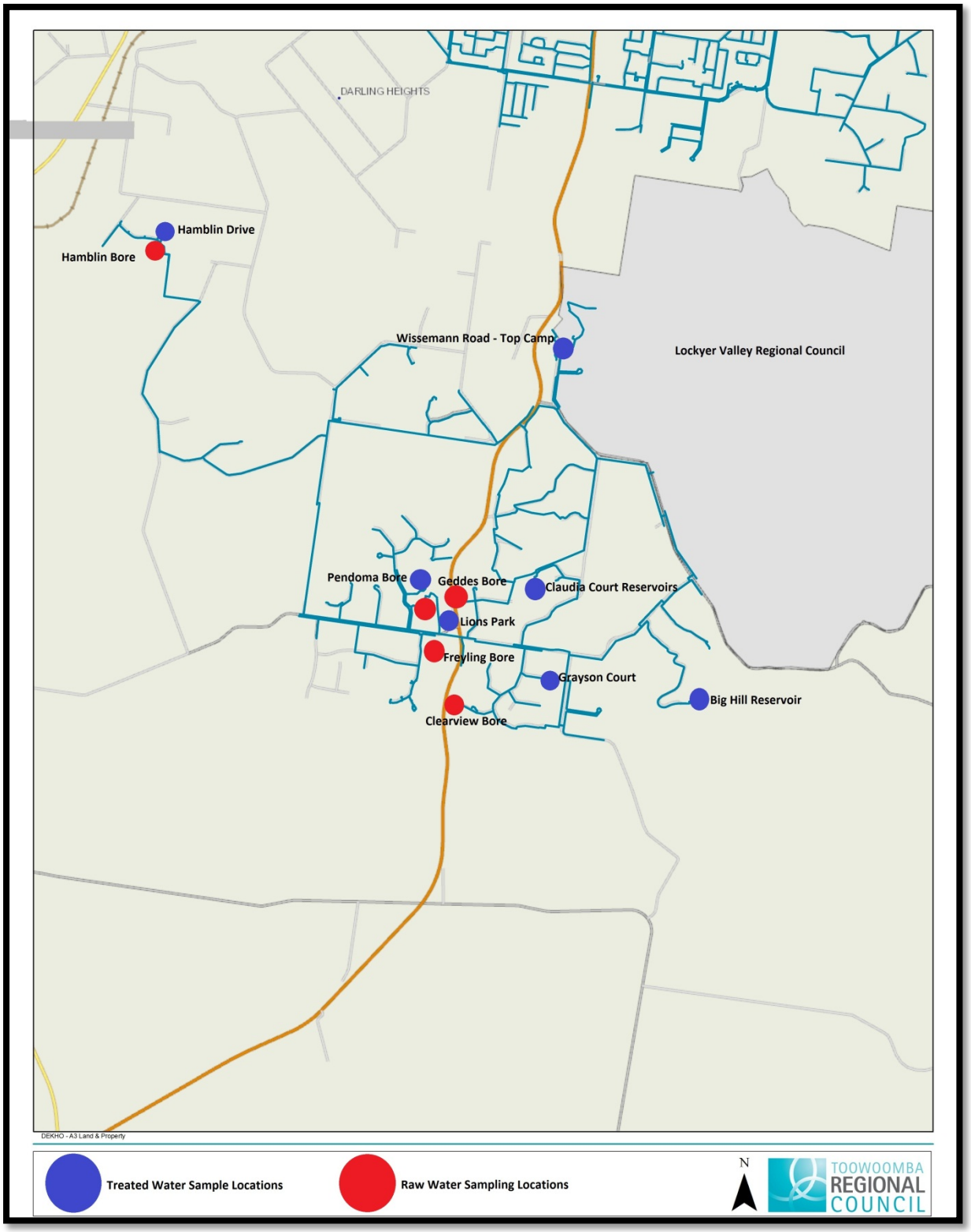
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Hodgson Vale	Raw Water Bores	Turbidity	
	Raw Water Bores	Microbiological	
	Raw Water Bores	Standard Chemical	
	Raw Water Bores	Herbicide and Pesticide	
	Raw Water Bores	Heavy Metals	
Hodgson Vale	Low level Reservoir	Turbidity	
	Low level Reservoir	Microbiological	
	Low level Reservoir	Standard Chemical	
	Low level Reservoir	Disinfection By-Products	
	Low level Reservoir	Herbicide and Pesticide	
	Low level Reservoir	Heavy Metals	
Hodgson Vale	Consumer Taps	Turbidity	
	Consumer Taps	Microbiological	
	Consumer Taps	Standard Chemical	
	Consumer Taps	Disinfection By-Products	
	Consumer Taps	Herbicide and Pesticide	
	Consumer Taps	Heavy Metals	

Table 2: Water Samples – Greenmount Operator Field Testing

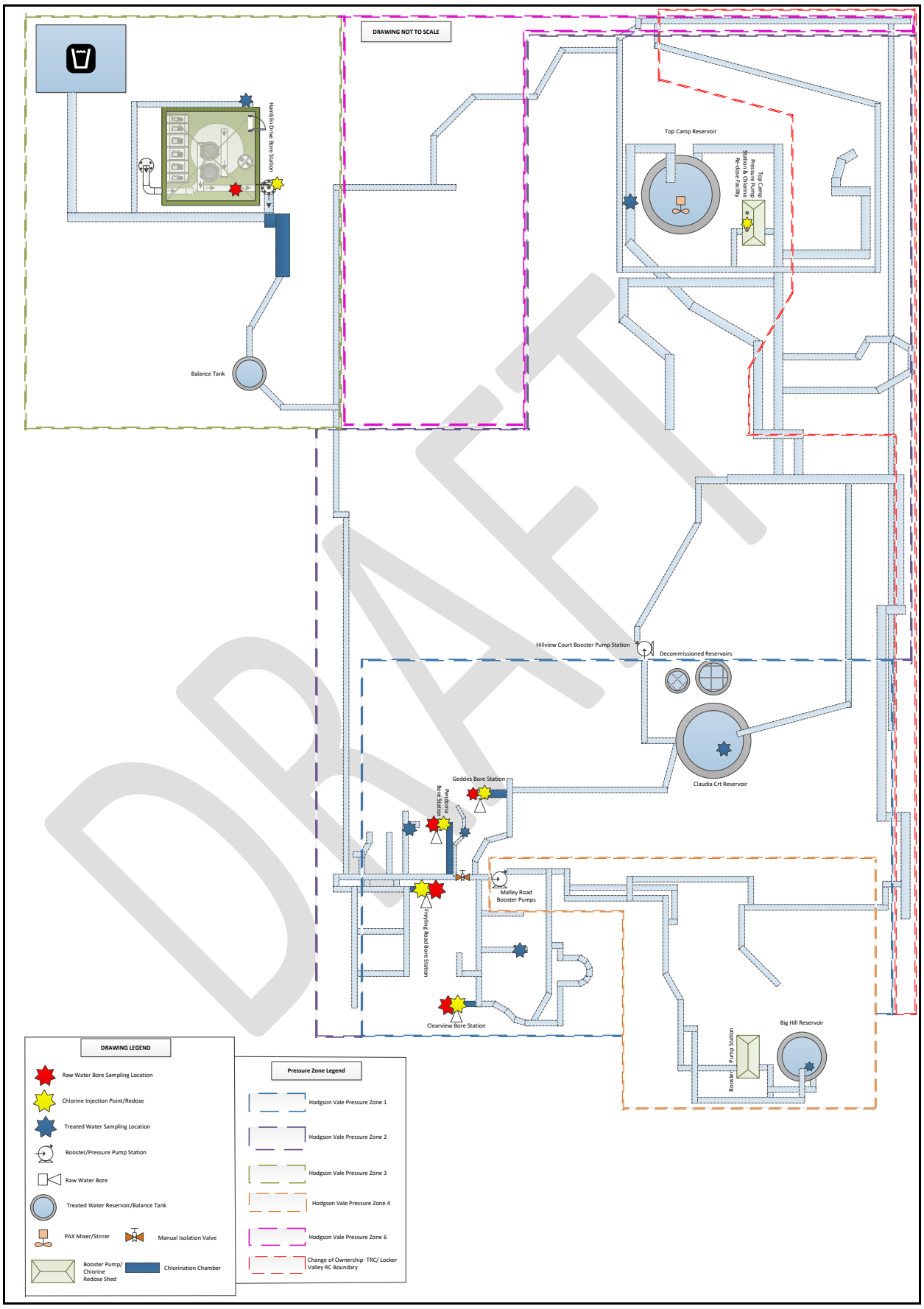
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Hodgson Vale	Raw Water Bores	Free Chlorine	2 x Weekly
Hodgson Vale	Consumer Taps	Free Chlorine	Weekly
Hodgson Vale	Low Level Reservoir	Free Chlorine	2 x Weekly

NOTE: Chlorine residuals to be record on QP-FRM-208 Greenmount Operators Chlorine Residual Record Sheet DM# 5164807

Hodgson Vale Reticulation Map



Hodgson Vale Drinking Water Supply Schematic



Appendix C

Pittsworth Water Sampling

Water Quality Sampling Task list

Table 1,2,3 and 4 are a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Brookstead	Hanlon Road	Bore 3		GRAB
Brookstead	Brookstead – Norwin Road	Bore 1		GRAB
Brookstead	Brookstead – Norwin Road	Blended Bores		GRAB
Yarranlea	Gore Highway	Bore 4 – Yarranlea (GAB)	YL1	GRAB
Pittsworth	Mt Mallard Low Level Reservoir	Cnr Mallard Road and Wattle Street	PIT1	GRAB
Southbrook	Gore Highway	Southbrook Low Level Reservoir		GRAB

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Brookstead	Madelaine Street	Brookstead Community Hall	BKS2	GRAB
Brookstead	Ware Street	Brookstead Park	BK1	GRAB
Pittsworth	Clifton Road	Pittsworth Works Depot	PIT2	GRAB
Pittsworth	Pioneer Way	Pioneer Village	PIT3	GRAB
Pittsworth	Hume Street	Lions Park	PIT4	GRAB
Pittsworth	Vines Street	Vine Street Chlorine Re-dose station		GRAB
Southbrook	Cnr Queen and John Streets	Community Hall	SBK1	GRAB

Table 3: Wastewater Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
				GRAB
				GRAB

Table 4: Water Treatment Plant Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID	SAMPLE TYPE	FREQUENCY
Yarranlea WTP	Gore Highway				

NOTE: Currently the Yarranlea Water Treatment Plant is still being commissioned. Once commissioning has occurred, operational staff will need to implement the sampling and analysis listed in table 4.

NOTE: Water Treatment Operator test results to be recorded on (document still in DRAFT)

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Brookstead	Raw Water Bores	Turbidity	
	Raw Water Bores	Microbiological	
	Raw Water Bores	Standard Chemical	
	Raw Water Bores	Herbicide and Pesticide	
	Raw Water Bores	Heavy Metals	
Brookstead	Consumer Taps	Turbidity	
	Consumer Taps	Microbiological	
	Consumer Taps	Standard Chemical	
	Consumer Taps	Disinfection By-Products	
	Consumer Taps	Herbicide and Pesticide	
	Consumer Taps	Heavy Metals	
Yarranlea	WTP	Turbidity	Weekly
	WTP	Microbiological	Weekly
	WTP	Standard Chemical	3 Monthly
	WTP	Disinfection By-Products	3 Monthly
	WTP	Herbicide and Pesticide	6 Monthly
	WTP	Heavy Metals	6 Monthly

Table 1: Water Samples – Laboratory Testing *(continued)*

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Yarranlea	Low Level Reservoir	Turbidity	
	Low Level Reservoir	Microbiological	
	Low Level Reservoir	Standard Chemical	
	Low Level Reservoir	Disinfection By-Products	
	Low Level Reservoir	Herbicide and Pesticide	
	Low Level Reservoir	Heavy Metals	
Pittsworth	Low Level Reservoir	Turbidity	
	Low Level Reservoir	Microbiological	
	Low Level Reservoir	Standard Chemical	
	Low Level Reservoir	Disinfection By-Products	
	Low Level Reservoir	Herbicide and Pesticide	
	Low Level Reservoir	Heavy Metals	
Pittsworth	Consumer Taps	Turbidity	
	Consumer Taps	Microbiological	
	Consumer Taps	Standard Chemical	
	Consumer Taps	Disinfection By-Products	
	Consumer Taps	Herbicide and Pesticide	
	Consumer Taps	Heavy Metals	

Table 1: Water Samples – Laboratory Testing *(continued)*

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Southbrook	Low Level Reservoir	Turbidity	
	Low Level Reservoir	Microbiological	
	Low Level Reservoir	Standard Chemical	
	Low Level Reservoir	Disinfection By-Products	
	Low Level Reservoir	Herbicide and Pesticide	
	Low Level Reservoir	Heavy Metals	
Southbrook	Consumer Taps	Turbidity	
	Consumer Taps	Microbiological	
	Consumer Taps	Standard Chemical	
	Consumer Taps	Disinfection By-Products	
	Consumer Taps	Herbicide and Pesticide	
	Consumer Taps	Heavy Metals	

Table 2: Water Samples – Pittsworth Operator Field Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Brookstead	Raw Water Blended Bores	Free Chlorine	2 x Weekly
Brookstead	Consumer Taps	Free Chlorine	Weekly
Yarranlea	WTP	Free Chlorine	Daily (5)
Yarranlea	WTP	Turbidity	Daily (5)
Yarranlea	WTP	Colour	Daily (5)
Yarranlea	WTP	Hardness	Daily (5)
Yarranlea	WTP	Alkalinity	Daily (5)
Yarranlea	Low Level Reservoir	Free chlorine	2 x Weekly
Pittsworth	Low Level Reservoir	Free Chlorine	2 x Weekly
Pittsworth		Free Chlorine	
Pittsworth	Consumer Taps	Free Chlorine	Weekly
Pittsworth	Re-Dose Station	Free Chlorine	2 x Weekly
Southbrook	Low Level Reservoir	Free Chlorine	2 x Weekly
Southbrook	Consumer Taps	Free Chlorine	Weekly

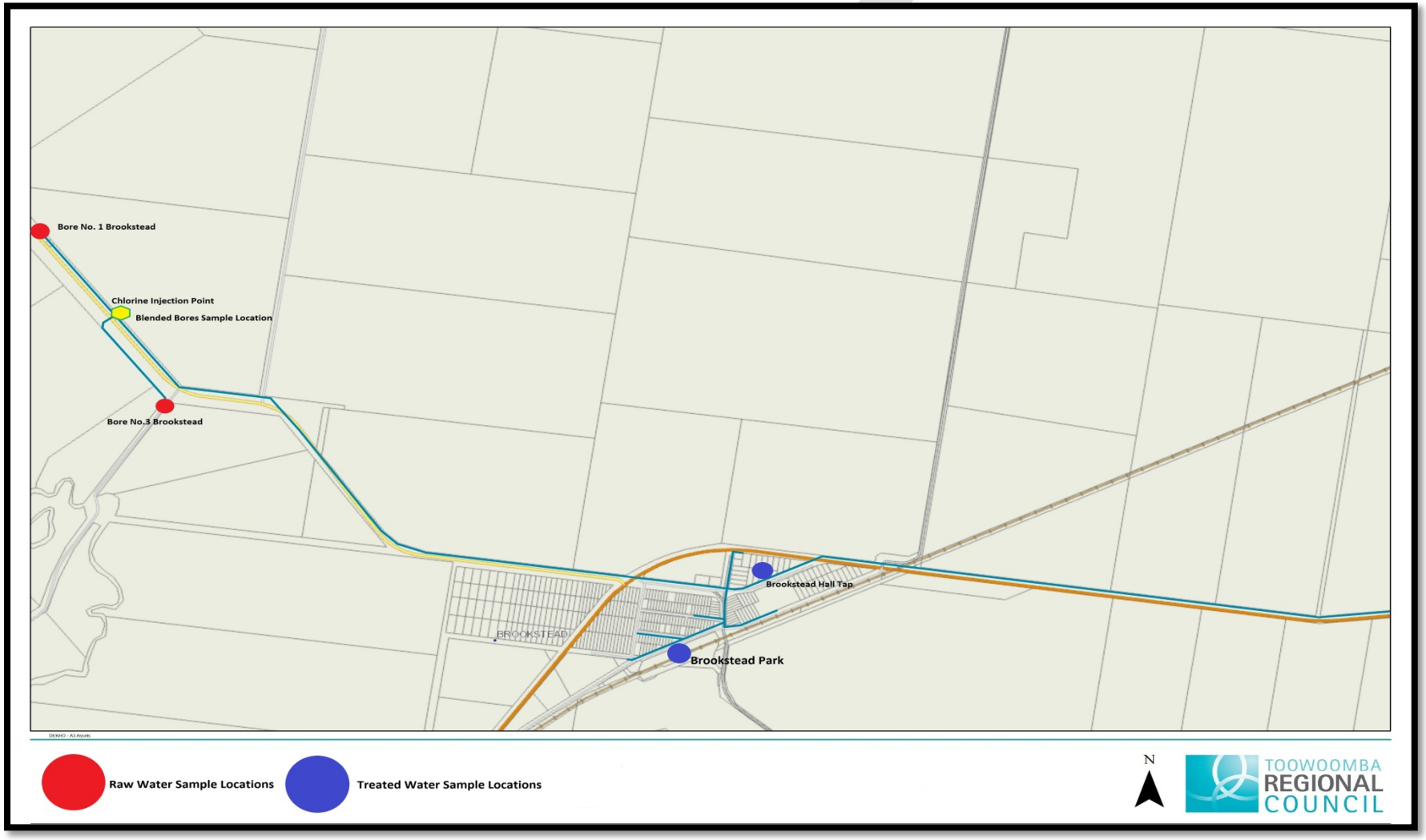
NOTE: Currently the Yarranlea Water Treatment Plant is still being commissioned. Once commissioning has occurred, operational staff will need to implement the sampling and analysis that is greyed out in the table above.

NOTE: Reticulation Chlorine residuals to be record on QP-FRM-220 Pittsworth Operators Chlorine Residual Record Sheet DM#5204615

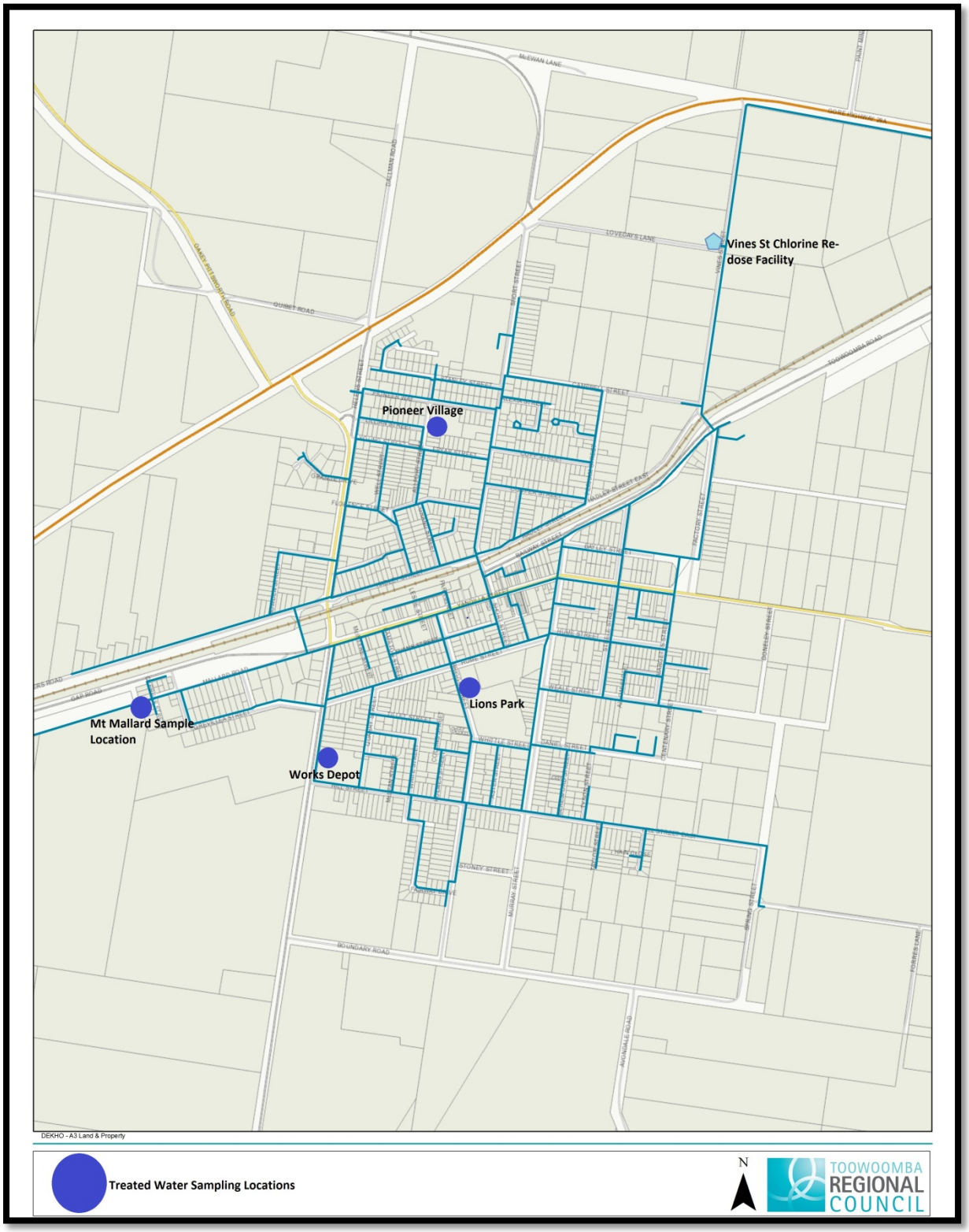
NOTE: Water Treatment Operator test results to be recorded on (document still in DRAFT)

Pittsworth Reticulation Map

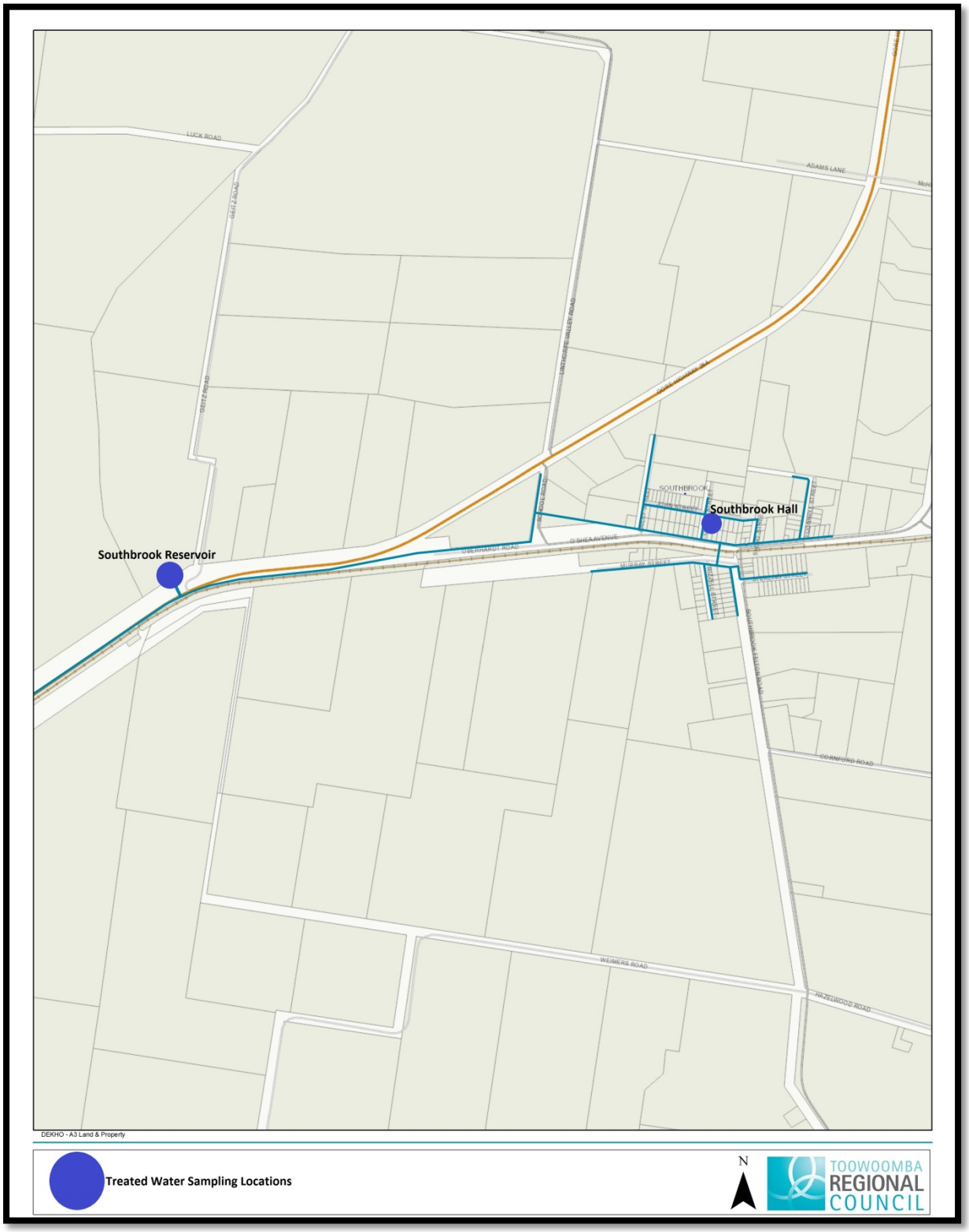
(Brookstead Map)



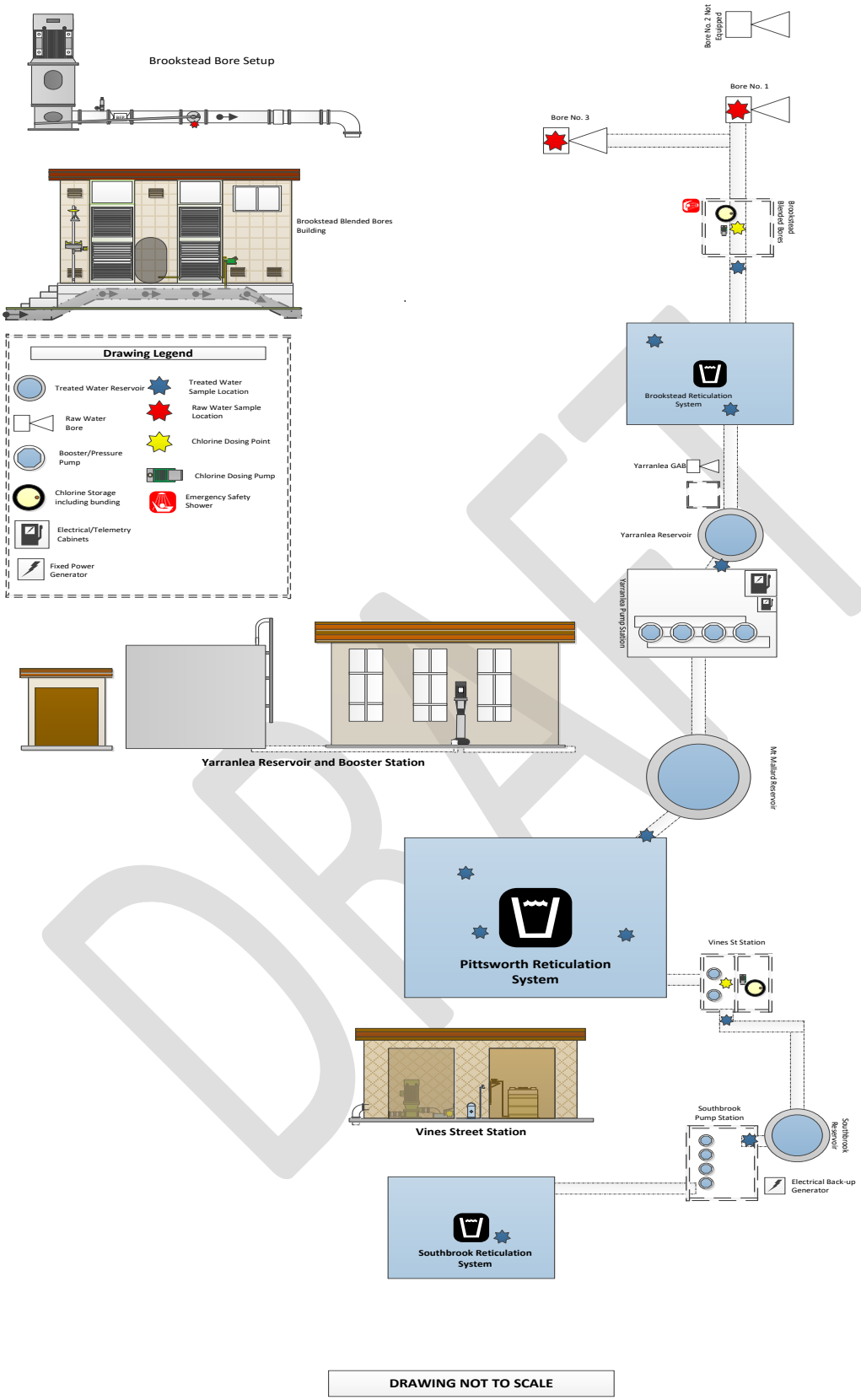
Pittsworth Reticulation Map



Southbrook Reticulation Map



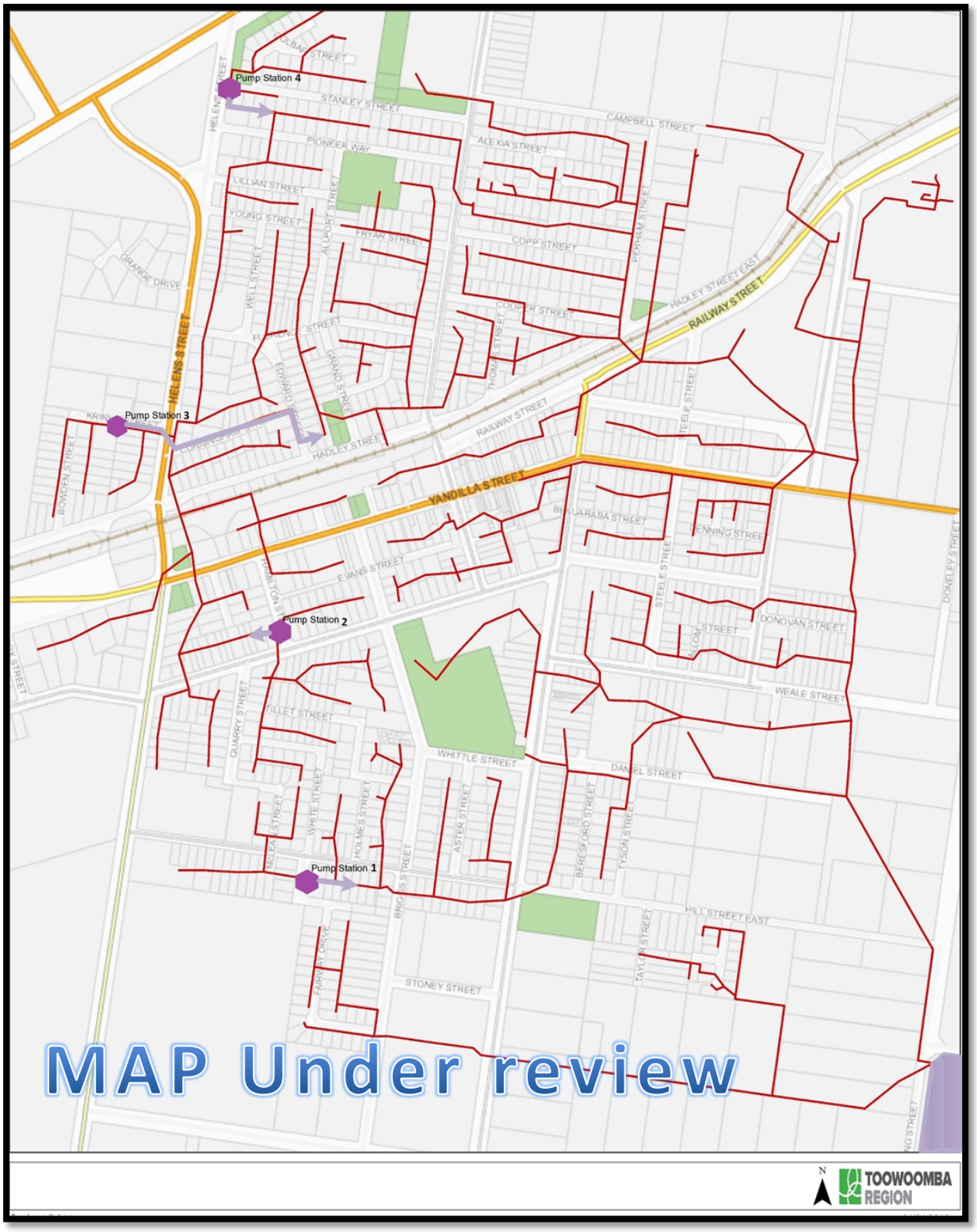
Pittsworth Drinking Water Supply Schematic



NOTE: Yarranlea WTP Schematic to be added once WTP has been commissioned and fully operational

Yarranlea Water Treatment Plant Schematic

Pittsworth Wastewater Map



Note:

Pittsworth Wastewater Map to be dated once new Wastewater Treatment Plant has been constructed, commissioned and operational.

NOTE: *A new waste Water Treatment Plant is being built to replace the existing plant (shown above), the new plant is to be completed by early 2016, at which time new map/schematic's/sample locations will be added to this manual*

Appendix D

Millmerran Water Sampling

Water Quality Sampling Task list

Table 1,2, and 3 are a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Pampas	Gore Highway	Bore 1A		GRAB
Pampas	Gore Highway	Bore 4		GRAB
Pampas	Gilgai Lane	Bore 5		GRAB
Pampas	Gilgai Lane	Bore 6		GRAB
Yandilla	Pfeffer Road	Bore 7 (GAB)		GRAB
Yandilla	Pfeffer Road	Bore 8 (GAB)		GRAB
Millmerran	Cnr Mary & Charles Streets	Low Level Reservoir	M1	GRAB

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Millmerran	Commens Street	Rendezvous Park	M2	GRAB
Millmerran	Campbell Street	Millmerran Cemetery	M3	GRAB
Millmerran	Ross Street	McGowan Park	M4	GRAB
Millmerran	Saleyards Road	Works Depot	M5	GRAB
Millmerran	Bligh Street	Works Depot	M6	GRAB
Millmerran	Debnams Road	Debnams Road	M7	GRAB
Millmerran	Factory Lane	Factory Dam Skate Park	M8	GRAB
Millmerran	Millmerran – Cecil Plains Road	Millmerran Show Grounds	M9	GRAB

Table 3: Wastewater Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
				GRAB
				GRAB

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Pampas	Raw Water Bores	Turbidity	
	Raw Water Bores	Microbiological	
	Raw Water Bores	Standard Chemical	
	Raw Water Bores	Herbicide and Pesticide	
	Raw Water Bores	Heavy Metals	
Yandilla	Raw Water Bores	Turbidity	
	Raw Water Bores	Microbiological	
	Raw Water Bores	Standard Chemical	
	Raw Water Bores	Herbicide and Pesticide	
	Raw Water Bores	Heavy Metals	
	Raw Water Bores	Iron and Manganese	
Millmerran	Low Level Reservoir	Turbidity	
	Low Level Reservoir	Microbiological	
	Low Level Reservoir	Standard Chemical	
	Low Level Reservoir	Disinfection By-Products	
	Low Level Reservoir	Herbicide and Pesticide	
	Low Level Reservoir	Heavy Metals	
	Low Level Reservoir	Iron and Manganese	

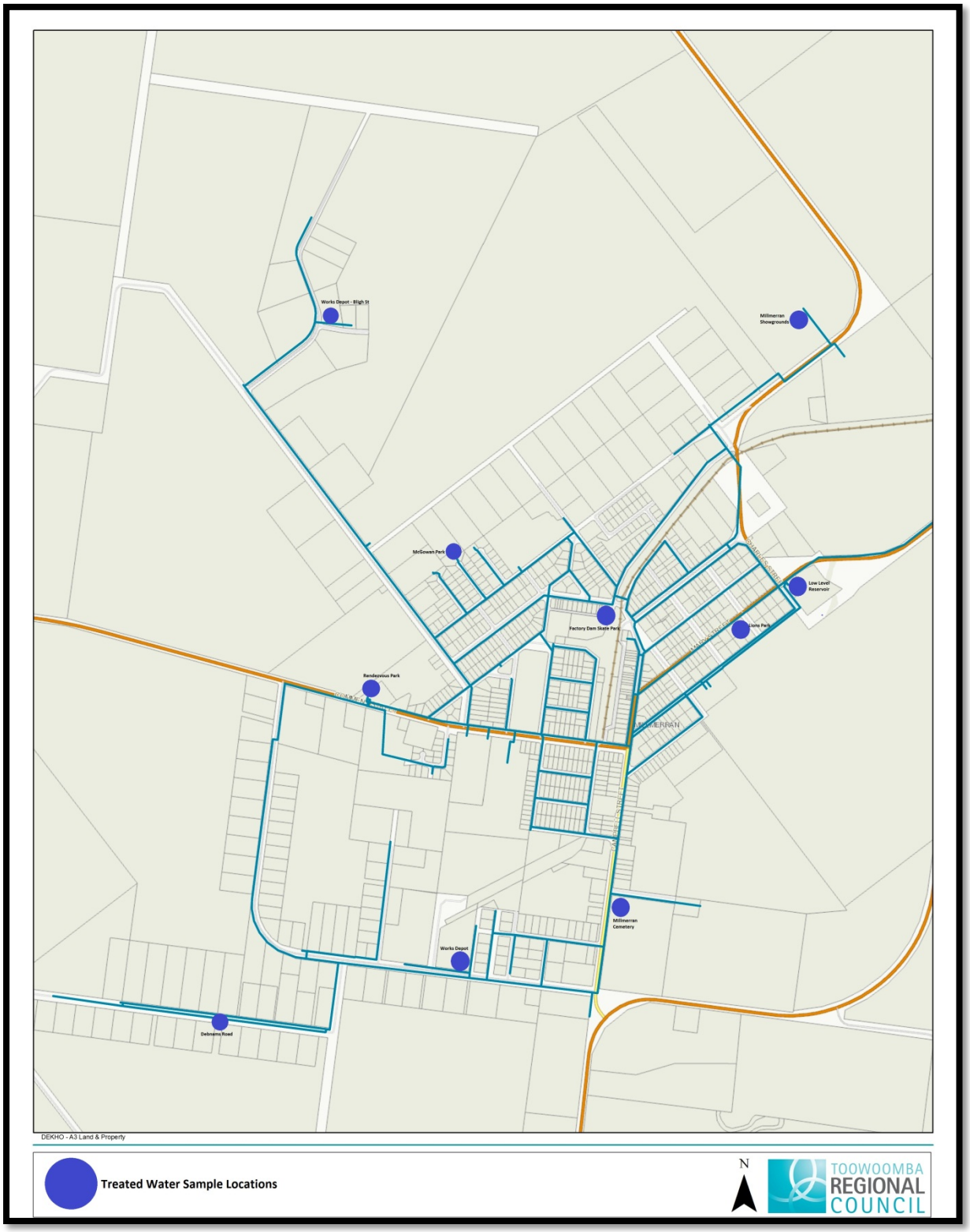
Millmerran	Elevated Reservoir	Turbidity	
	Elevated Reservoir	Microbiological	
	Elevated Reservoir	Standard Chemical	
	Elevated Reservoir	Disinfection By-Products	
	Elevated Reservoir	Herbicide and Pesticide	
	Elevated Reservoir	Heavy Metals	
Millmerran	Consumer Taps	Turbidity	
	Consumer Taps	Microbiological	
	Consumer Taps	Standard Chemical	
	Consumer Taps	Disinfection By-Products	
	Consumer Taps	Herbicide and Pesticide	
	Consumer Taps	Heavy Metals	

Table 2: Water Samples – Millmerran Operator Field Testing

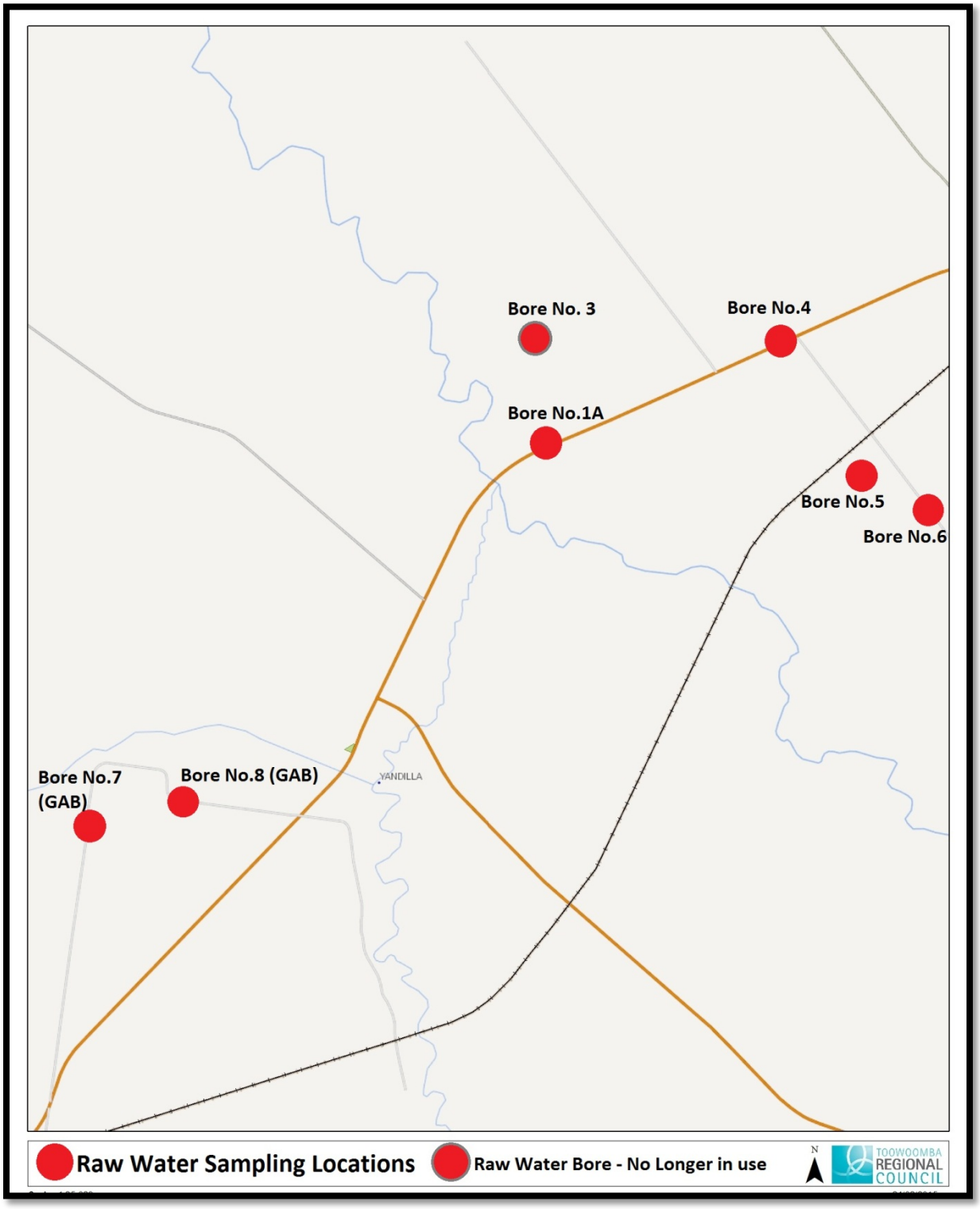
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Pampas	Raw Water Bore No.7	Free Chlorine	2 x Weekly
Pampas	Raw Water Bore No.8	Free Chlorine	2 x Weekly
Millmerran	Consumer Taps	Free Chlorine	Weekly
Millmerran	Low Level Reservoir	Free Chlorine	2 x Weekly
Millmerran	Elevated Reservoir	Free Chlorine	2 x Weekly

NOTE: Reticulation Chlorine residuals to be record on QP-FRM-216 Millmerran Operators Chlorine Residual Record Sheet DM#5175753

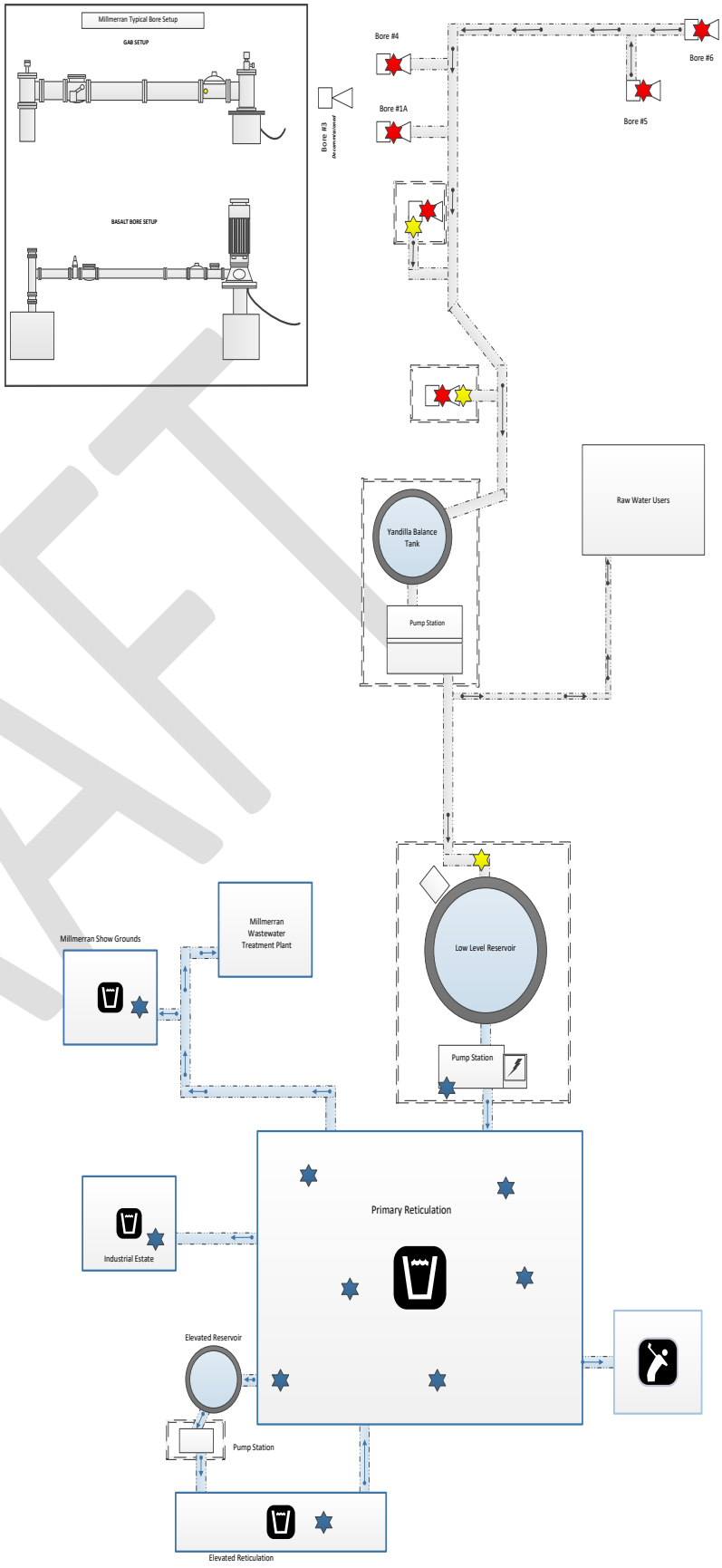
Millmerran Reticulation Map



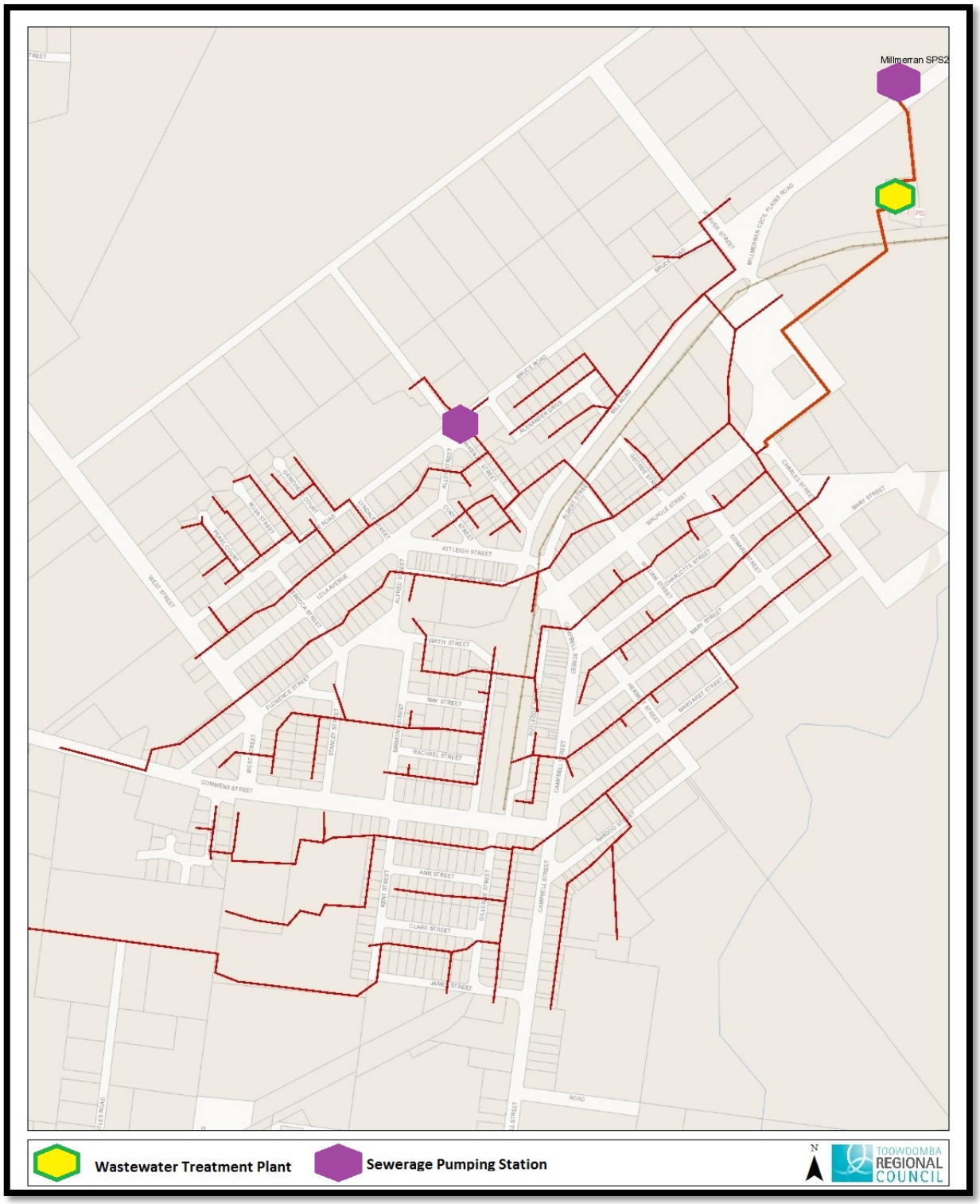
Millmerran Raw Water Map



Millmerran Reticulation Schematic



Millmerran Wastewater Map



Cecil Plains Water Sampling

Water Quality Sampling Task list

Table 1,2,3 and 4 are a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Cecil Plains	Weir Road	Raw Water – Cecil Plains Weir		GRAB
Cecil Plains	Weir Road	Raw Water – Cecil Plains Bore (GAB)		GRAB
Cecil Plains	Weir Road	Cecil Plains Water Treatment Plant		GRAB
Cecil Plains	Weir Road	Cecil Plains Clear Water Storage		GRAB
Cecil Plains	Weir Road	Cecil Plains Bore Water Storage		GRAB
Cecil Plains	Weir Road	Cecil Plains Blended Water	CP1	GRAB
Cecil Plains	Weir Road	Cecil Plains Elevated Reservoir		GRAB

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Cecil Plains	Taylor Street	Henry Stuart Russell Park	CP2	GRAB
Cecil Plains	Russell Avenue	Cecil Plains Community Hall	CP3	GRAB
Cecil Plains	Cheetham Street	Sewerage Pump Station	CP4	GRAB
Cecil Plains	Taylor Street	Garden	CP5	GRAB

Table 3: Wastewater Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
				GRAB
				GRAB

Table 4: Water Treatment Plant Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID	SAMPLE TYPE	FREQUENCY
Cecil Plains	WTP	Raw Water – Turbidity		GRAB	Daily(5)
Cecil Plains	WTP			Online	Continuous
Cecil Plains	WTP	Raw Water – pH		GRAB	Daily(5)
Cecil Plains	WTP	Raw Water – Hardness		GRAB	Daily(5)
Cecil Plains	WTP	Raw Water – Alkalinity		GRAB	Daily(5)
Cecil Plains	WTP	Raw Water – Colour		GRAB	Daily(5)
Cecil Plains	WTP	Treated Water – Turbidity		GRAB	Daily(5)
Cecil Plains	WTP	Treated Water – Turbidity		Online	Continuous
Cecil Plains	WTP	Treated Water – Free Chlorine		GRAB	Daily(5)
Cecil Plains	WTP	Treated Water – Free Chlorine		Online	Continuous
Cecil Plains	WTP	Treated Water – pH		GRAB	Daily(5)
Cecil Plains	WTP	Treated Water – Hardness		GRAB	Daily(5)
Cecil Plains	WTP	Treated Water – Alkalinity		GRAB	Daily(5)
Cecil Plains	WTP	Treated Water Colour		GRAB	Daily(5)

NOTE: Water Treatment Operator test results to be recorded on Cecil Plains Water Treatment Plant Daily Operator Log QP-FRM-218 DM#5175914

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Cecil Plains	Cecil Plains Weir	Turbidity	
	Cecil Plains Weir	Microbiological	
	Cecil Plains Weir	Standard Chemical	
	Cecil Plains Weir	Herbicide and Pesticide	
	Cecil Plains Weir	Heavy Metals	
Cecil Plains	Raw Water Bore	Turbidity	
	Raw Water Bore	Microbiological	
	Raw Water Bore	Standard Chemical	
	Raw Water Bore	Herbicide and Pesticide	
	Raw Water Bore	Heavy Metals	
Cecil Plains	WTP	Turbidity	
	WTP	Microbiological	
	WTP	Standard Chemical	
	WTP	Disinfection By-Products	
	WTP	Herbicide and Pesticide	
	WTP	Heavy Metals	
	WTP	Iron and Manganese	

Table 1: Water Samples – Laboratory Testing *(continued)*

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Cecil Plains	Blended Water	Turbidity	
	Blended Water	Microbiological	
	Blended Water	Standard Chemical	
	Blended Water	Disinfection By-Products	
	Blended Water	Herbicide and Pesticide	
	Blended Water	Heavy Metals	
	Blended Water	Iron and Manganese	
	Blended Water	Aluminium,	
Cecil Plains	Elevated Reservoir	Turbidity	
	Elevated Reservoir	Microbiological	
	Elevated Reservoir	Standard Chemical	
	Elevated Reservoir	Disinfection By-Products	
	Elevated Reservoir	Herbicide and Pesticide	
	Elevated Reservoir	Heavy Metals	
Cecil Plains	Consumer Taps	Turbidity	
	Consumer Taps	Microbiological	
	Consumer Taps	Standard Chemical	
	Consumer Taps	Disinfection By-Products	
	Consumer Taps	Herbicide and Pesticide	
	Consumer Taps	Heavy Metals	
	Consumer Taps	Iron and Manganese	
	Consumer Taps	Aluminium,	

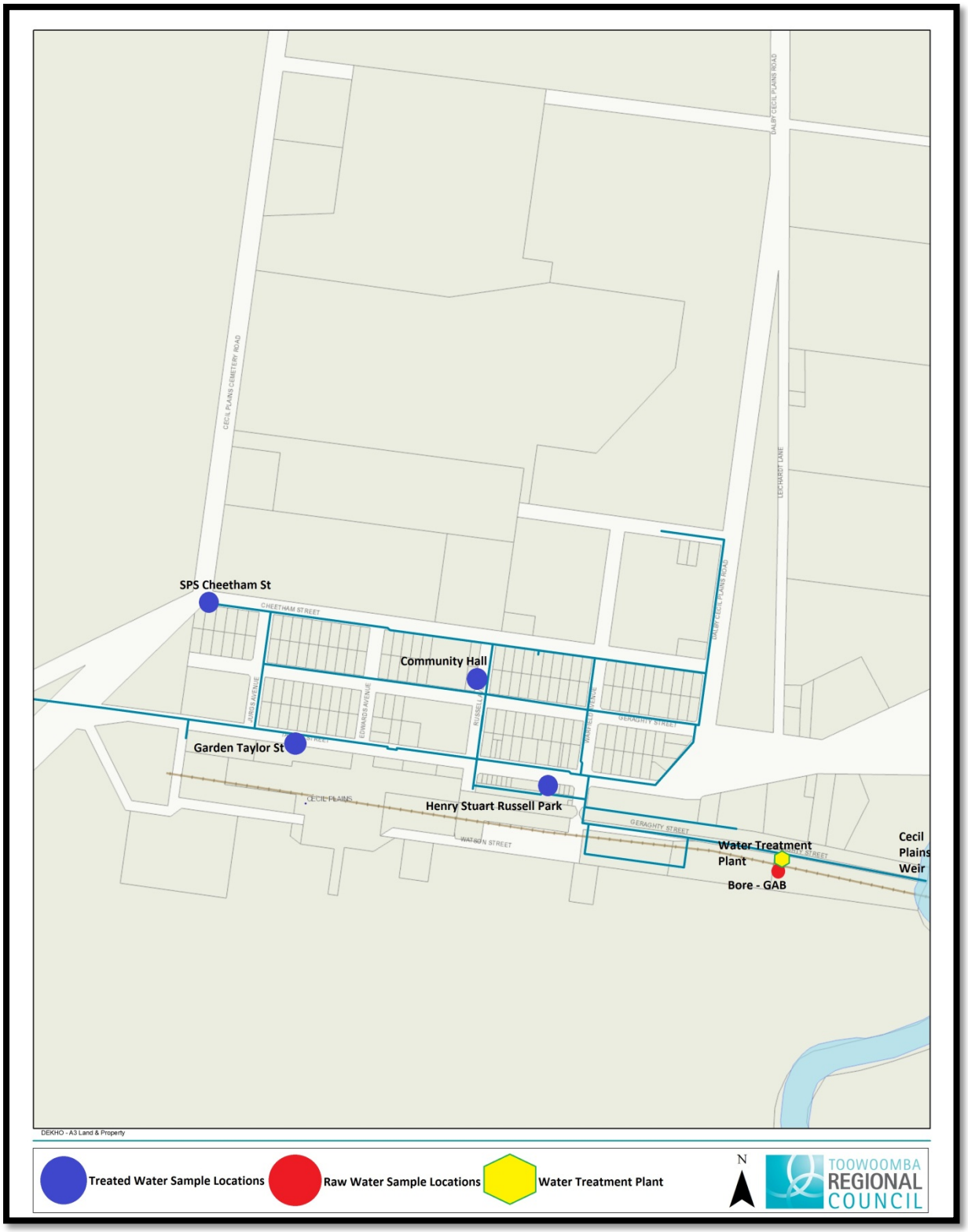
Table 2: Water Samples – Cecil Plains Operator Field Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Cecil Plains	Cecil Plains Weir	Turbidity	Daily(5)
Cecil Plains	Raw Water Bore	Turbidity	Daily(5)
Cecil Plains	WTP	Free Chlorine	Daily(5)
Cecil Plains	WTP	Turbidity	Daily(5)
Cecil Plains	WTP	Colour	Daily(5)
Cecil Plains	WTP	Hardness	Daily(5)
Cecil Plains	WTP	Alkalinity	Daily(5)
Cecil Plains	Blended Water	Free Chlorine	Daily(5)
Cecil Plains	Elevated Reservoir	Free Chlorine	2 x Weekly
Cecil Plains	Consumer Taps	Free Chlorine	Weekly

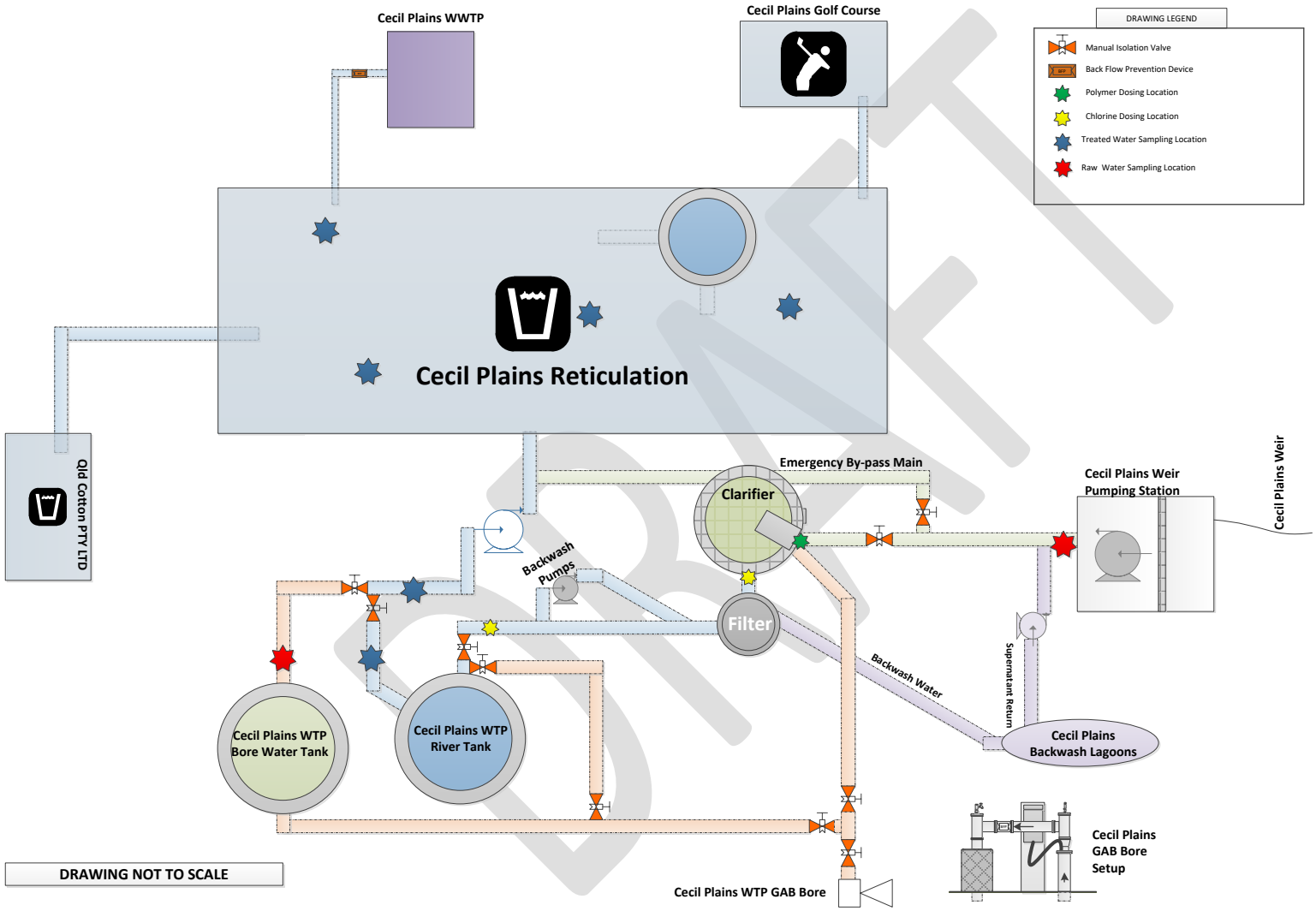
NOTE: Reticulation Chlorine residuals to be record on QP-FRM-215 Cecil Plains Operators Chlorine Residual Record Sheet DM#5175752

NOTE: Water Treatment Plant Operator Field testing to be recorded on Cecil Plains Water Treatment Plant Operator Log QP-FRM-218 DM#5175914

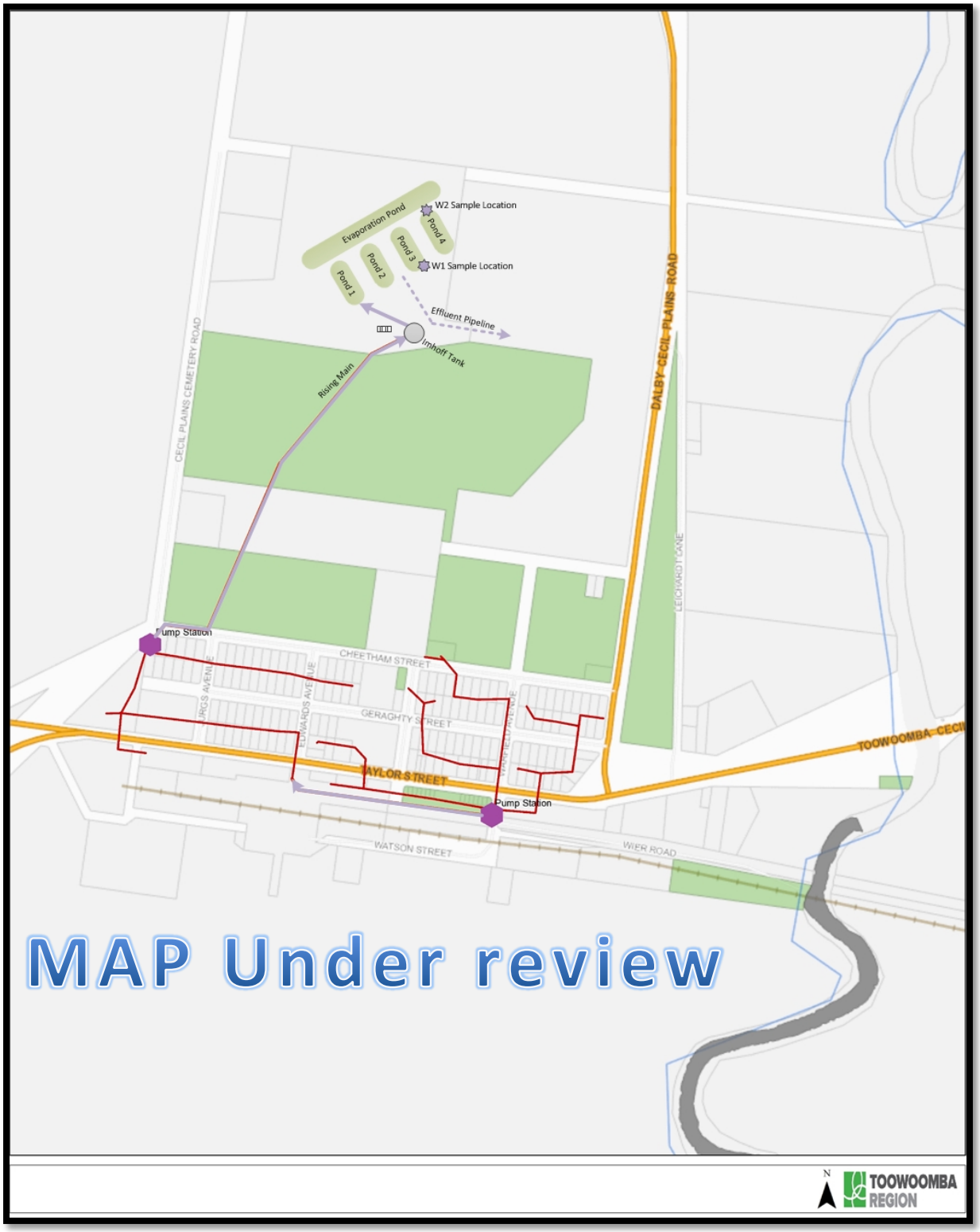
Cecil Plains Reticulation Map



Cecil Plains Reticulation Schematic



Cecil Plains Wastewater Map



Appendix F

Pechey Water Sampling

Water Quality Sampling Task list

Table 1,2, and 3 are a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Pechey	Grapetree Road	Raw Water	CN01	GRAB
Pechey	Grapetree Road	Pechey Water Treatment Plant	CN10	GRAB
Pechey	Grapetree Road	Pechey Clearwater Tank	CN11	GRAB
Pechey	Grapetree Road	Treated Water	CN02	GRAB

Table 2: Water Samples – Consumer Taps

Refer to Crows Nest and Hampton Reticulation Schemes for details

Table 3: Water Treatment Plant Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID	SAMPLE TYPE	FREQUENCY
Pechey	WTP	Raw Water – Turbidity		GRAB	Daily(5)
Pechey	WTP	Raw Water – Turbidity		Online	Continuous
Pechey	WTP	Raw Water – pH		GRAB	Daily(5)
Pechey	WTP	Raw Water – Hardness		GRAB	Daily(5)
Pechey	WTP	Raw Water Alkalinity		GRAB	Daily(5)
Pechey	WTP	Raw Water Colour		GRAB	Daily(5)
Pechey	WTP	Treated Water turbidity		GRAB	Daily(5)
Pechey	WTP	Treated Water Turbidity		Online	Continuous
Pechey	WTP	Treated Water Free Chlorine		GRAB	Daily(5)
Pechey	WTP	Treated Water Free Chlorine		Online	Continuous
Pechey	WTP	Treated Water pH		GRAB	Daily(5)
Pechey	WTP	Treated Water Hardness		GRAB	Daily(5)
Pechey	WTP	Treated Water Alkalinity		GRAB	Daily(5)
Pechey	WTP	Treated Water Colour		GRAB	Daily(5)

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Pechey	WTP Raw Water	Turbidity	
	WTP Raw Water	Microbiological	
	WTP Raw Water	Standard Chemical	
	WTP Raw Water	Herbicide and Pesticide	
	WTP Raw Water	Heavy Metals	
Pechey	WTP	Microbiological	
	WTP	Aluminium	
	WTP	Iron and Manganese	
	WTP	Standard Chemical	
	WTP	Disinfection By-products	
	WTP	Herbicide and Pesticide	
	WTP	Heavy Metals	

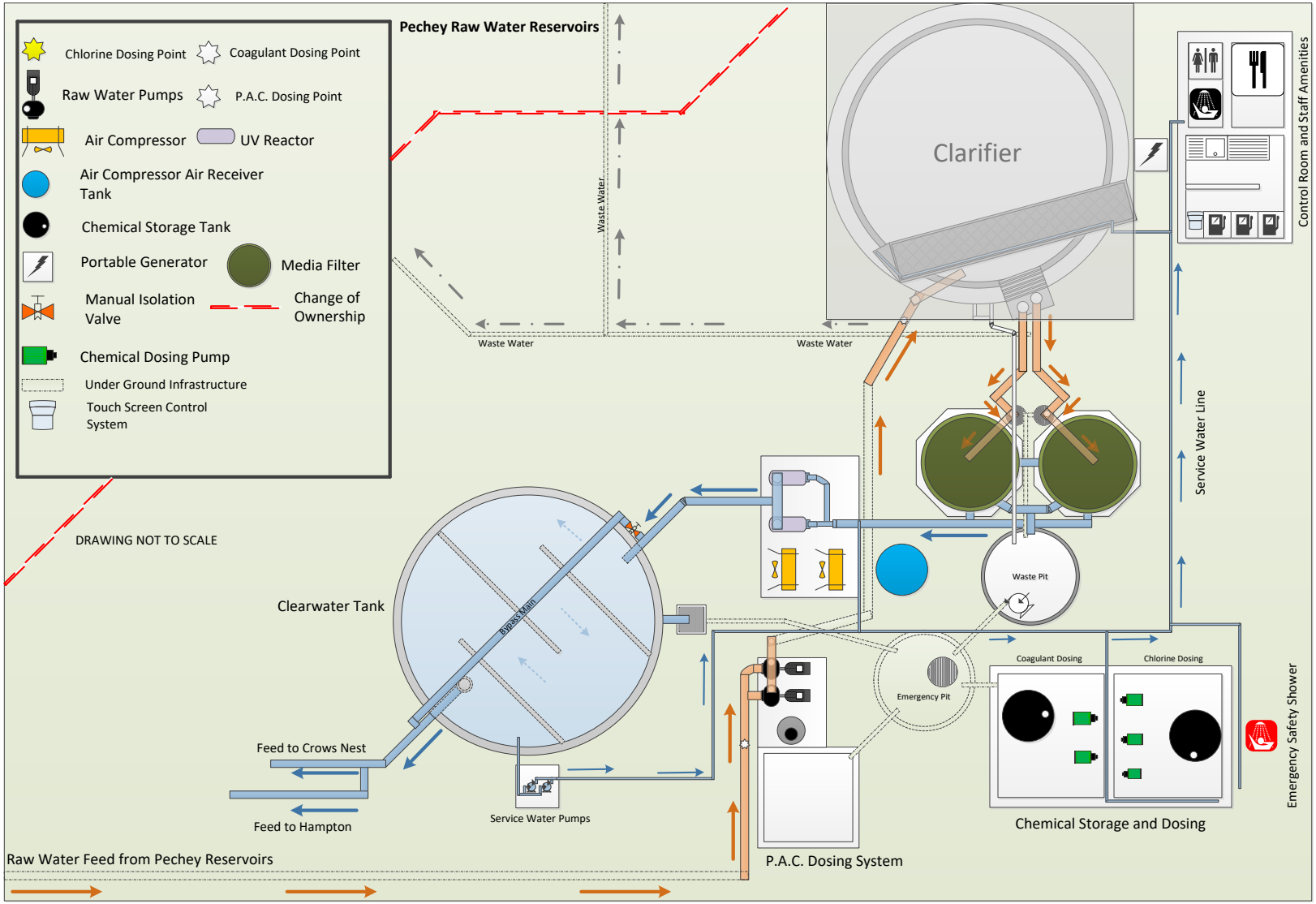
Table 2: Water Samples – Northern Operations Field Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Pechey	WTP Raw Water	Turbidity	Daily(5)
Pechey	WTP Raw Water	Colour	Daily(5)
Pechey	WTP Raw Water	Hardness	Daily(5)
Pechey	WTP Raw Water	Alkalinity	Daily(5)
Pechey	WTP Raw Water	pH	Daily(5)
Pechey	WTP Treated Water	Free Chlorine	Daily(5)
Pechey	WTP Treated Water	Turbidity	Daily(5)
Pechey	WTP Treated Water	Colour	Daily(5)
Pechey	WTP Treated Water	Hardness	Daily(5)
Pechey	WTP Treated Water	Alkalinity	Daily(5)

NOTE: Reticulation Chlorine residuals to be record on QP-FRM-256 Northern Operations Monthly Turbidity and Free chlorine Record Sheet DM#6260536

NOTE: Water Treatment Plant Operator testing to be recorded on Pechey Water Treatment Plant Operation Log DM#6317513

Pechey WTP Schematic



Crows Nest Water Sampling

Water Quality Sampling Task list

Table 1,2, and 3 are a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Crows Nest	Tower Park Court	Low Level Reservoir	CN03	GRAB
Crows Nest	Woodlea Court	Low Level Reservoir	CN05	GRAB

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Crows Nest	Toowoomba Road	Bullocky's Rest	CN04	GRAB
Crows Nest	Thallon Street	Crows Nest Cricket Oval	CN06	GRAB
Crows Nest	Olsen Street	Sewerage Pump Station 5	CN07	GRAB
Crows Nest	Andrews Road	Crows Nest Golf Course	CN08	GRAB
Crows Nest	John Street	Crows Nest TRC Works Depot	CN08	GRAB
Crows Nest		Sewerage Pump Station 4	CN09	GRAB
Crows Nest	Timber Street	S.E.S. Depot	CN07	GRAB
Crows Nest	Pierces Creek Road	Pierces Creek Booster Pump Station		GRAB
Crows Nest	New England Highway	Crows Nest Show Grounds		GRAB

The consumer taps highlighted grey above has been reviewed. These sample locations were constantly (daily) failing to achieve a free chlorine residual unless the sampling tap is run for over an hour. Operational and Branch Support Staff reviewed sample locations and have now in the process of changing these sample locations to more suitable sample locations that provide a more accurate sample results, with minimal water wastage.

NOTE: The highlighted areas to remain in grey until next review takes place, after review has been approved, highlighted areas to be removed.

Table 3: Wastewater Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
				GRAB

NOTE: Reticulation Chlorine residuals to be record on QP-FRM-256 Northern Operations Monthly Turbidity and Free chlorine Record Sheet DM#6260536

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY.

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Crows Nest	Low Level Reservoir	Microbiological	
	Low Level Reservoir	Aluminium	
	Low Level Reservoir	Iron and Manganese	
	Low Level Reservoir	Standard Chemical	
	Low Level Reservoir	Disinfection By-Products	
	Low Level Reservoir	Herbicide and Pesticide	
	Low Level Reservoir	Heavy Metals	
Crows Nest	Consumer Taps	Microbiological	
	Consumer Taps	Aluminium	
	Consumer Taps	Iron and Manganese	
	Consumer Taps	Standard Chemical	
	Consumer Taps	Disinfection By-Products	
	Consumer Taps	Herbicide and Pesticide	

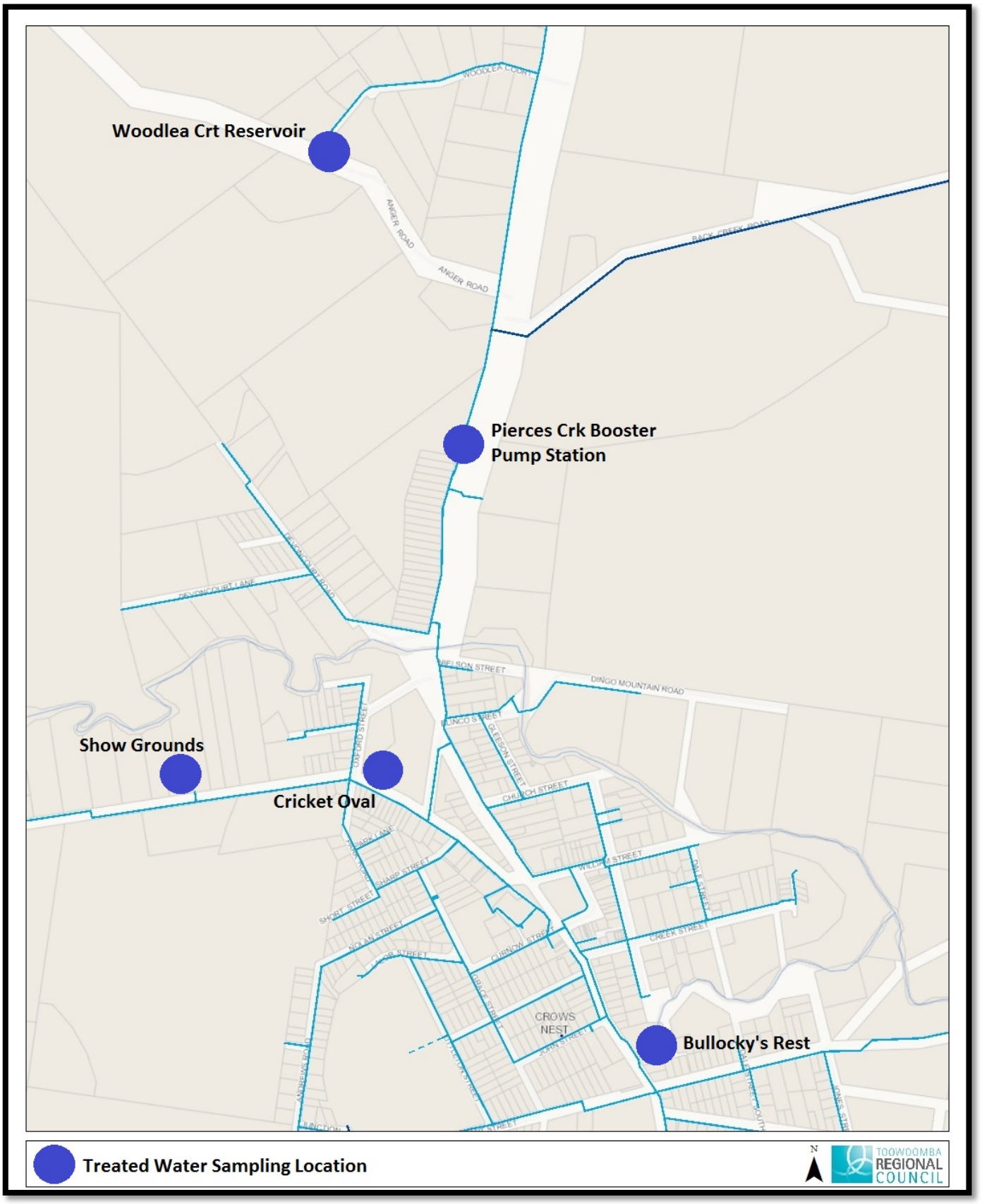
	Consumer Taps	Heavy Metals	

Table 2: Water Samples – Northern Operations Field Testing

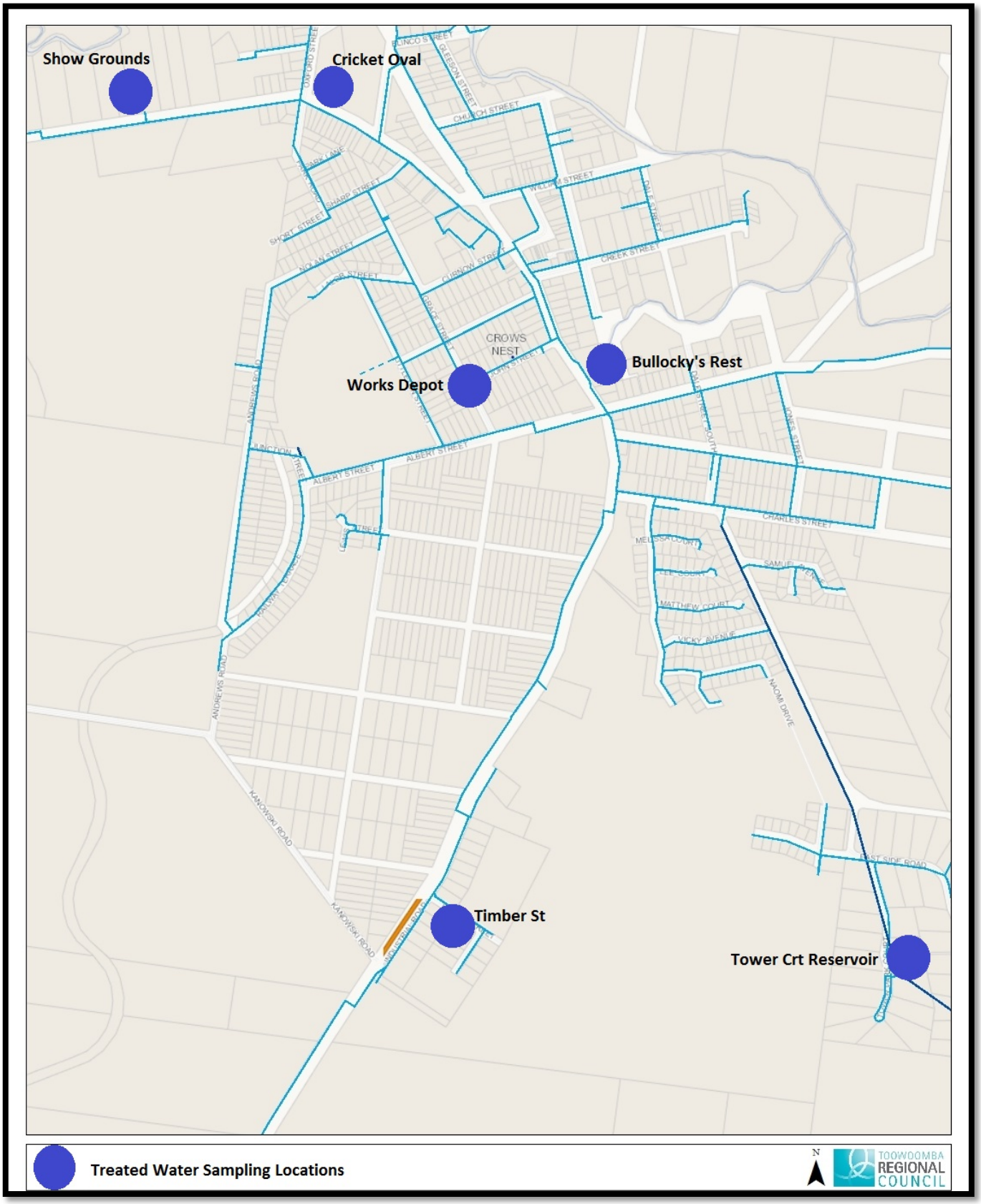
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Crows Nest	Low Level Reservoir	Free Chlorine	2 x Weekly
Crows Nest	Consumer Taps	Free Chlorine	Weekly

NOTE: Reticulation Chlorine residuals to be record on QP-FRM-256 Northern Operations Monthly Turbidity and Free chlorine Record Sheet DM#6260536

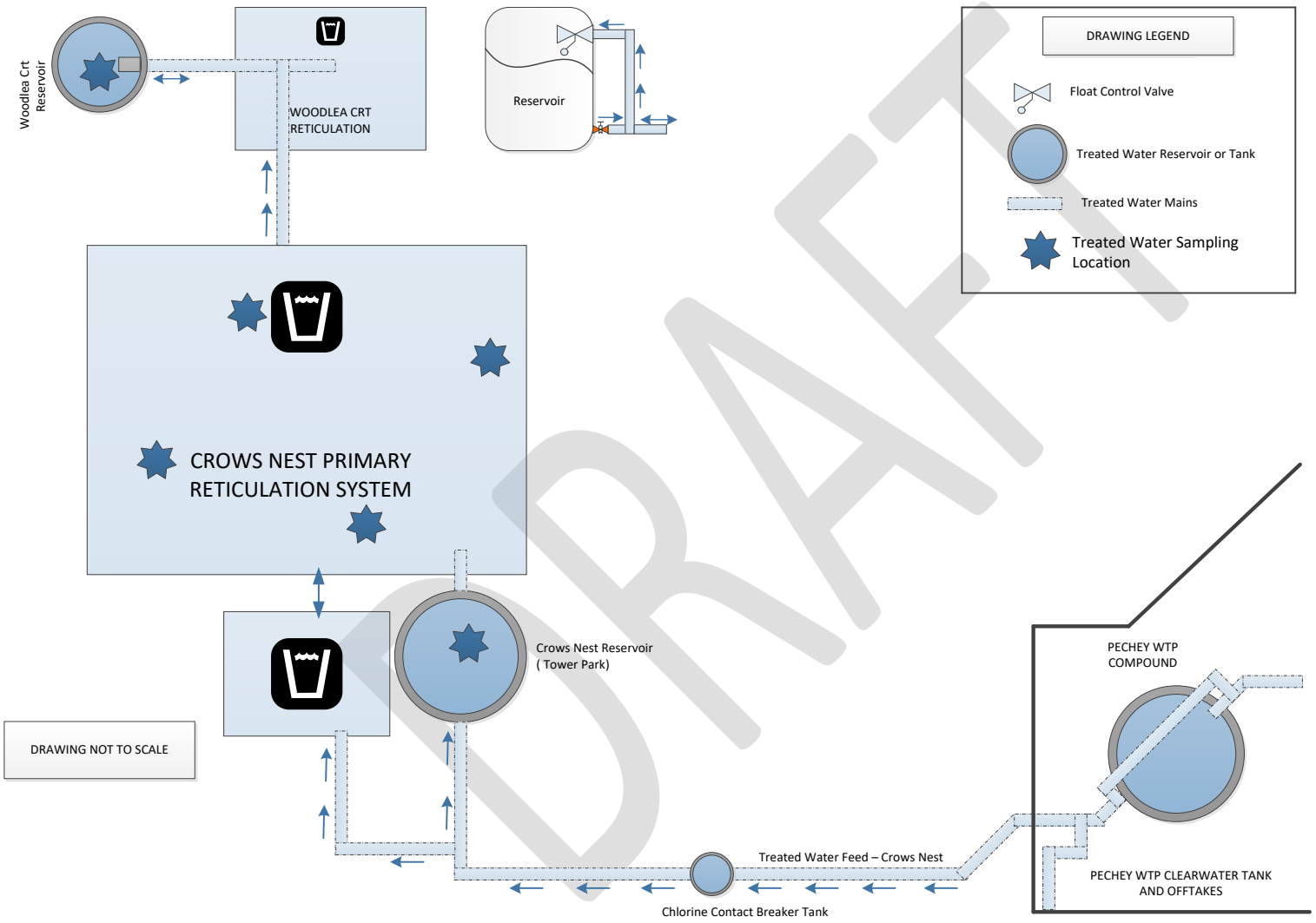
Crows Nest Reticulation Map



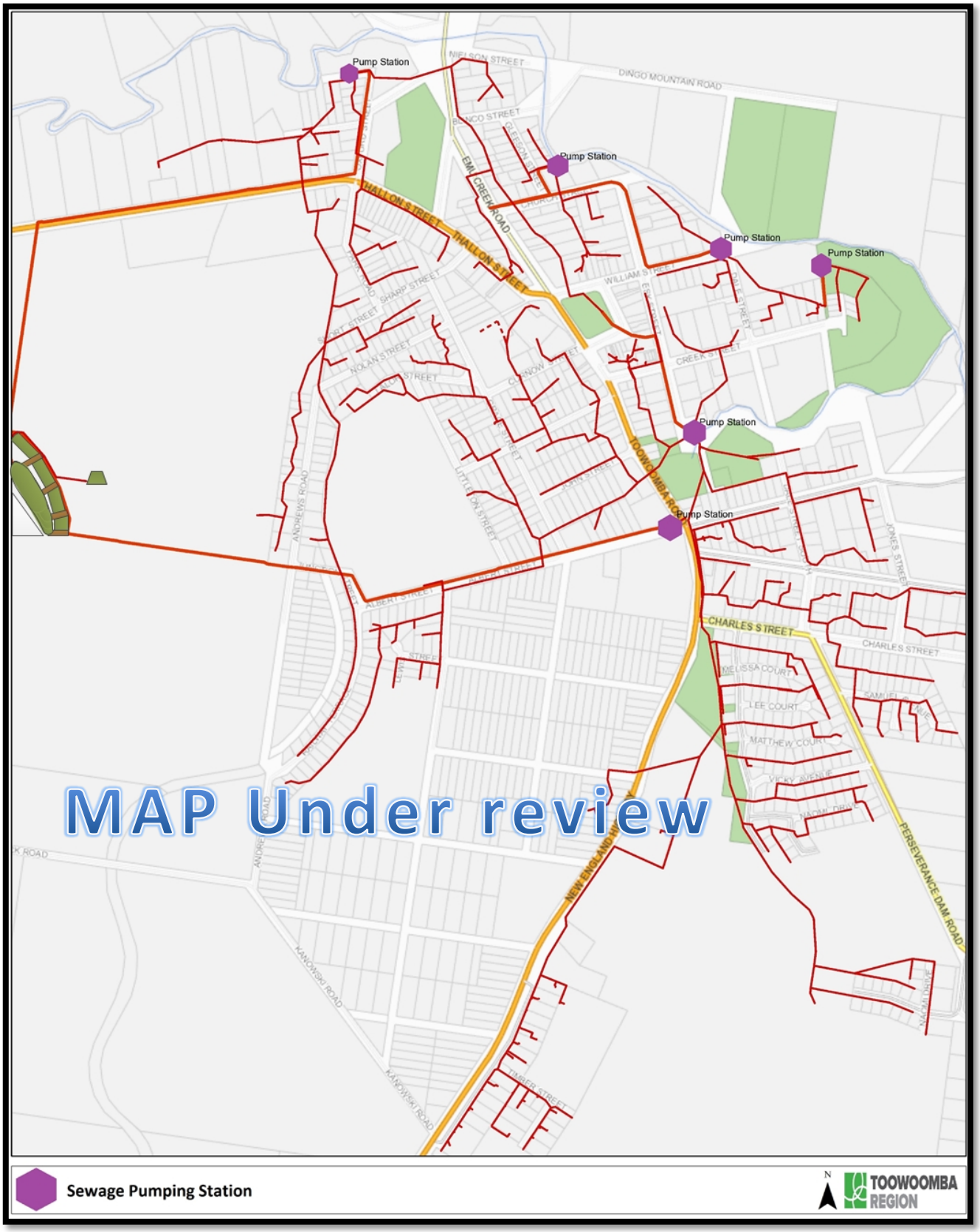
Crows Nest Reticulation Map



Crows Nest Schematic



Crows Nest Wastewater Map



Hampton Water Sampling

Water Quality Sampling Task list

Table 1 and 2 are a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Hampton	Access via New England Highway	Low Level Reservoir	HAM03	GRAB

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Hampton	New England Hwy	Chapman Park	HAM02	GRAB
Hampton	Cnr Wilkies & McMullen Road	Consumer Tap	HAM04	GRAB
Hampton	CNR Brennan and Hampton Roads	Consumer Tap *(Old WTP Site)*	HAM01	GRAB

NOTE: Reticulation Chlorine residuals to be record on QP-FRM-256 Northern Operations Monthly Turbidity and Free chlorine Record Sheet DM#6260536

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Hampton	Low Level Reservoir	Microbiological	
	Low Level Reservoir	Aluminium	
	Low Level Reservoir	Iron and Manganese	
	Low Level Reservoir	Standard Chemical	
	Low Level Reservoir	Disinfection By-Products	
	Low Level Reservoir	Herbicide and Pesticide	
	Low Level Reservoir	Heavy Metals	
Hampton	Consumer Taps	Microbiological	
	Consumer Taps	Aluminium	
	Consumer Taps	Iron and Manganese	
	Consumer Taps	Standard Chemical	
	Consumer Taps	Disinfection By-Products	
	Consumer Taps	Herbicide and Pesticide	
	Consumer Taps	Heavy Metals	

Table 2: Water Samples – Northern Operations Field Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Hampton	Low Level Reservoir	Free Chlorine	2 x Weekly
Hampton	Consumer Taps	Free Chlorine	Weekly

NOTE: Reticulation Chlorine residuals to be record on QP-FRM-256 Northern Operations Monthly Turbidity and Free chlorine Record Sheet DM#6260536

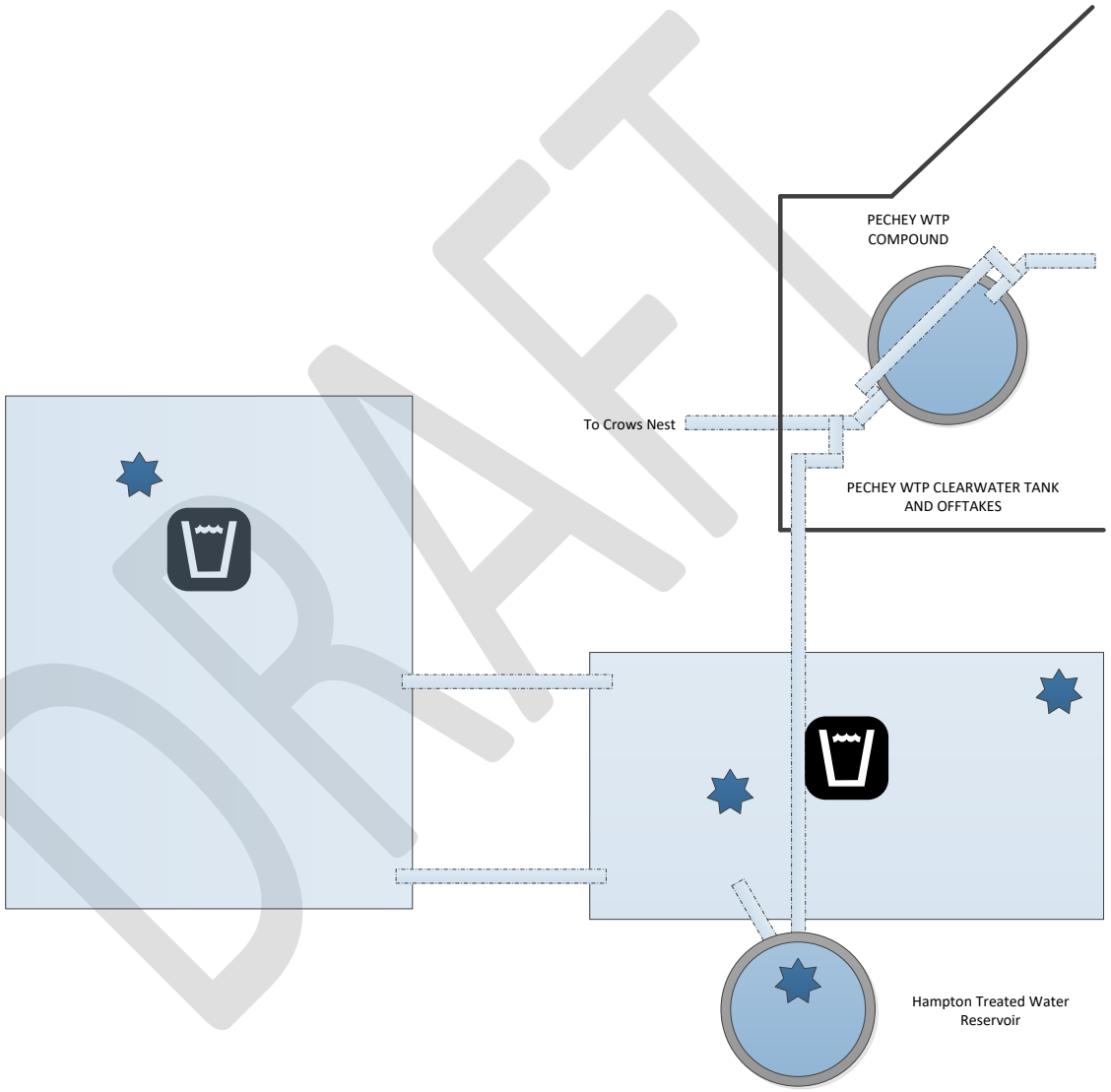
Hampton Reticulation Map

Hampton Schematic

DRAWING NOT TO SCALE

Treated Water Sampling Location

Treated Water Reservoir/Clearwater Tank



Perseverance Water Treatment Plant Sampling

Water Quality Sampling Task list

Table 1, 2, and 3 are a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Perseverance	Raw Water	Perseverance WTP	PER02	GRAB
Perseverance	Treated Water	Perseverance WTP	PER01	GRAB
Perseverance	Filtered Water	Perseverance WTP	PER04	GRAB

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Perseverance	Perseverance Recreational Lodge		PER03	GRAB
Perseverance	Toilet Block Perseverance Park	Public Toilet Block Perseverance Park	PER06	GRAB

Table 3: Water Treatment Plant Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID	SAMPLE TYPE	FREQUENCY
Perseverance	WTP	Raw Water – Turbidity		GRAB	2 x Weekly
Perseverance	WTP	Raw Water – Turbidity		Online	Continuous
Perseverance	WTP	Raw Water – pH		GRAB	Weekly
Perseverance	WTP	Raw Water – Hardness		GRAB	Weekly
Perseverance	WTP	Raw Water – Alkalinity		GRAB	Weekly
Perseverance	WTP	Raw Water – Colour		GRAB	Weekly
Perseverance	WTP	Treated Water – Turbidity		GRAB	2 x Weekly
Perseverance	WTP	Treated Water – Turbidity		GRAB	Continuous
Perseverance	WTP	Treated Water – Free Chlorine		GRAB	2 x Weekly
Perseverance	WTP	Treated Water – Free Chlorine		Online	Continuous
Perseverance	WTP	Treated Water – pH		GRAB	Weekly
Perseverance	WTP	Treated Water – Hardness		GRAB	Weekly
Perseverance	WTP	Treated Water – Alkalinity		GRAB	Weekly
Perseverance	WTP	Treated Water – Colour		GRAB	Weekly

Note: Currently staff at the Perseverance WTP do not have the facilities to test for some parameters. These parameters have been highlighted grey in the previous tables. Once the Pechey Water Treatment Plant is fully commissioned and operations have purchased the required equipment, operational should be able to then test these parameters at the Pechey Water Treatment Plant using the correct equipment.

Until then Water Operations Northern Operations will rely on Toowoomba Regional Council Laboratory Services testing and analysis for these Parameters.

NOTE: Water Treatment Plant Operator Field testing to recorded on QP-FRM-248 Perseverance Water Treatment Plant Daily Operator Log DM#5788654

NOTE: Chlorine residuals to be record on QP-FRM-256 Northern Operations Monthly Turbidity and Free Chlorine Record Sheet DM#6260536

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Perseverance	Perseverance WTP Raw Water	Turbidity	
	Perseverance WTP Raw Water	Microbiological	
	Perseverance WTP Raw Water	Standard Chemical	
	Perseverance WTP Raw Water	Herbicide and Pesticide	
	Perseverance WTP Raw Water	Heavy Metals	
Perseverance	WTP	Microbiological	
	WTP	Aluminium	
	WTP	Iron and Manganese	
	WTP	Standard Chemical	
	WTP	Disinfection By-Products	
	WTP	Herbicide and Pesticide	
	WTP	Heavy Metals	
Perseverance	Consumer Taps	Microbiological	
	Consumer Taps	Aluminium	
	Consumer Taps	Iron and Manganese	
	Consumer Taps	Standard Chemical	
	Consumer Taps	Disinfection By-Products	
	Consumer Taps	Herbicide and Pesticide	
	Consumer Taps	Heavy Metals	

Table 2: Water Samples – Northern Operations Field Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Perseverance	Perseverance WTP Raw Water	Turbidity	2 x Weekly
Perseverance	Perseverance WTP Raw Water	Colour	See Note Below
Perseverance	Perseverance WTP Raw Water	Hardness	See Note Below
Perseverance	Perseverance WTP Raw Water	Alkalinity	See Note Below
Perseverance	Perseverance WTP Raw Water	pH	See Note Below
Perseverance	WTP	Free Chlorine	Minimum Twice Weekly
Perseverance	WTP	Turbidity	2 x Weekly
Perseverance	WTP	Colour	See Note Below
Perseverance	WTP	Hardness	See Note Below
Perseverance	WTP	Alkalinity	See Note Below
Perseverance	WTP Treated Water	Free Chlorine	Minimum Twice Weekly
Perseverance	Consumer Taps	Free Chlorine	Weekly

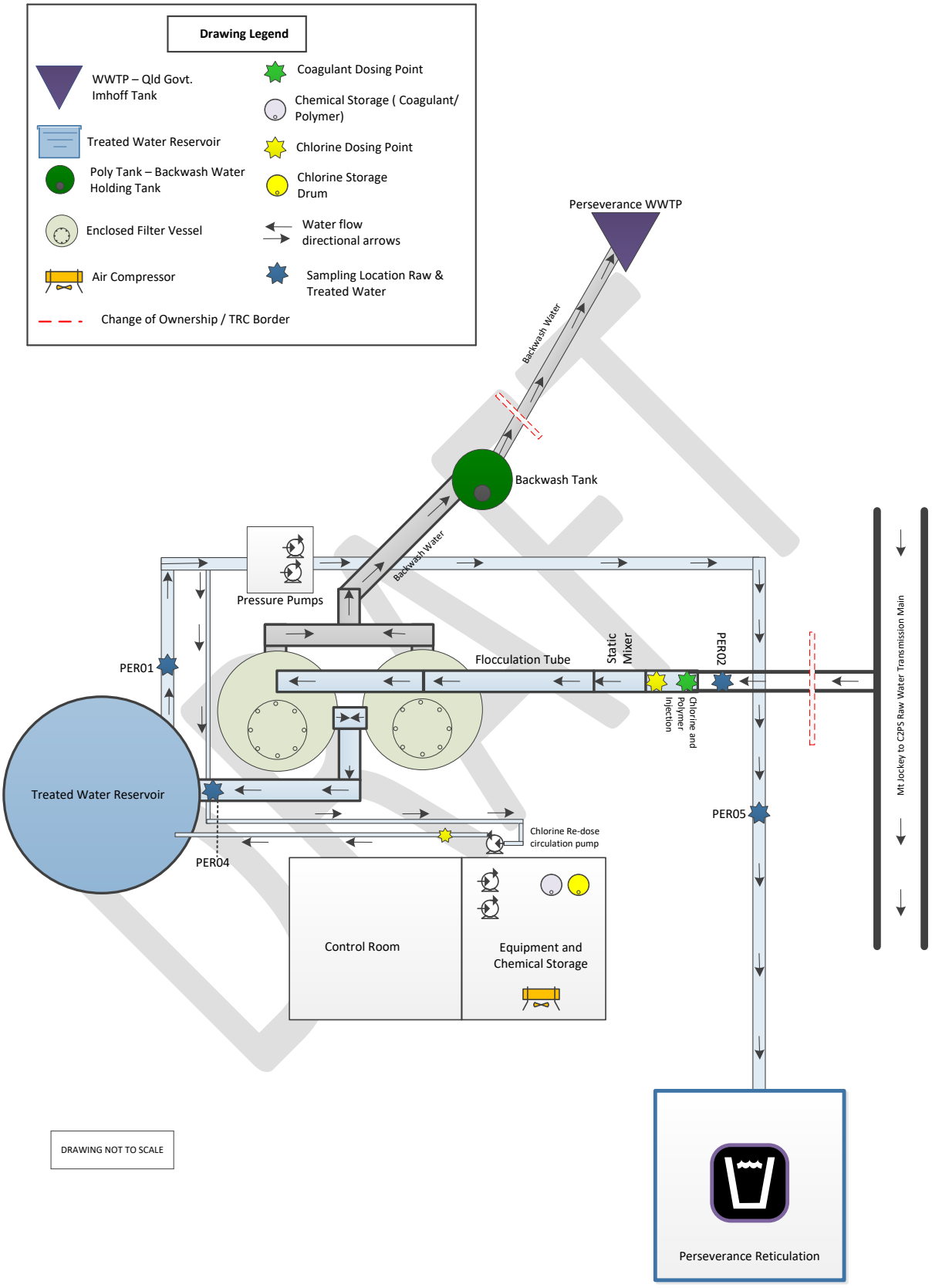
NOTE: Currently staff at the Perseverance WTP do not have the facilities to test for some parameters. These parameters have been highlighted grey in the previous tables. Once the Pechey Water Treatment Plant is fully commissioned and operations have purchased the required equipment, operational staff should be able to then test these parameters at the Pechey Water Treatment Plant using the correct equipment.

Until then Water Operations Northern Operations will rely on Toowoomba Regional Council Laboratory Services testing and analysis for these parameters.

NOTE: Reticulation Chlorine residuals to be record on QP-FRM-256 Northern Operations Monthly Turbidity and Free chlorine Record Sheet DM#6260536

Perseverance Reticulation Map

Perseverance WTP Schematic



Highfields Water Sampling

Water Quality Sampling Task list

Table 1, 2 and 3 are a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Highfields	Borghardt Road	Borghardt Road Reservoir	HF01	GRAB

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Highfields	Borghardt Road	Works Depot	HF02	GRAB
Meringandan East	Main Street, Behind the Toilet Block	Ted Franke Park	HF03	GRAB
Cabarlah	New England Hwy	Cabarlah Park	HF05	GRAB
Cabarlah	Happy Valley Road	Happy Valley Road	HF06	GRAB
Highfields	Anderson Court	SPS 3	HF07	GRAB
Highfields	Polzin Street	SPS 7	HF08	GRAB
Highfields	Highgrove Road	SPS 11	HF09	GRAB
Highfields	Plaza Circle	Plaza Circle Park	HF10	GRAB
Cawdor	Beaumont Avenue	Consumer Tap	HF11	GRAB
Highfields	Angus Street	Les Steinberg Park	HF12	GRAB
Highfields	Parkway Drive	Consumer Tap	HF13	GRAB
Highfields	Travean Drive	Trevean Park	HF14	GRAB
Highfields	MacQueen Park		HF15	GRAB
Highfields	Orange Grove Road	Michael Park	HF16	GRAB
Highfields	Cnr Kuhls & Clarke Road	Kuhls Oval	HF17	GRAB
Highfields	Polzin Road	Clara May Smythe Park	HF18	GRAB

NOTE:

SPS 11 (situated at Highgrove Road), is to be decommissioned in 2016. Highfields reticulation system is currently under review as population growth has increased in the 2years. Operational and

Branch Support Staff are reviewing sample locations as well as new developments for possible new sampling locations. These sampling locations to be added to sampling manual and sampling schedule once appropriate sampling sites have been located. Areas highlighted in grey are to stay in manual until next review, when once approved will be removed.

Table 3: Wastewater Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
				GRAB
				GRAB

NOTE: Reticulation Chlorine residuals to be record on QP-FRM-256 Northern Operations Monthly Turbidity and Free chlorine Record Sheet DM#6260536

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Highfields	Low Level Reservoir	Microbiological	
Highfields	Low Level Reservoir	Aluminium	
Highfields	Low Level Reservoir	Iron and Manganese	
Highfields	Low Level Reservoir	Standard Chemical	
Highfields	Low Level Reservoir	Disinfection By-Products	
Highfields	Low Level Reservoir	Herbicide and Pesticide	
Highfields	Low Level Reservoir	Heavy Metals	
Highfields	Consumer Taps	Microbiological	
Highfields	Consumer Taps	Aluminium	
Highfields	Consumer Taps	Iron and Manganese	
Highfields	Consumer Taps	Standard Chemical	
Highfields	Consumer Taps	Fluoride	
Highfields	Consumer Taps	Disinfection By-Products	
Highfields	Consumer Taps	Herbicide and Pesticide	
Highfields	Consumer Taps	Heavy Metals	

Table 1: Water Samples – Laboratory Testing *(continued from previous page)*

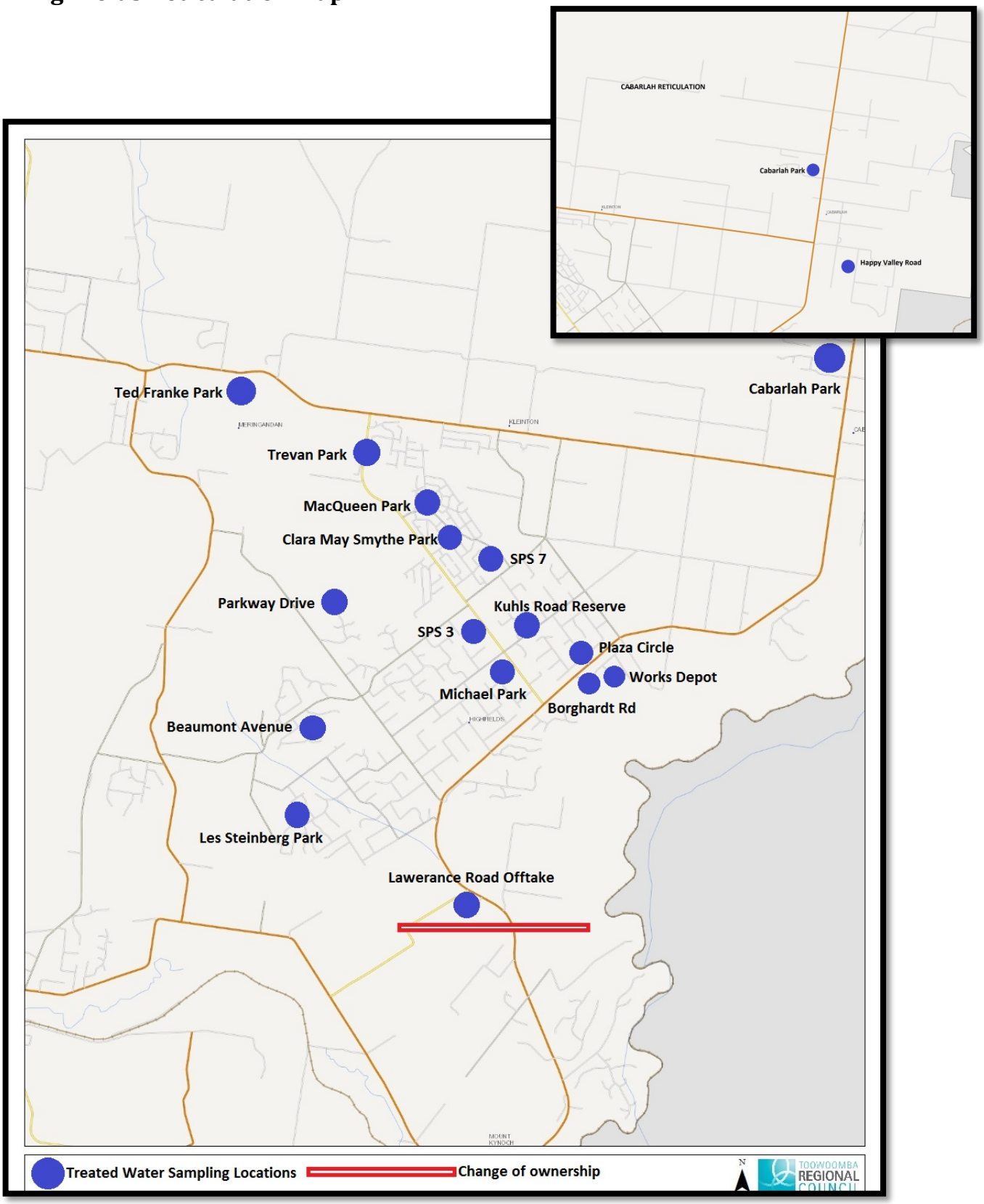
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Meringandan East	Consumer Taps	Microbiological	
Meringandan East	Consumer Taps	Aluminium	
Meringandan East	Consumer Taps	Iron and Manganese	
Meringandan East	Consumer Taps	Standard Chemical	
Meringandan East	Consumer Taps	Fluoride	
Meringandan East	Consumer Taps	Disinfection By-Products	
Meringandan East	Consumer Taps	Herbicide and Pesticide	
Meringandan East	Consumer Taps	Heavy Metals	

Table 2: Water Samples – Northern Operations Field Testing

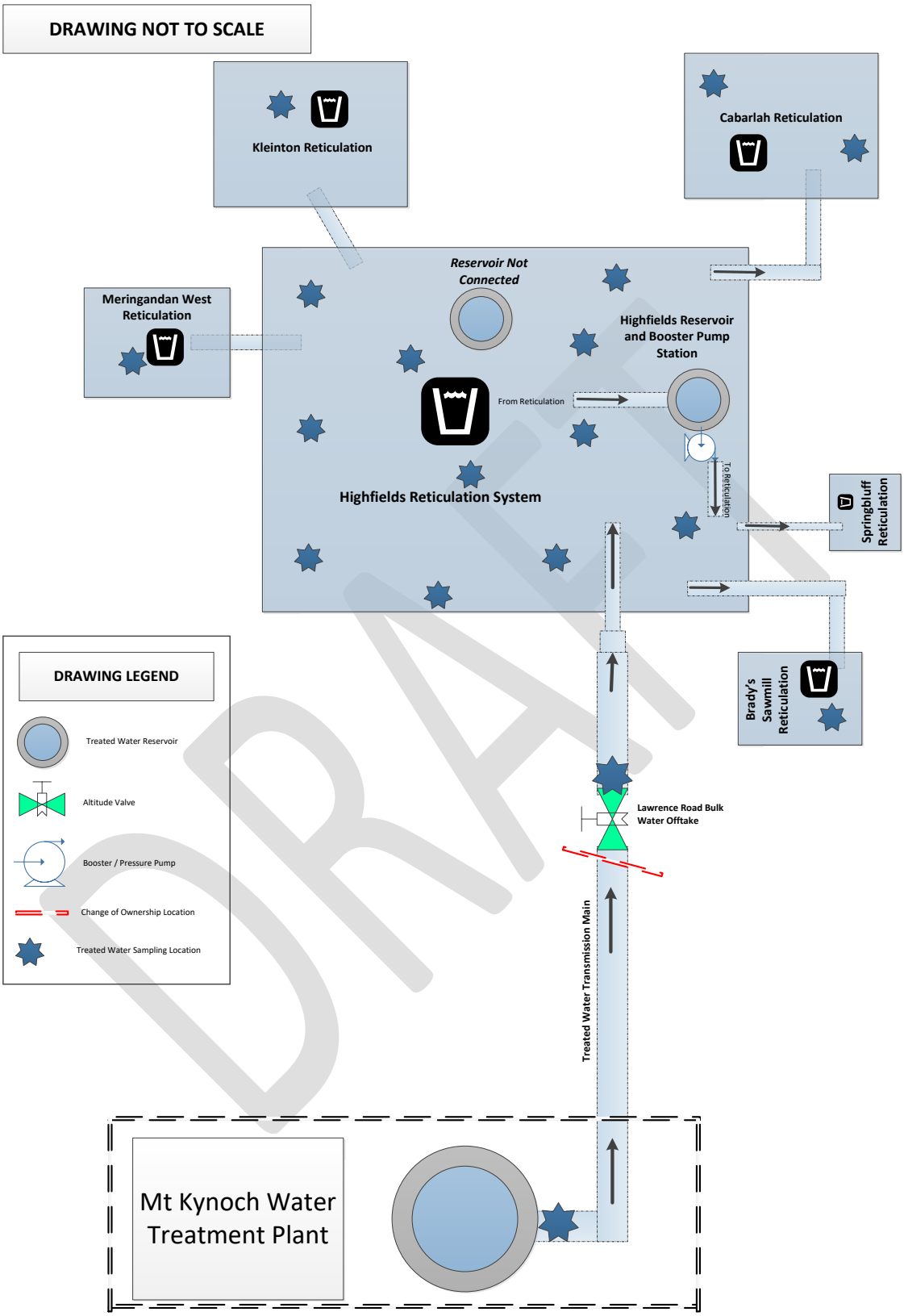
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Highfields	Low Level Reservoir	Free Chlorine	2 x Weekly
Highfields	Consumer Taps	Free Chlorine	Weekly
Meringandan East	Consumer Taps	Free Chlorine	Weekly
Cabarlah	Consumer Taps	Free Chlorine	Weekly
Cawdor	Consumer Taps	Free Chlorine	Weekly
Kleinton	Consumer Taps	Free Chlorine	Weekly
Highfields	Lawrence Road Offtake	Free Chlorine	Weekly

NOTE: Reticulation Chlorine residuals to be record on QP-FRM-256 Northern Operations Monthly Turbidity and Free chlorine Record Sheet DM#6260536

Highfields Reticulation Map



Highfields Schematic



Goombungee Water Sampling

Water Quality Sampling Task list

Table 1 and 2 are a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Goombungee	Goombungee Dam Road	Twmba Feed WTP Clearwater Tank	G1	GRAB
Goombungee	Private Access Road off Peachey Maclagan Road	Reservoir No. 1	G6	GRAB
Goombungee	In Paddock at end of Cooke Street	Reservoir No. 2	G7	GRAB

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Goombungee	Mocatta Street	Consumer Tap	G8	GRAB
Goombungee	Cnr George and Barker Streets	Pioneer Park	G9	GRAB
Goombungee	TRC Workshop – Cooke Street	Consumer Tap	G10	GRAB

NOTE: Reticulation Chlorine residuals to be record on QP-FRM-256 Northern Operations Monthly Turbidity and Free chlorine Record Sheet DM#6260536

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

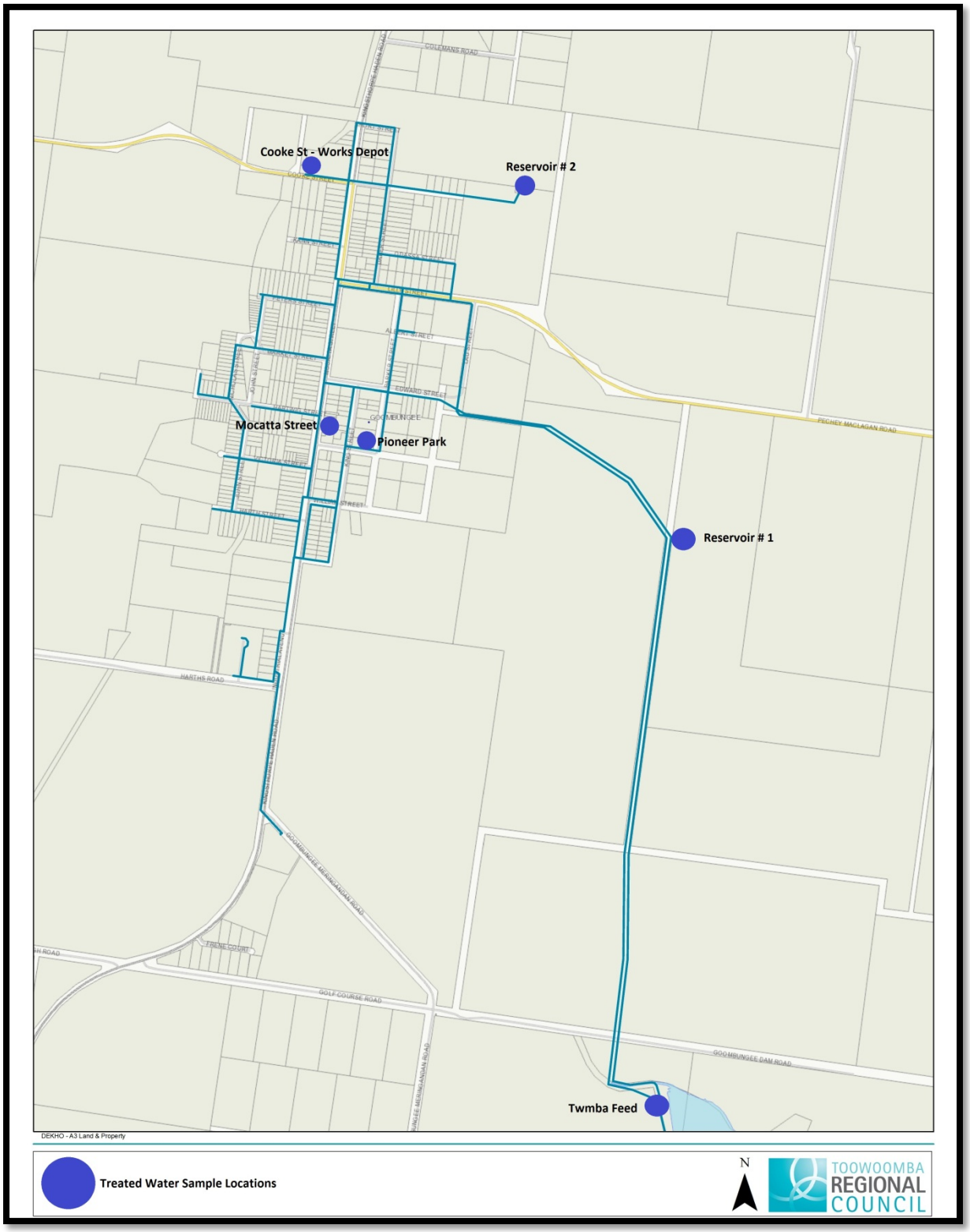
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Goombungee	Low Level Reservoirs	Microbiological	
Goombungee	Low Level Reservoirs	Aluminium	
Goombungee	Low Level Reservoirs	Iron and Manganese	
Goombungee	Low Level Reservoirs	Standard Chemical	
Goombungee	Low Level Reservoirs	Disinfection By-Products	
Goombungee	Low Level Reservoirs	Herbicide and Pesticide	
Goombungee	Low Level Reservoirs	Heavy Metals	
Goombungee	Consumer Taps	Microbiological	
Goombungee	Consumer Taps	Aluminium	
Goombungee	Consumer Taps	Iron and Manganese	
Goombungee	Consumer Taps	Standard Chemical	
Goombungee	Consumer Taps	Fluoride	
Goombungee	Consumer Taps	Disinfection By-Products	
Goombungee	Consumer Taps	Herbicide and Pesticide	
Goombungee	Consumer Taps	Heavy Metals	

Table 2: Water Samples – Northern Operations Field Testing

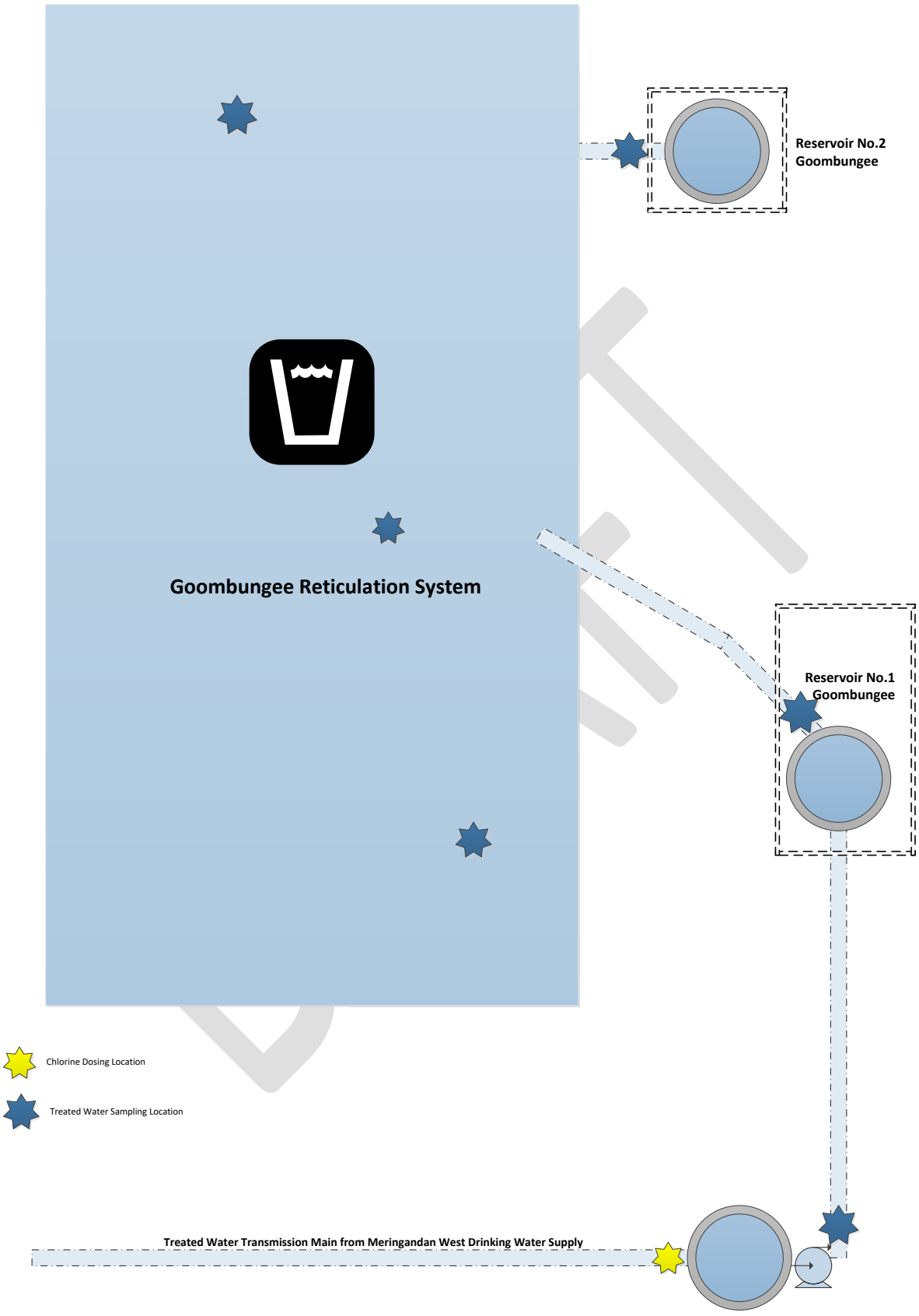
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Goombungee	Low Level Reservoir	Free Chlorine	2 x Weekly
Goombungee	Consumer Taps	Free Chlorine	Weekly

NOTE: Reticulation Chlorine residuals to be record on QP-FRM-256 Northern Operations Monthly Turbidity and Free chlorine Record Sheet DM#6260536

Goombungee Reticulation Map



Goombungee Schematic



Kingsthorpe Water Sampling

Water Quality Sampling Task list

Table 1, 2 and 3 a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Kingsthorpe	Laneway off Rebwonga Street	Twmba Feed Simons Reservoir	K1	GRAB
Kingsthorpe	Cnr Graman and Darel Streets	Graman St Reservoir	K3	GRAB
Kingsthorpe	Laneway off Rebwonga Street	Simons Reservoir	K4	GRAB
Kingsthorpe	Access Road of Emmanulla Drive	Emmanulla Drive Reservoirs	K5	GRAB
Kingsthorpe	Access Road at end of Alice Court	Harriman's Reservoir	K6	GRAB

NOTE:

Currently Harriman's Reservoir at Kingsthorpe is offline, as it receives minimal turnover. It is not know yet if this will be returned to service once the new sub divisions have been built on or not. If the reservoir is to be fully decommissioned, then it will be removed from this manual once a formal decision has been made. Until then it will remain in this manual greyed out as above.

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Kingsthorpe	At back of Scouts Den off Petersens Road	Settlers Park	K7	GRAB
Kingsthorpe	Public Toilet Block on Gowrie Street	Village Green Park	K8	GRAB
Kingsthorpe	Goombungee Road	Stoney Ridge Park	K9	GRAB
Kingsthorpe	Goombungee Road	Kingsthorpe Rec.Res. Park	K10	GRAB

NOTE: Reticulation Chlorine residuals to be record on QP-FRM-256 Northern Operations Monthly Turbidity and Free chlorine Record Sheet DM#6260536

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

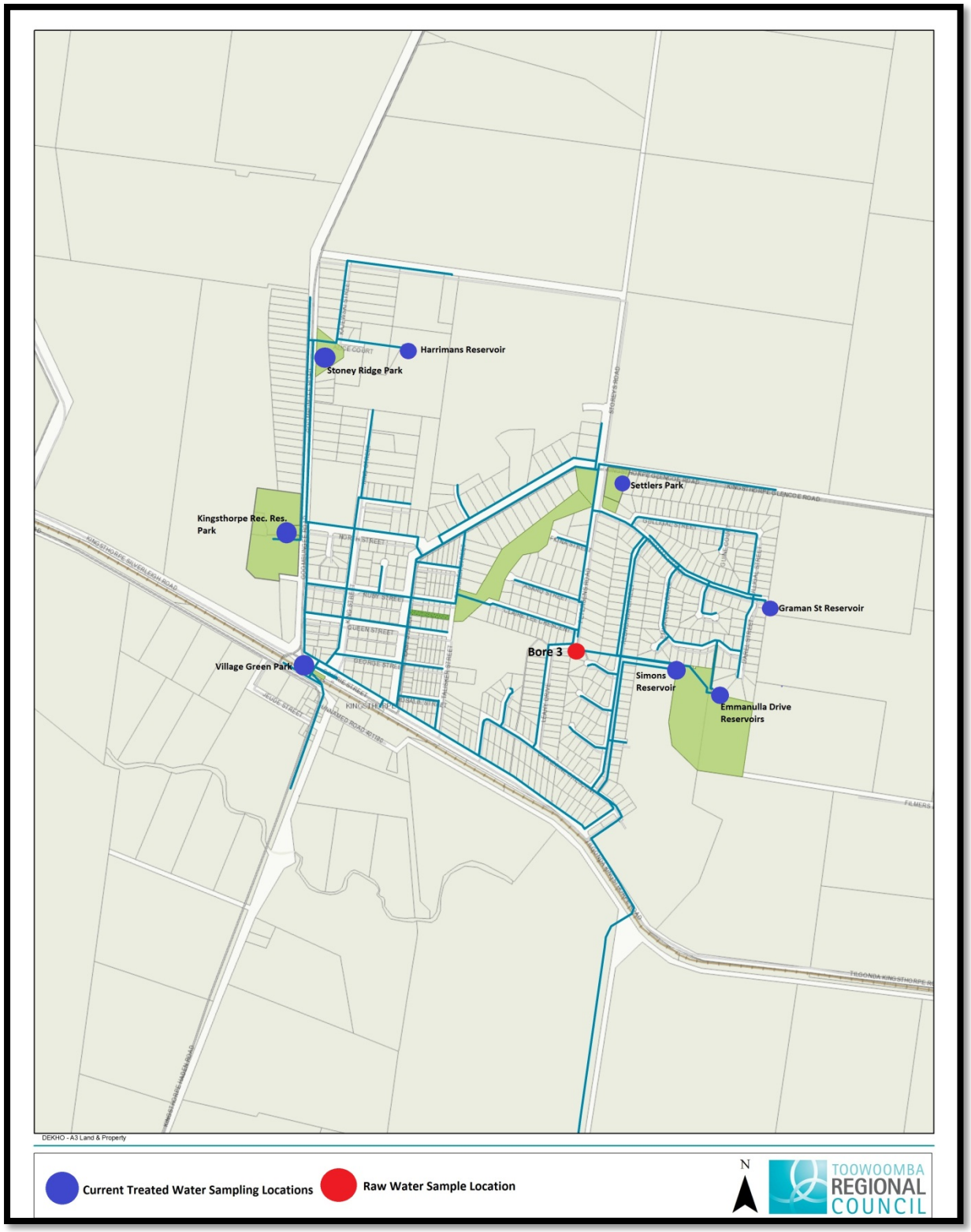
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Kingsthorpe	Low Level Reservoirs	Microbiological	
Kingsthorpe	Low Level Reservoirs	Standard Chemical	
Kingsthorpe	Low Level Reservoirs	Disinfection By-Products	
Kingsthorpe	Low Level Reservoirs	Herbicide and Pesticide	
Kingsthorpe	Low Level Reservoirs	Heavy Metals	
Kingsthorpe	Consumer Taps	Microbiological	
Kingsthorpe	Consumer Taps	Aluminium	
Kingsthorpe	Consumer Taps	Iron and Manganese	
Kingsthorpe	Consumer Taps	Standard Chemical	
Kingsthorpe	Consumer Taps	Fluoride	
Kingsthorpe	Consumer Taps	Disinfection By-Products	
Kingsthorpe	Consumer Taps	Herbicide and Pesticide	
Kingsthorpe	Consumer Taps	Heavy Metals	

Table 2: Water Samples – Northern Operations Field Testing

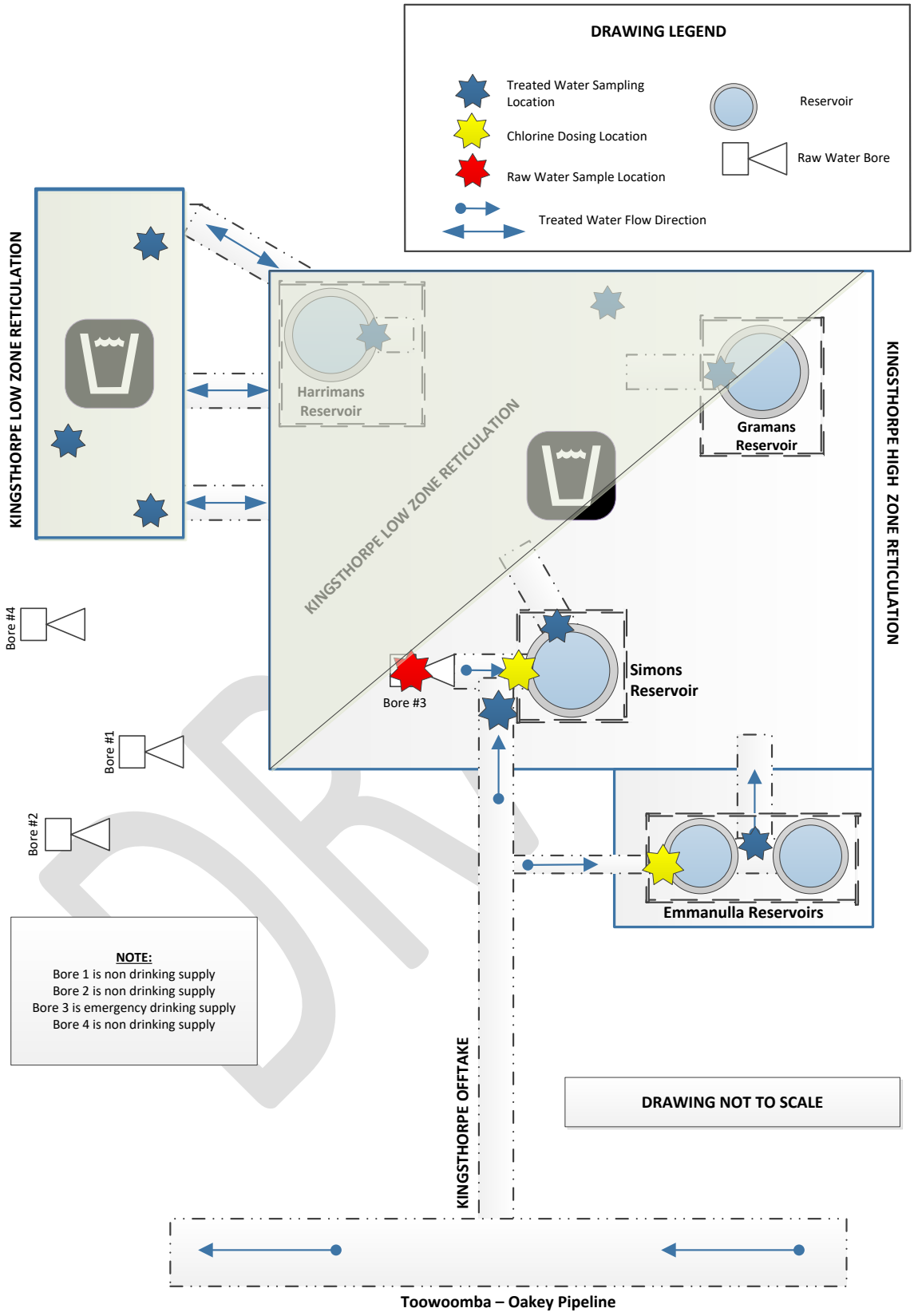
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Kingsthorpe	Low Level Reservoir	Free Chlorine	2 x Weekly
Kingsthorpe	Consumer Taps	Free Chlorine	Weekly

NOTE: Reticulation Chlorine residuals to be record on QP-FRM-256 Northern Operations Monthly Turbidity and Free chlorine Record Sheet DM#6260536

Kingsthorpe Reticulation Map



Kingsthorpe Drinking Water Supply Schematic



NOTE: Harrimans Reservoir currently offline. Reservoir has been isolated from reticulation by valve being closed and tagged out. Harrimans Reservoir is likely to be returned to service once new subdivision has been built.

Gowrie Junction Water Sampling

Water Quality Sampling Task list

Table 1, 2 and 3 a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Gowrie Junction	Junction Drive	Twmba Feed Junction Drive Reservoir	GJ1	GRAB
Gowrie Junction	Tower Court Reservoir No.1	Tower Court Reservoir	GJ2	GRAB
Gowrie Junction	Junction Drive Reservoir No.2	Junction Drive Reservoir	GJ3	GRAB
Gowrie Junction	Hilltop Drive Reservoir No.3	Birdwood Reservoir	GJ4	GRAB

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Gowrie Junction	Mansell Drive at back of public toilet block	McMahon Park	GJ5	GRAB
Gowrie Junction	Calcutt Road Pump Station	Booster Pump Station	GJ6	GRAB
Gowrie Junction	Hilltop Drive	Birdwood Park	GJ7	GRAB

NOTE: Reticulation Chlorine residuals to be record on QP-FRM-256 Northern Operations Monthly Turbidity and Free chlorine Record Sheet DM#6260536

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Gowrie Junction	Low Level Reservoirs	Microbiological	
Gowrie Junction	Low Level Reservoirs	Aluminium	
Gowrie Junction	Low Level Reservoirs	Iron and Manganese	
Gowrie Junction	Low Level Reservoirs	Standard Chemical	
Gowrie Junction	Low Level Reservoirs	Disinfection By-Products	
Gowrie Junction	Low Level Reservoirs	Herbicide and Pesticide	
Gowrie Junction	Low Level Reservoirs	Heavy Metals	
Gowrie Junction	Consumer Taps	Microbiological	
Gowrie Junction	Consumer Taps	Aluminium	
Gowrie Junction	Consumer Taps	Iron and Manganese	
Gowrie Junction	Consumer Taps	Standard Chemical	
Gowrie Junction	Consumer Taps	Fluoride	
Gowrie Junction	Consumer Taps	Disinfection By-Products	

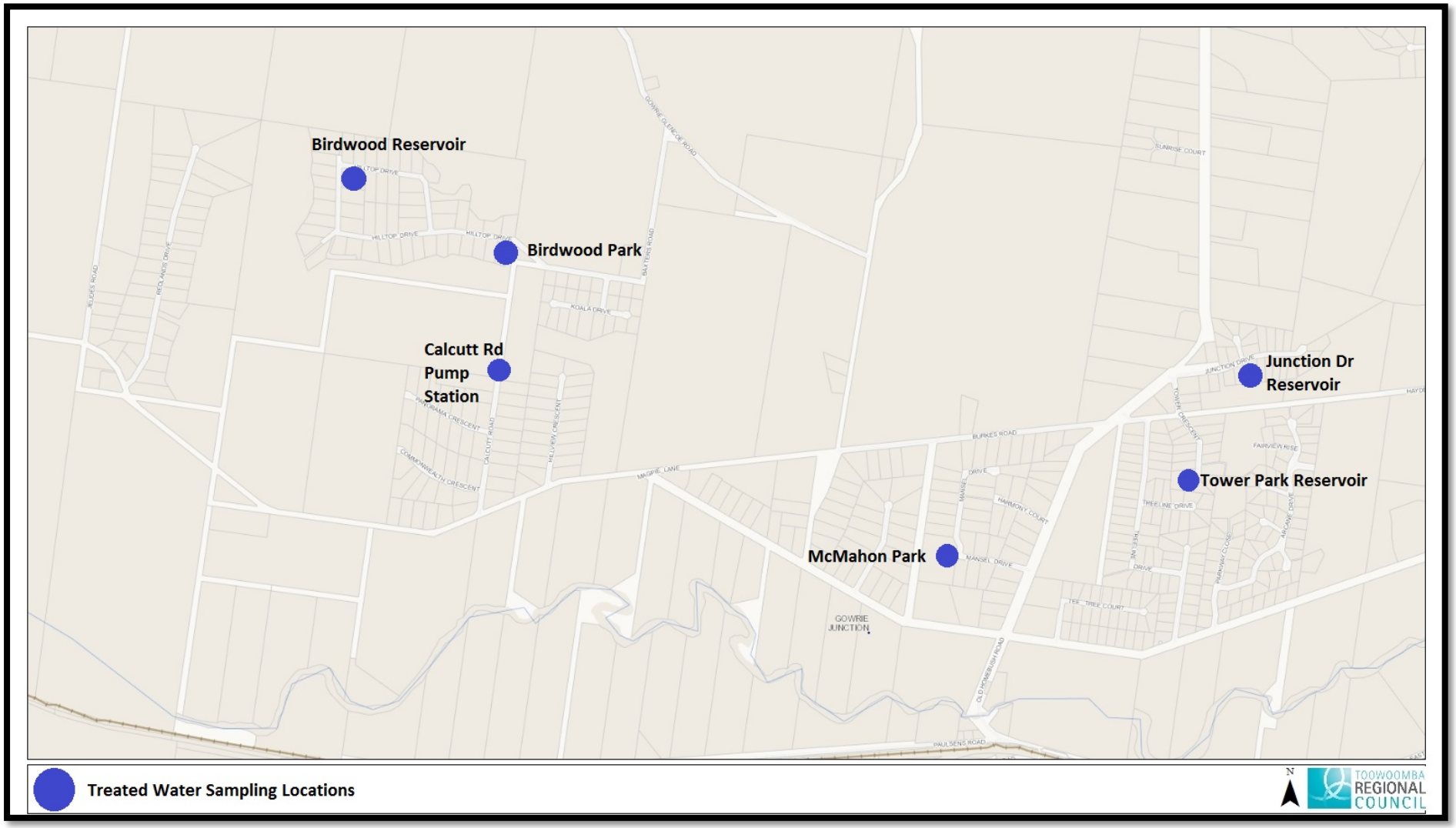
Gowrie Junction	Consumer Taps	Herbicide and Pesticide	
Gowrie Junction	Consumer Taps	Heavy Metals	

Table 2: Water Samples – Northern Operations Field Testing

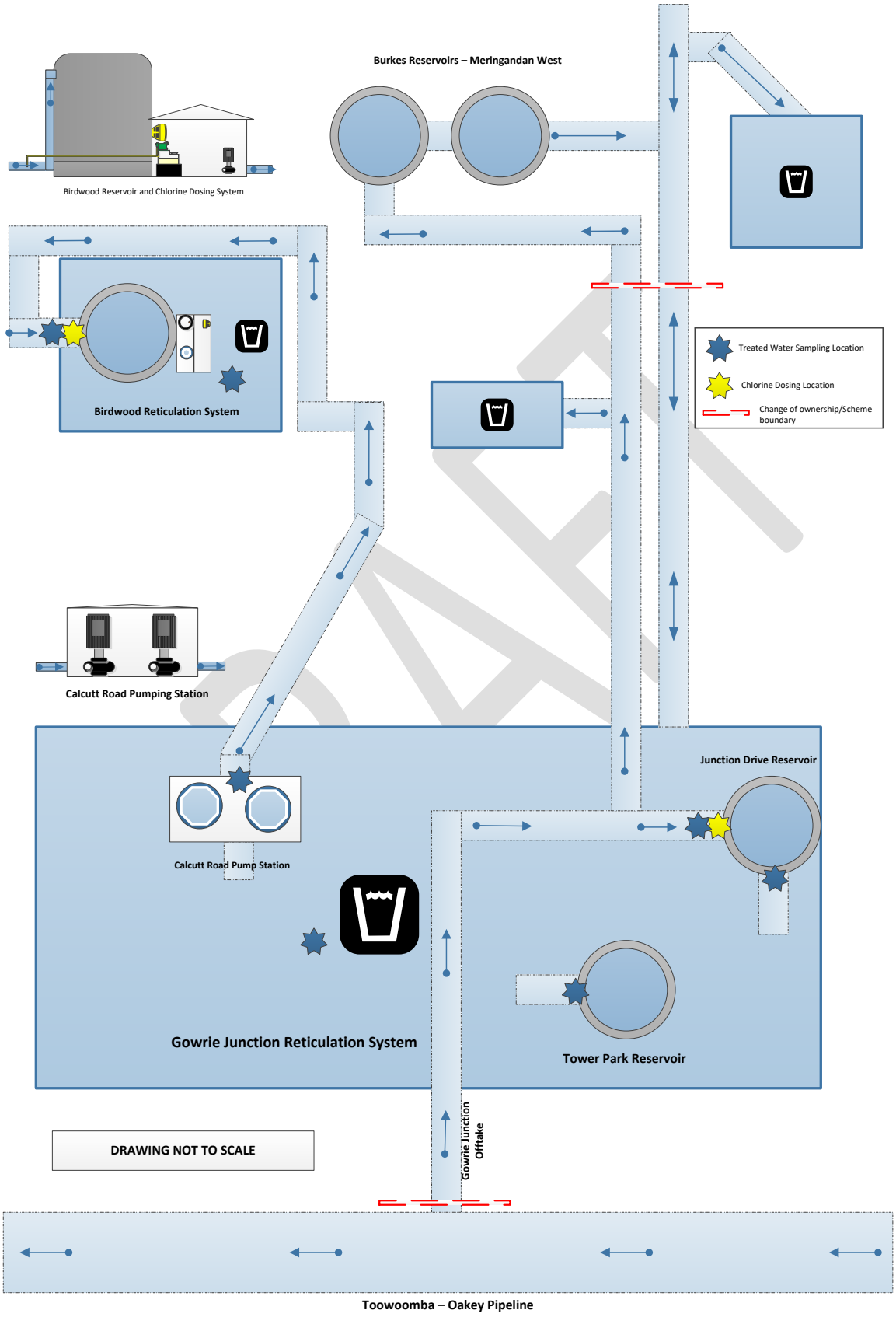
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Gowrie Junction	Low Level Reservoir	Free Chlorine	2 x Weekly
Gowrie Junction	Consumer Taps	Free Chlorine	Weekly

NOTE: Reticulation Chlorine residuals to be record on QP-FRM-256 Northern Operations Monthly Turbidity and Free chlorine Record Sheet DM#6260536

Gowrie Junction Reticulation Map



Gowrie Junction Water Supply Schematic



Meringandan West Water Sampling

Water Quality Sampling Task list

Table 1, 2 and 3 a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Meringandan West	Highview Street	Low Level Reservoirs Twmba Feed	MW01	GRAB
Meringandan West	Old Homebush Road Gowrie Junction	Burkes Reservoirs. Samples collected from inside blue building	MW02	GRAB
Meringandan West	Highview Street	Low Level Reservoirs	MW03	GRAB

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Meringandan West	CNR William and Clifford Streets	Bi-centiennial Park	MW04	GRAB
Meringandan West	Yalangur Lilyvale Oval. Behind playgroup shed	Lillyvale Oval	MW05	GRAB
Meringandan West	Parkview Place	Parkview Place	MW06	GRAB
Meringandan West	Highland Park (renamed to Parrot Tree Park)	102 Peters Road	MW07	GRAB
Meringandan West	Rody Burke Road	Rody Burke Park	MW08	GRAB
Meringandan West	Curlew Street	7 Curlew Street	MW09	GRAB
Meringandan West	Parmore Park	3 Apple Tree Court	MW10	GRAB
Meringandan West	Meringandan West Cemetery	Peters Road	MW11	GRAB

NOTE: Reticulation Chlorine residuals to be record on QP-FRM-256 Northern Operations Monthly Turbidity and Free chlorine Record Sheet DM#6260536

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Meringandan West	Low Level Reservoirs	Microbiological	
Meringandan West	Low Level Reservoirs	Aluminium	
Meringandan West	Low Level Reservoirs	Iron and Manganese	
Meringandan West	Low Level Reservoirs	Standard Chemical	
Meringandan West	Low Level Reservoirs	Disinfection By-Products	
Meringandan West	Low Level Reservoirs	Herbicide and Pesticide	
Meringandan West	Low Level Reservoirs	Heavy Metals	
Meringandan West	Consumer Taps	Microbiological	
Meringandan West	Consumer Taps	Aluminium	
Meringandan West	Consumer Taps	Iron and Manganese	
Meringandan West	Consumer Taps	Standard Chemical	
Meringandan West	Consumer Taps	Fluoride	
Meringandan West	Consumer Taps	Disinfection By-Products	

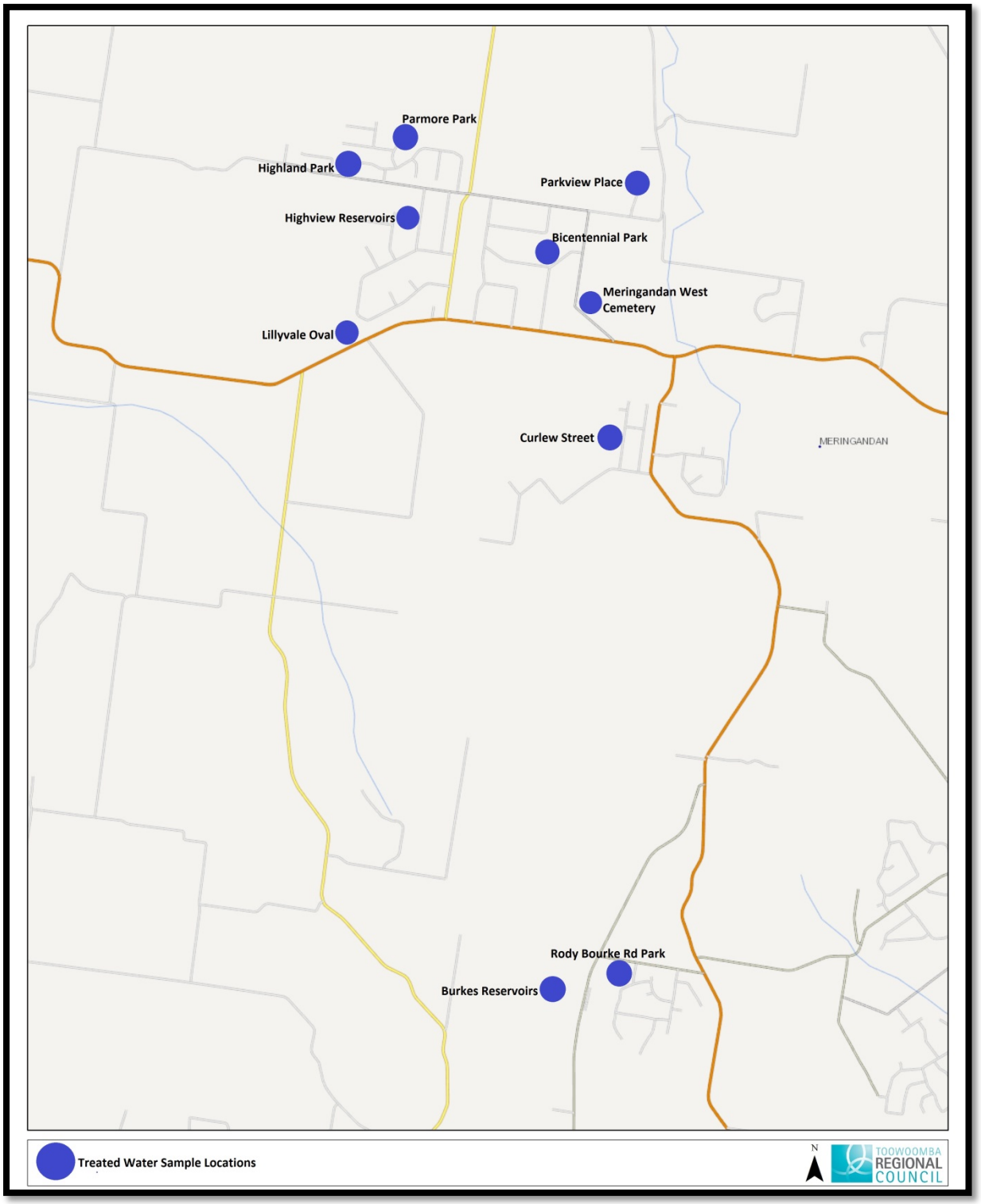
Meringandan West	Consumer Taps	Herbicide and Pesticide	
Meringandan West	Consumer Taps	Heavy Metals	

Table 2: Water Samples – Northern Operations Field Testing

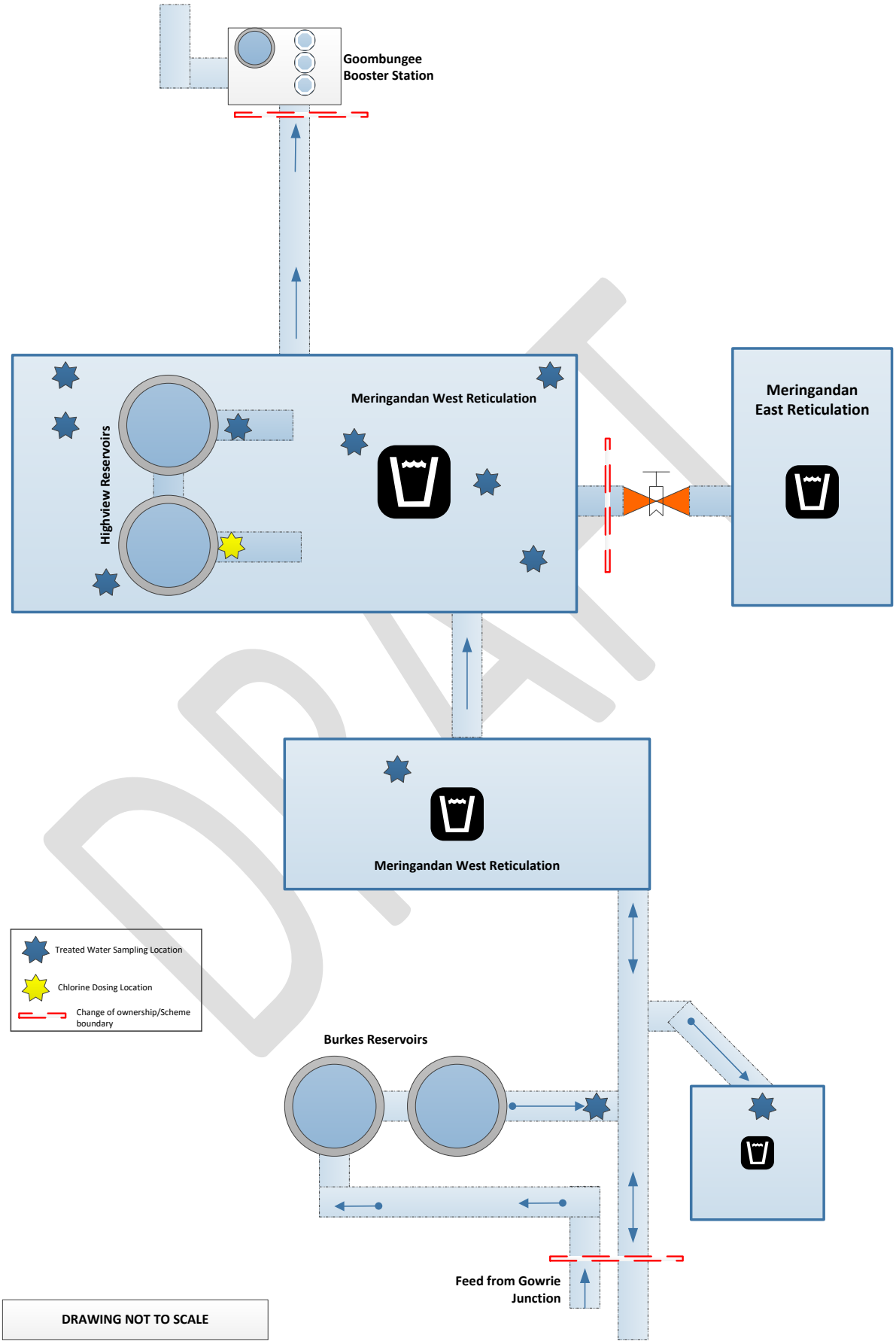
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Meringandan West	Low Level Reservoir	Free Chlorine	2 x Weekly
Meringandan West	Consumer Taps	Free Chlorine	Weekly

NOTE: Reticulation Chlorine residuals to be record on QP-FRM-256 Northern Operations Monthly Turbidity and Free chlorine Record Sheet DM#6260536

Meringandan West Reticulation Map



Meringandan West Supply Schematic



Haden Water Sampling

Water Quality Sampling Task list

Table 1, 2 and 3 a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Haden	Reinke Road	Low Level Reservoir	H1	GRAB
Haden	Kann Street	Haden Raw Water Bore	H3	GRAB

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Haden	Kann Street at back of public toilet block	Haden Park	H2	GRAB
Haden	Haden Crows Nest Road	Haden School	H4	GRAB

NOTE: Reticulation Chlorine residuals to be record on QP-FRM-256 Northern Operations Monthly Turbidity and Free chlorine Record Sheet DM#6260536

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Haden	Low Level Reservoirs	Microbiological	
Haden	Low Level Reservoirs	Aluminium	
Haden	Low Level Reservoirs	Iron and Manganese	
Haden	Low Level Reservoirs	Standard Chemical	
Haden	Low Level Reservoirs	Disinfection By-Products	
Haden	Low Level Reservoirs	Herbicide and Pesticide	
Haden	Low Level Reservoirs	Heavy Metals	
Haden	Consumer Taps	Microbiological	
Haden	Consumer Taps	Aluminium	
Haden	Consumer Taps	Iron and Manganese	
Haden	Consumer Taps	Standard Chemical	
Haden	Consumer Taps	Fluoride	
Haden	Consumer Taps	Disinfection By-Products	
Haden	Consumer Taps	Herbicide and Pesticide	
Haden	Consumer Taps	Heavy Metals	
Haden	Raw Water Bore	Microbiological	
Haden	Raw Water Bore	Iron and Manganese	
Haden	Raw Water Bore	Standard Chemical	
Haden	Raw Water Bore	Fluoride	
Haden	Raw Water Bore	Herbicide and Pesticide	

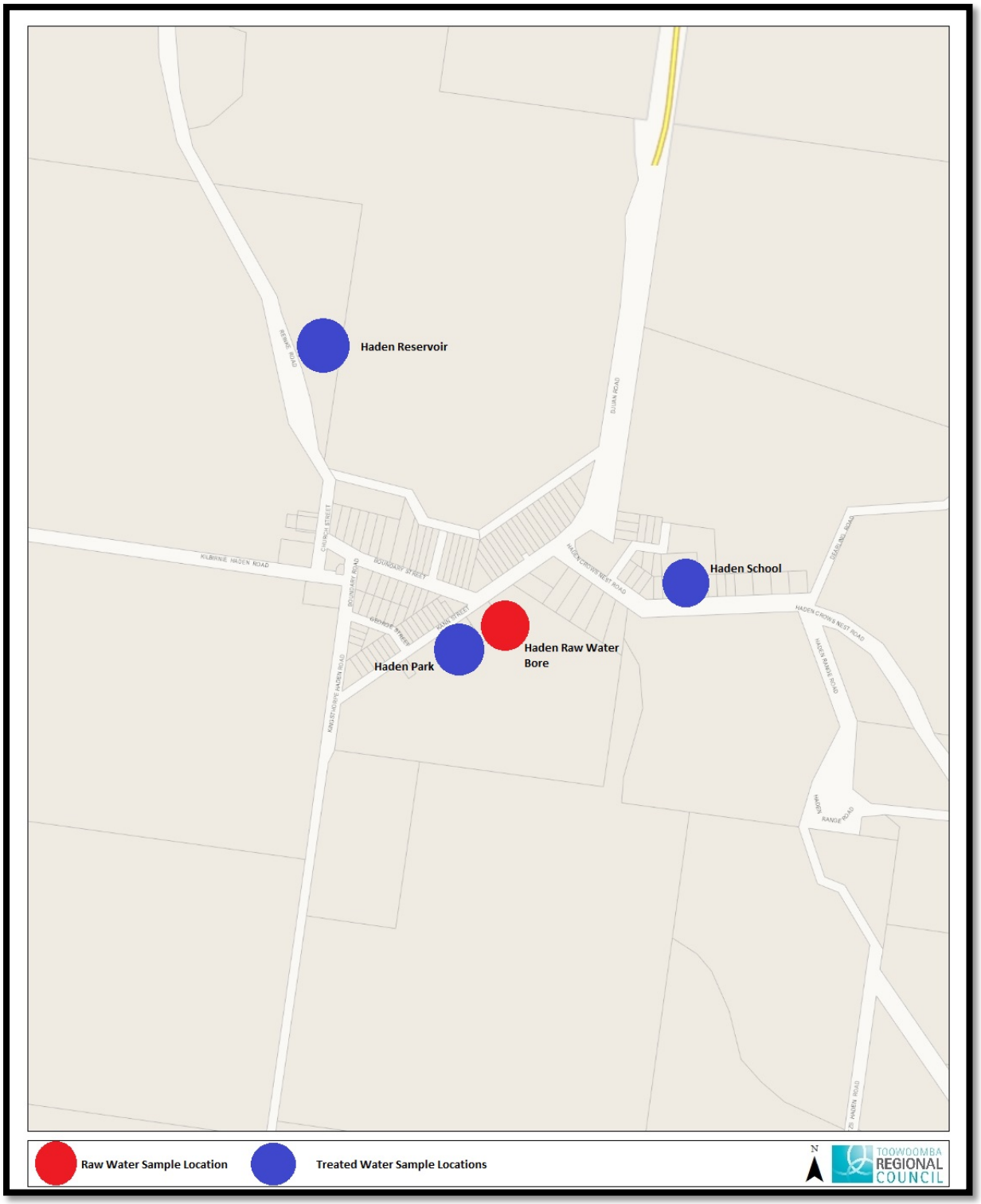
Haden	Raw Water Bore	Heavy Metals	6 Monthly/Event

Table 2: Water Samples – Northern Operations Field Testing

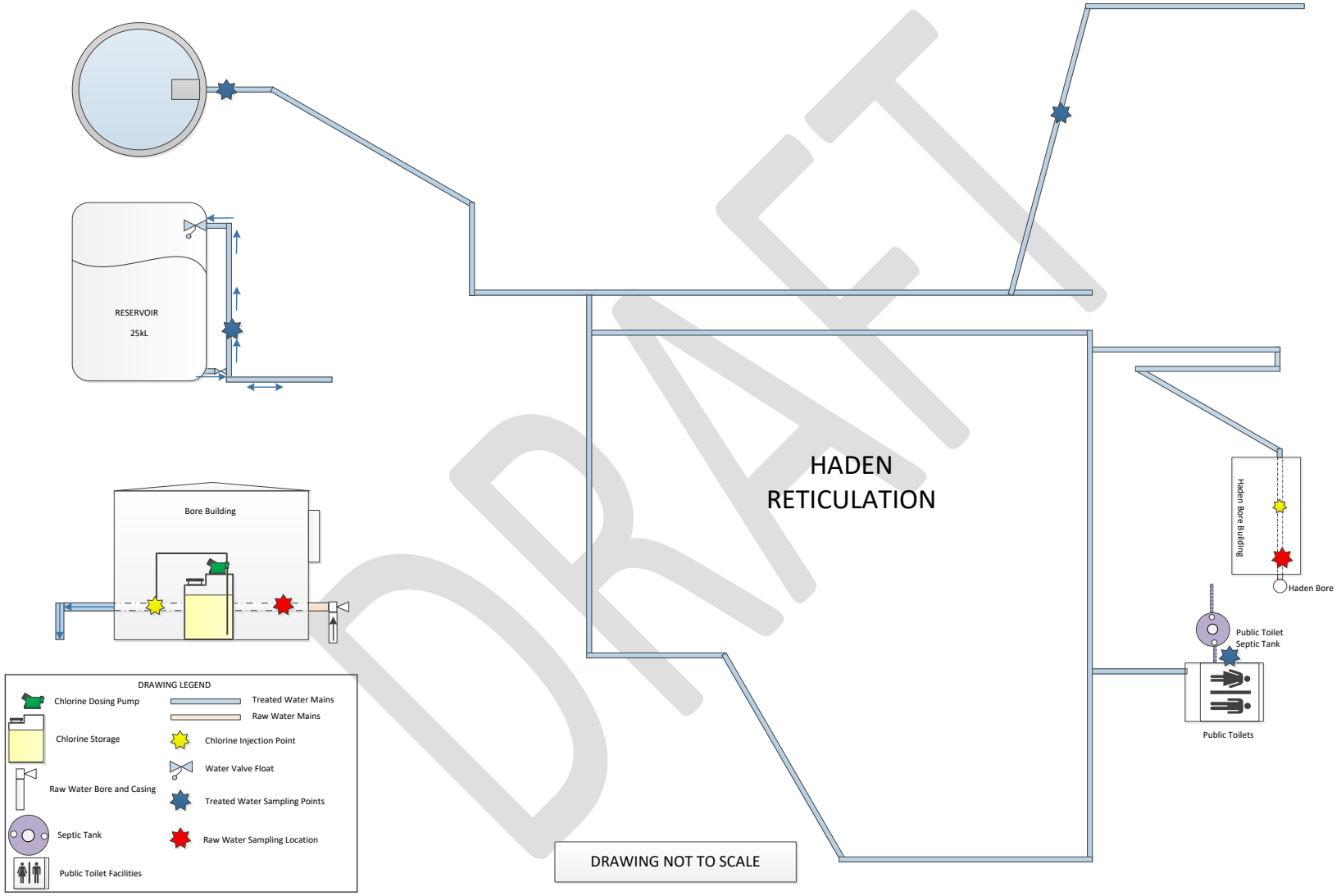
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Haden	Low Level Reservoir	Free Chlorine	2 x Weekly
Haden	Consumer Taps	Free Chlorine	Weekly

NOTE: Reticulation Chlorine residuals to be record on QP-FRM-256 Northern Operations Monthly Turbidity and Free chlorine Record Sheet DM#6260536

Haden Reticulation Map



Haden Water Supply Schematic



Yarraman Water Sampling

Water Quality Sampling Task list

Table 1,2,3 and 4 are a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Yarraman	Yarraman WTP D'Aguilar HWY	Blended Raw Water	Y1	GRAB
Yarraman	Yarraman WTP D'Aguilar HWY	WTP Treated Water	Y2	GRAB
Yarraman	Yarraman WTP D'Aguilar HWY	Reservoir No.1	Y3	GRAB
Yarraman	Off Toomey Street	Reservoir No.2	Y4	GRAB
Yarraman	Yarraman WTP D'Aguilar HWY	Raw Water – Boondooma Feed	Y7	GRAB
Yarraman	Yarraman WTP D'Aguilar HWY	Raw Water – Ted Pukaalls Weir	Y8	GRAB

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Yarraman	Barr Smith Street	Memorial Park	Y5	GRAB
Yarraman	Budgen Street	Garden	Y6	GRAB

Table 3: Wastewater Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
				GRAB

Table 4: Water Treatment Plant Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID	SAMPLE TYPE	FREQUENCY
Yarraman	WTP	Raw Water – Turbidity		GRAB	Daily(6)
Yarraman	WTP	Raw Water – Turbidity		Online	Continuous
Yarraman	WTP	Raw Water – pH		GRAB	Daily(6)
Yarraman	WTP	Raw Water – Hardness		GRAB	Daily(6)
Yarraman	WTP	Raw Water Alkalinity		GRAB	Daily(6)
Yarraman	WTP	Raw Water – Colour		GRAB	Daily(6)
Yarraman	WTP	Treated Water – Turbidity		GRAB	Daily(6)
Yarraman	WTP	Treated Water – Turbidity		Online	Continuous
Yarraman	WTP	Treated Water – Free Chlorine		GRAB	Daily(6)
Yarraman	WTP	Treated Water – Free Chlorine		Online	Continuous
Yarraman	WTP	Treated Water – pH		GRAB	Daily(6)
Yarraman	WTP	Treated Water – Hardness		GRAB	Daily(6)
Yarraman	WTP	Treated Water – Alkalinity		GRAB	Daily(6)
Yarraman	WTP	Treated Water – Colour		GRAB	Daily(6)

NOTE

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Yarraman	Raw Water Supplies	Turbidity	
	Raw Water Supplies	Microbiological	
	Raw Water Supplies	Iron and Manganese	
	Raw Water Supplies	Standard Chemical	
	Raw Water Supplies	Herbicide and Pesticide	
	Raw Water Supplies	Heavy Metals	
	Raw Water Supplies	Algal Counts	
	Raw Water Supplies	Algal Toxins	
	Raw Water Supplies	Cryptosporidium and Giardia	
Yarraman	WTP	Turbidity	
	WTP	Microbiological	
	WTP	Iron and Manganese	
	WTP	Aluminium	
	WTP	Standard Chemical	
	WTP	Disinfection By-products	
	WTP	Herbicide and Pesticide	
	WTP	Heavy Metals	
	WTP	Cryptosporidium and Giardia	

Table 1: Water Samples – Laboratory Testing *(continued)*

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Yarraman	Low Level Reservoirs	Turbidity	
	Low Level Reservoirs	Microbiological	
	Low Level Reservoirs	Iron and Manganese	
	Low Level Reservoirs	Aluminium	
	Low Level Reservoirs	Standard Chemical	
	Low Level Reservoirs	Disinfection By-products	
	Low Level Reservoirs	Herbicide and Pesticide	
	Low Level Reservoirs	Heavy Metals	
Yarraman	Consumer Taps	Turbidity	
	Consumer Taps	Microbiological	
	Consumer Taps	Iron and Manganese	
	Consumer Taps	Aluminium	
	Consumer Taps	Standard Chemical	
	Consumer Taps	Disinfection By-products	
	Consumer Taps	Herbicide and Pesticide	
	Consumer Taps	Heavy Metals	
	Consumer Taps	Cryptosporidium and Giardia	

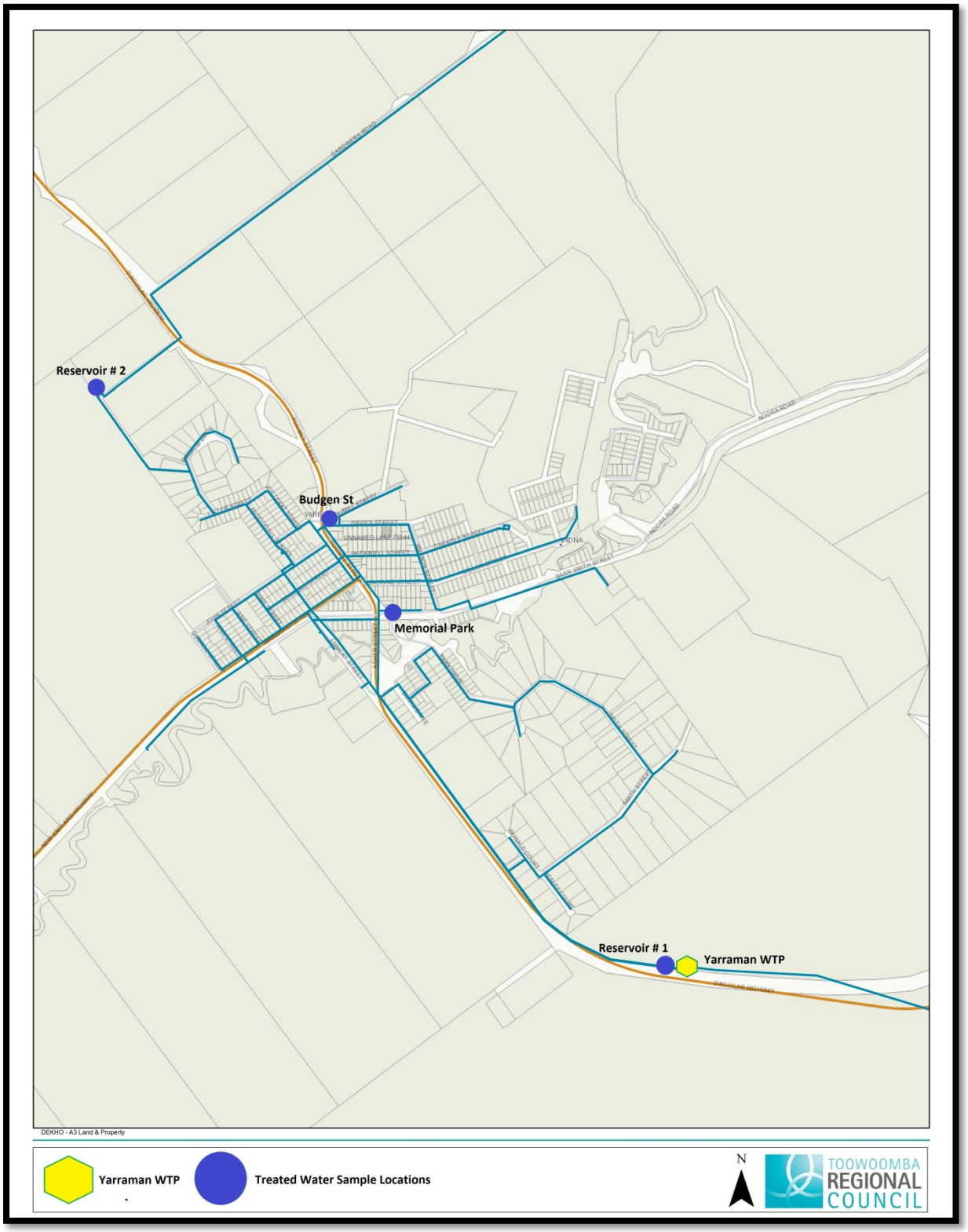
Table 2: Water Samples – Northern Operations Field Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Yarraman	Raw Water Supplies	Turbidity	Daily(6)
Yarraman	Raw Water Supplies	pH	Daily(6)
Yarraman	Raw Water Supplies	Hardness	Daily(6)

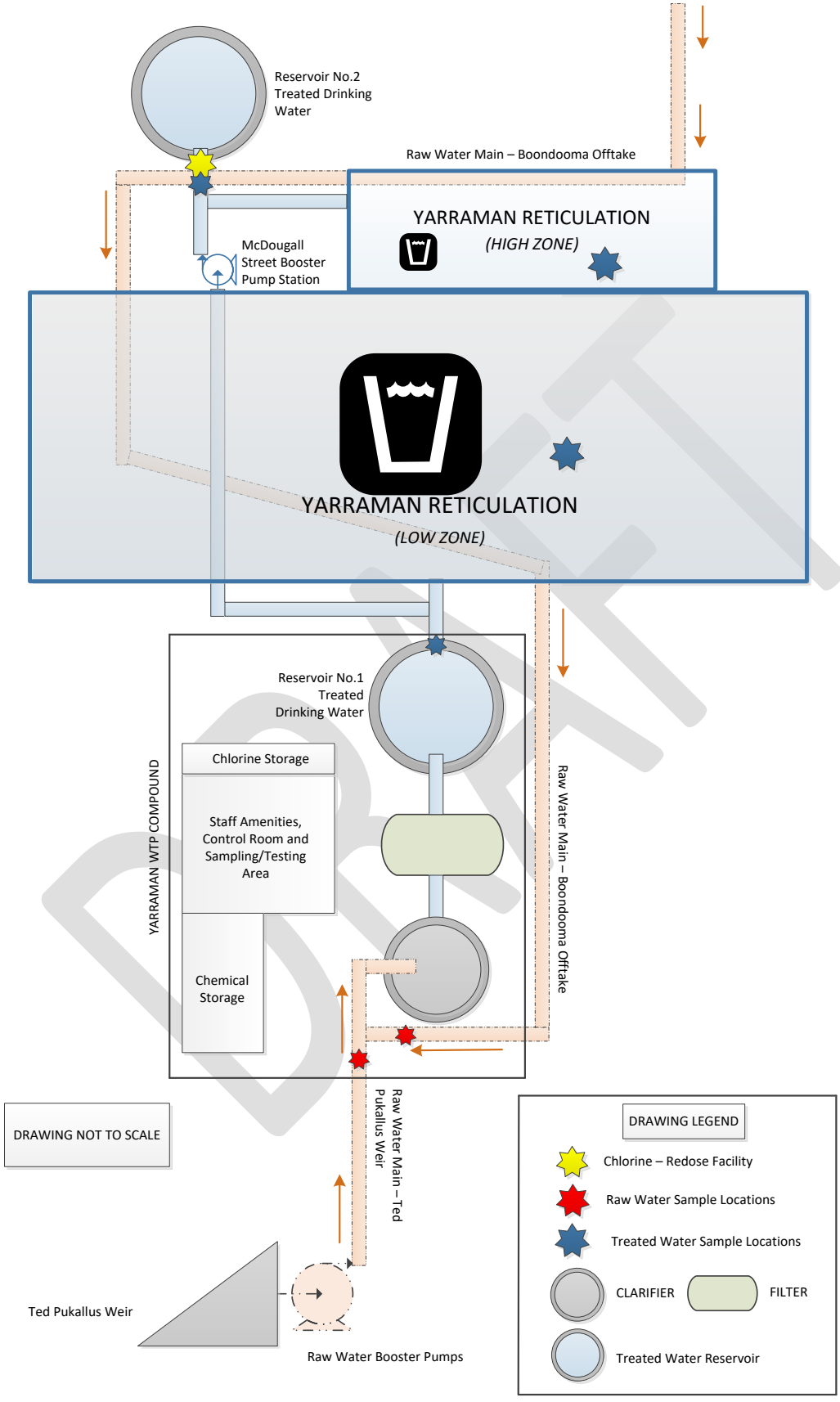
Yarraman	Raw Water Supplies	Alkalinity	Daily(6)
Yarraman	Raw Water Supplies	Colour	Daily(6)
Yarraman	Raw Water Supplies	Iron	Daily(6)
Yarraman	Raw Water Supplies	Total Dissolved Solids	Daily(6)
Yarraman	Treated Water	Free Chlorine	Daily(6)
Yarraman	Treated Water	Turbidity	Daily(6)
Yarraman	Treated Water	pH	Daily(6)
Yarraman	Treated Water	Hardness	Daily(6)
Yarraman	Treated Water	Alkalinity	Daily(6)
Yarraman	Treated Water	Colour	Daily(6)
Yarraman	Treated Water	Iron	Daily(6)
Yarraman	Treated Water	Total Dissolved Solids	Daily(6)

NOTE: Yarraman Water Treatment Plant Operator field testing to be recorded on Yarraman Water Treatment Plant Daily Operator Log QP-FRM-221 DM#5223931

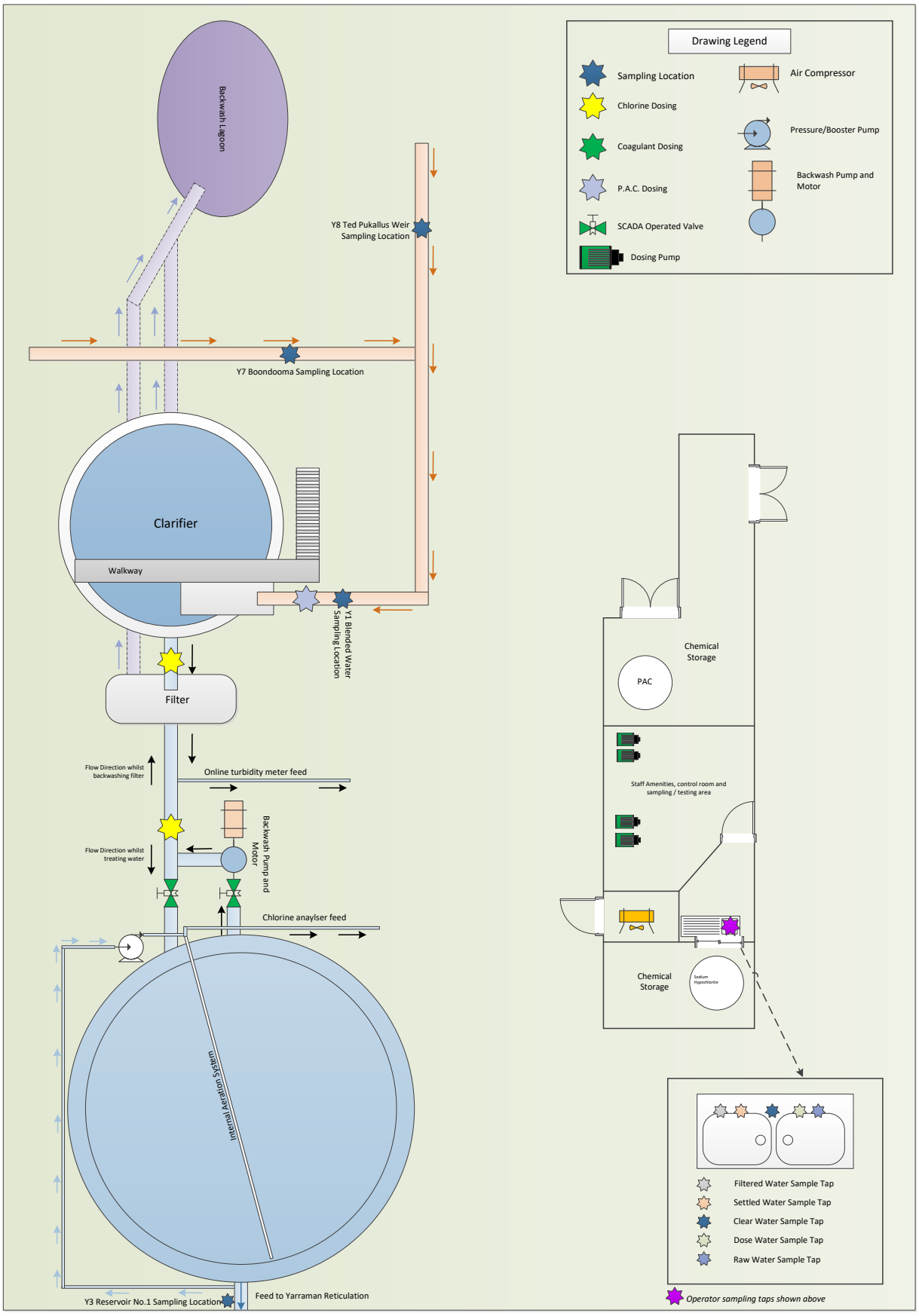
Yarraman Reticulation Map



Yarraman Water supply Schematic



Yarraman Water Treatment Plant Schematic



Oakey Water Sampling

Water Quality Sampling Task list

Table 1,2,3 and 4 are a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Oakey	Beale Street Located inside Army Aviation Grounds	Raw Water Bore 3	O13	GRAB
Oakey	Oakey Connection Road	Raw Water Bore 5	O14	GRAB
Oakey	Oakey Connection Road	Raw Water Bore 6	O15	GRAB
Oakey	Oakey Cooyar Road	Raw Water Bore 7	O16	GRAB
Oakey	Janetzki Road inside Oakey Showgrounds	Raw Water Bore 8	O17	GRAB
Oakey	Ramsay Street	Treated Water Pumping Station		GRAB
Oakey	Off Gribb Street	Low Level Reservoirs	O01	GRAB
Oakey	Off Gribb Street	Elevated Reservoir	O02	GRAB
Oakey	Off Gribb Street	Low Level Reservoirs Twmba Feed	O05	GRAB
Oakey	WTP Compound	Raw Water Feed Reservoir		GRAB
Oakey	WTP Compound	Treated Water Reservoir		GRAB
Oakey	WTP Compound	RO Treatment Plant	O04	GRAB

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Oakey	4-20 Lorrimer Street	Oakey Works Depot	O03	GRAB
Oakey	Arthur Shooter Park, Stanley Street	SPS F	O06	GRAB
Oakey	Gayle Street	SPS J	O07	GRAB
Oakey	Jacquelyn Court	Jacquelyn Court Park	O08	GRAB

Oakey	64 Campbell Street at back of building	Oakey Service Centre	O09	GRAB
Oakey	Langton Crescent	Formerly Sussex Drive	O10	GRAB
Oakey	CNR Murray and Delray Streets	Borobi Park	O11	GRAB
Oakey	CNR Bridge and Queen Streets	Jaycees Park	O12	GRAB

Table 3: Wastewater Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
				GRAB

Table 4: Water Treatment Plant Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID	SAMPLE TYPE	FREQUENCY
Oakey	WTP	Raw Water – Turbidity		GRAB	Daily(5)
Oakey	WTP	Raw Water – Turbidity		Online	Continuous
Oakey	WTP	Raw Water – pH		GRAB	Daily(5)
Oakey	WTP	Raw Water – Hardness		GRAB	Daily(5)
Oakey	WTP	Raw Water Alkalinity		GRAB	Daily(5)
Oakey	WTP	Raw Water – Colour		GRAB	Daily(5)
Oakey	WTP	Treated Water – Turbidity		GRAB	Daily(5)
Oakey	WTP	Treated Water – Turbidity		Online	Continuous
Oakey	WTP	Treated Water – Free Chlorine		GRAB	Daily(5)
Oakey	WTP	Treated Water – Free Chlorine		Online	Continuous
Oakey	WTP	Treated Water – pH		GRAB	Daily(5)
Oakey	WTP	Treated Water – Hardness		GRAB	Daily(5)
Oakey	WTP	Treated Water – Alkalinity		GRAB	Daily(5)
Oakey	WTP	Treated Water – Colour		GRAB	Daily(5)

NOTE: Currently the Oakey Reverse Osmosis Water Treatment Plant is offline. It is not known if the Oakey WTP will be returned to service or not. if the WTP is returned to service then the above table will need to be implemented as an operator testing schedule, until then there is no requirement for staff to conduct testing or sampling from this location.

NOTE

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Oakey	Raw Water Supplies	Turbidity	Monthly
	Raw Water Supplies	Microbiological	Monthly/Event
	Raw Water Supplies	Standard Chemical	Monthly/Event
	Raw Water Supplies	Herbicide and Pesticide	6 Monthly/Event
	Raw Water Supplies	Heavy Metals	6 Monthly/Event
Oakey	Raw Water Feed Tank	Turbidity	Weekly
	Raw Water Feed Tank	Microbiological	Weekly
	Raw Water Feed Tank	Standard Chemical	Monthly
	Raw Water Feed Tank	Herbicide and Pesticide	6 Monthly/Event
	Raw Water Feed Tank	Heavy Metals	6 Monthly/Event
Oakey	RO Treatment Plant	Microbiological	Weekly
	RO Treatment Plant	Aluminium	Weekly
	RO Treatment Plant	Iron and Manganese	Weekly
	RO Treatment Plant	Standard Chemical	Monthly
	RO Treatment Plant	Brine Stream	Weekly
	RO Treatment Plant	Conductivity	Weekly
Oakey	Clearwater Reservoir	Turbidity	Weekly
	Clearwater Reservoir	Microbiological	Weekly
	Clearwater Reservoir	Aluminium	Weekly

	Clearwater Reservoir	Iron and Manganese	Weekly
	Clearwater Reservoir	Standard Chemical	Monthly
	Clearwater Reservoir	Disinfection By-products	3 Monthly
	Clearwater Reservoir	Herbicide and Pesticide	6 Monthly
	Clearwater Reservoir	Heavy Metals	6 Monthly
	Clearwater Reservoir	Conductivity	Weekly
Oakey	Low Level Reservoirs	Turbidity	
	Low Level Reservoirs	Microbiological	
	Low Level Reservoirs	Aluminium	
	Low Level Reservoirs	Iron and Manganese	
	Low Level Reservoirs	Standard Chemical	
	Low Level Reservoirs	Disinfection By-products	
	Low Level Reservoirs	Herbicide and Pesticide	
	Low Level Reservoirs	Heavy Metals	
Oakey	Elevated Reservoir	Turbidity	
	Elevated Reservoir	Microbiological	
	Elevated Reservoir	Aluminium	
	Elevated Reservoir	Iron and Manganese	
	Elevated Reservoir	Standard Chemical	
	Elevated Reservoir	Disinfection By-products	
	Elevated Reservoir	Herbicide and Pesticide	
	Elevated Reservoir	Heavy Metals	

NOTE: Current the Oakey Water Treatment Plant is offline. It is not known if the Oakey WTP will be returned to service or not. If the WTP is returned to service then the above table with greyed sections will need to be implemented as a testing schedule, until then there is no requirement for staff to conduct sampling for testing.

Table 1: Water Samples – Laboratory Testing *(continued)*

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Yarraman	Consumer Taps	Turbidity	
	Consumer Taps	Microbiological	
	Consumer Taps	Iron and Manganese	
	Consumer Taps	Standard Chemical	
	Consumer Taps	Disinfection By-products	
	Consumer Taps	Herbicide and Pesticide	
	Consumer Taps	Heavy Metals	

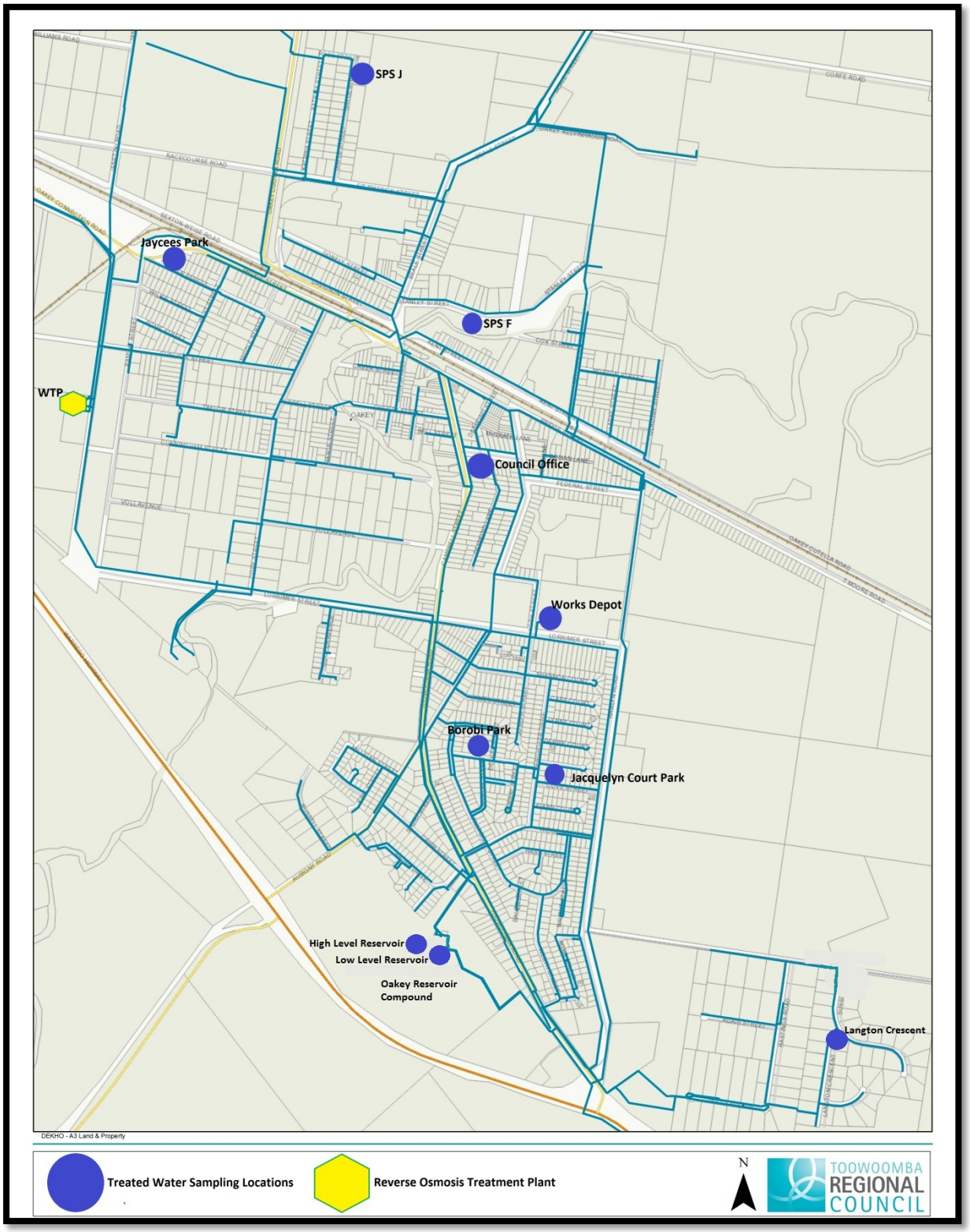
Table 2: Water Samples – Northern Operations Field Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Oakey	Raw Water Feed Tank	Turbidity	Daily(5)
Oakey	Raw Water Feed Tank	Conductivity	Daily(5)
Oakey	Raw Water Feed Tank	Hardness	Daily(5)
Oakey	Raw Water Feed Tank	Alkalinity	Daily(5)
Oakey	Raw Water Feed Tank	Colour	Daily(5)
Oakey	RO Treatment Plant	Turbidity	Daily(5)
Oakey	RO Treatment Plant	Conductivity	Daily(5)
Oakey	RO Treatment Plant	Hardness	Daily(5)
Oakey	RO Treatment Plant	Colour	Daily(5)
Oakey	RO Treatment Plant	Free Chlorine	Daily(5)
Oakey	RO Treatment Plant	Alkalinity	Daily(5)
Oakey	Low Level Reservoir No.1	Free Chlorine	Minimum Twice Weekly
Oakey	Low Level Reservoir No.2	Free Chlorine	Minimum Twice Weekly

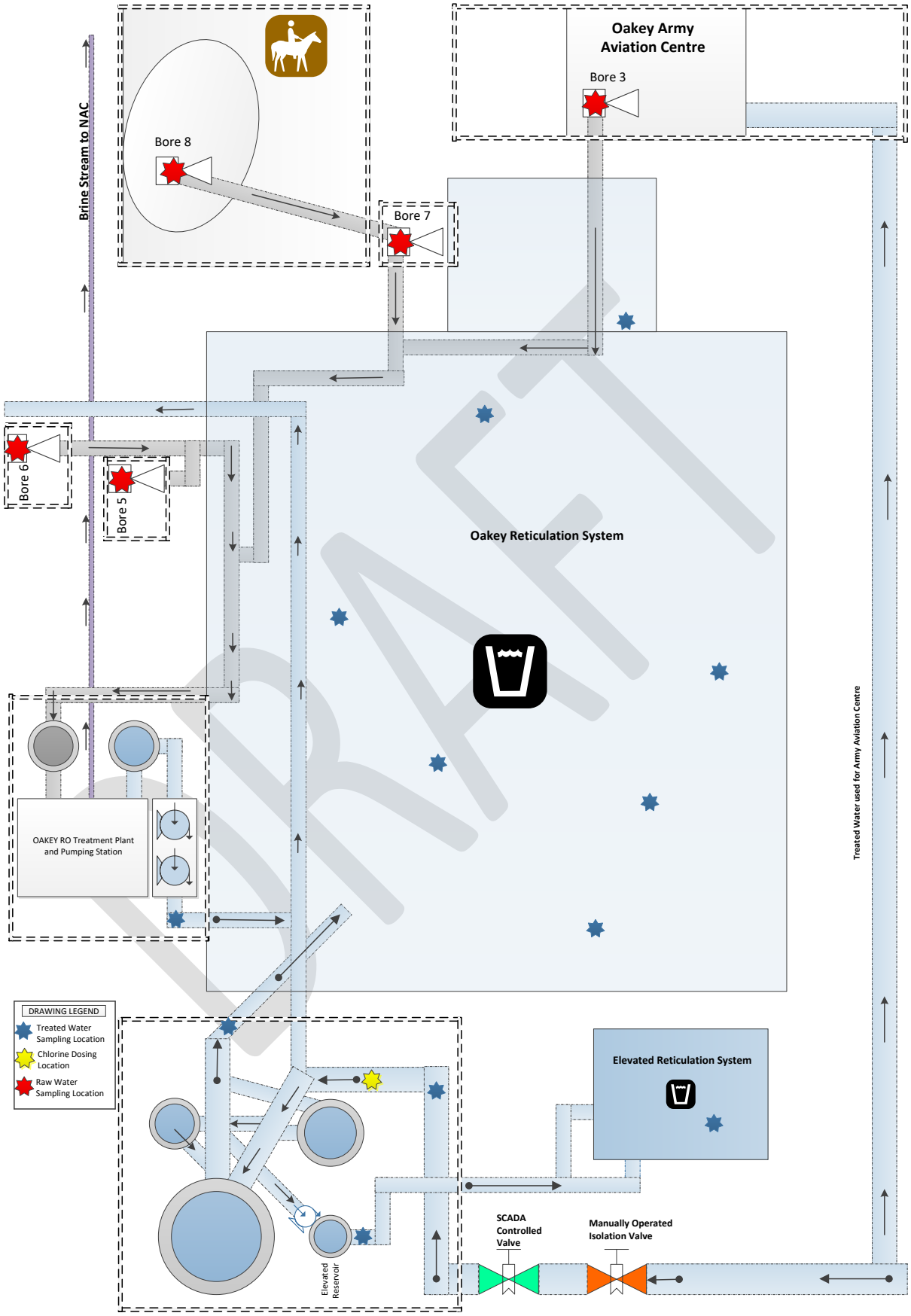
Oakey	Consumer Taps	Free Chlorine	Weekly
Oakey	Bore No.4 Compound Chlorine re-dose facility	Free Chlorine	Minimum Twice Weekly

NOTE: Operator Field testing results to be recorded on Northern Operations Monthly Turbidity and Free Chlorine Record Sheets DM#6260536

Oakey Reticulation Map



Oakey Water Supply Schematic



Oakey Water Treatment Plant Schematic

NOTE: *Currently the Oakey Reverse Osmosis Water Treatment Plant is offline. At this stage it is not known whether this treatment plant will be returned to service or not. Branch Support staff will provide an updated Schematic once the plant has been returned to service.*

Jondaryan Water Sampling

Water Quality Sampling Task list

Table 1 and 2 are a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Jondaryan	At end of Rutledge Road	Low Level Reservoirs	J01	GRAB

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Jondaryan	Earl Street	Earl Street	J02	GRAB
Jondaryan	Duke Street	Jondaryan Park	J03	GRAB
Jondaryan	Warrego Hwy	Bore 4 Compound	J04	GRAB

NOTE: Operator Field testing results to be recorded on Northern Operations Monthly Turbidity and Free Chlorine Record Sheets DM#6260536

NOTE

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

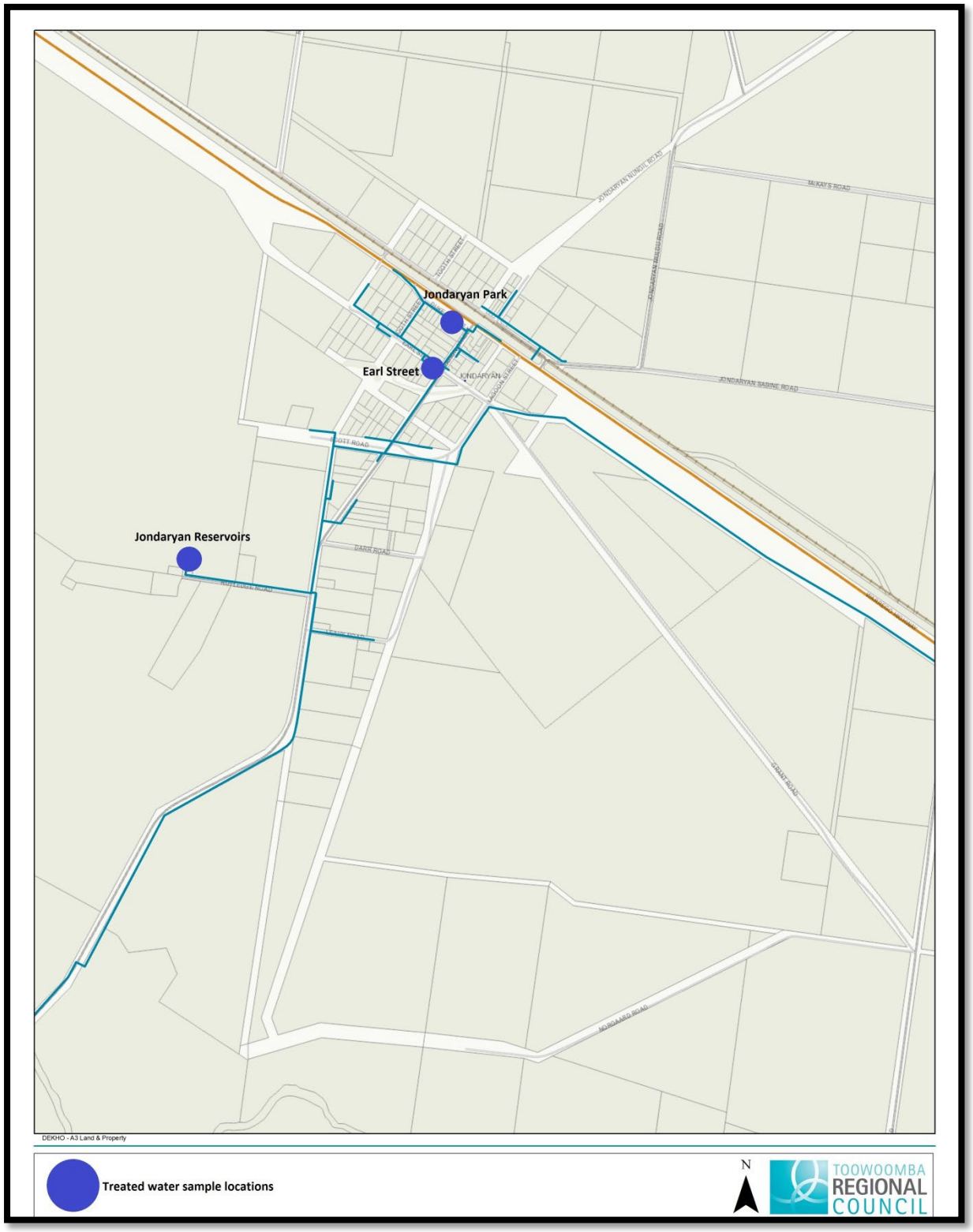
Table 1: Water Samples – Laboratory Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Jondaryan	Low Level Reservoirs	Turbidity	
	Low Level Reservoirs	Microbiological	
	Low Level Reservoirs	Aluminium	
	Low Level Reservoirs	Iron and Manganese	
	Low Level Reservoirs	Standard Chemical	
	Low Level Reservoirs	Disinfection By-products	
	Low Level Reservoirs	Herbicide and Pesticide	
	Low Level Reservoirs	Heavy Metals	
Jondaryan	Consumer Taps	Turbidity	
	Consumer Taps	Microbiological	
	Consumer Taps	Aluminium	
	Consumer Taps	Iron and Manganese	
	Consumer Taps	Standard Chemical	
	Consumer Taps	Disinfection By-products	
	Consumer Taps	Herbicide and Pesticide	
	Consumer Taps	Heavy Metals	

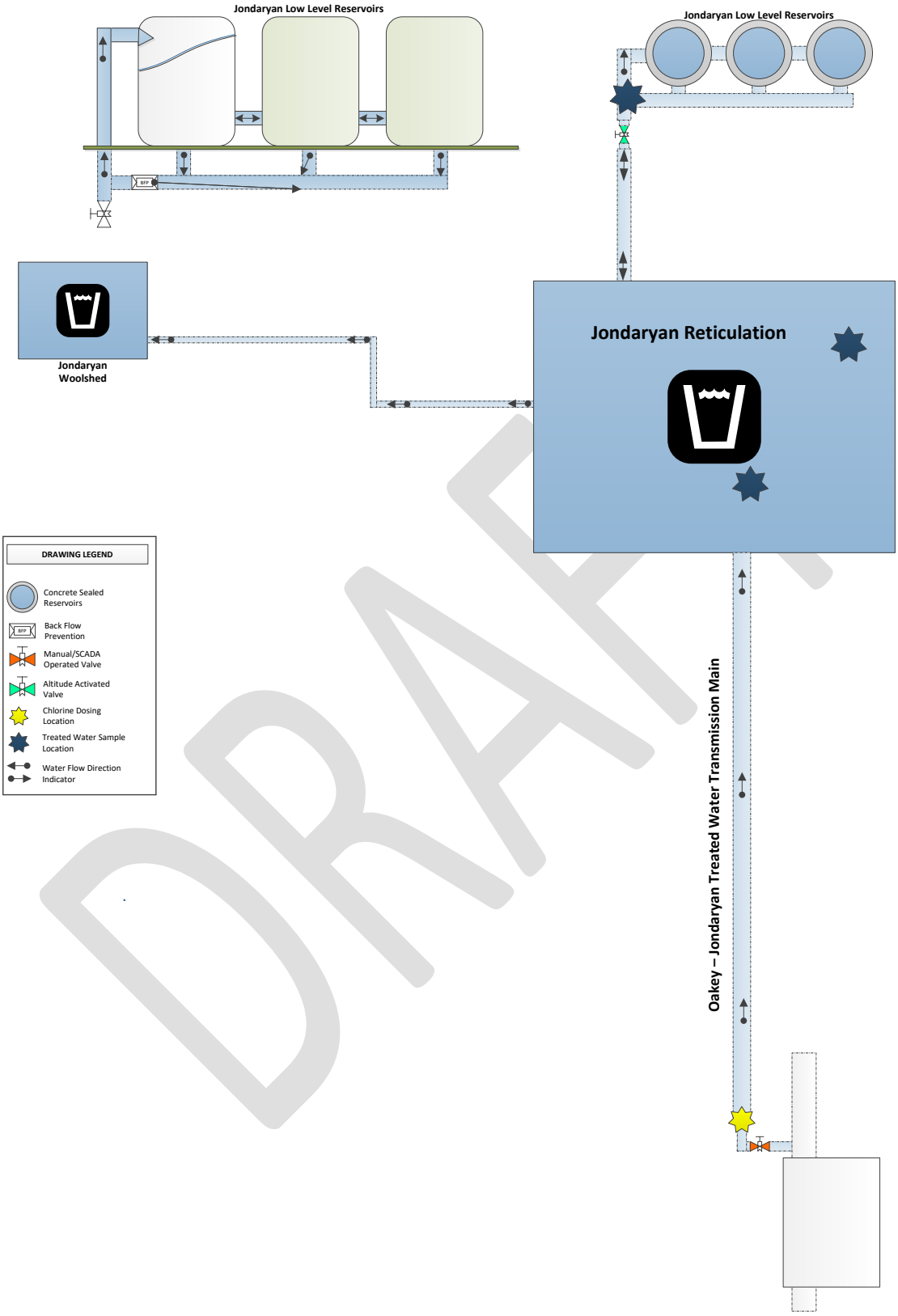
Table 2: Water Samples – Northern Operations Field Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Jondaryan	Low Level Reservoirs	Free Chlorine	Minimum Twice Weekly
Jondaryan	Consumer Taps	Free Chlorine	Weekly

Jondaryan Reticulation Map



Jondaryan Water Supply Schematic



Glenvale Water Sampling

Water Quality Sampling Task list

Table 1 and 2 are a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Glenvale	At end of skyline drive. **Private access road**	Low Level Reservoir	GV01	GRAB

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Glenvale	Sample Location of Harvey Road behind public BBQ	Glenvale Park	GV02	GRAB
Cotswold Hills	Hamzah Drive	John Trousdell Park	GV03	GRAB
Torrington	Cnr Cumner Road and Colonial Street	Joe Allen Park	GV04	GRAB

NOTE: Operator Field testing results to be recorded on Northern Operations Monthly Turbidity and Free Chlorine Record Sheets DM#6260536

NOTE

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

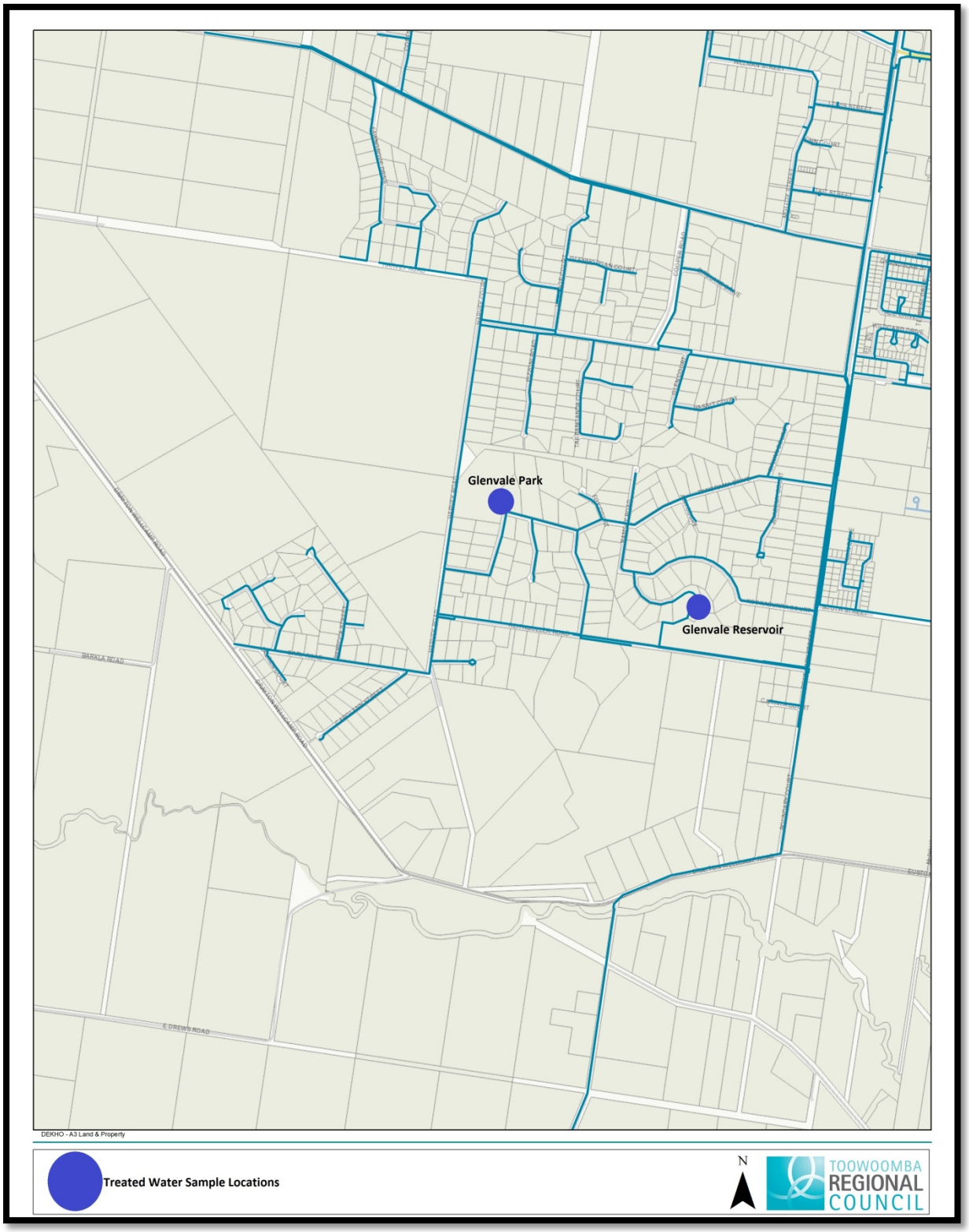
Table 1: Water Samples – Laboratory Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Glenvale	Low Level Reservoirs	Turbidity	
	Low Level Reservoirs	Microbiological	
	Low Level Reservoirs	Aluminium	
	Low Level Reservoirs	Iron and Manganese	
	Low Level Reservoirs	Standard Chemical	
	Low Level Reservoirs	Disinfection By-products	
	Low Level Reservoirs	Herbicide and Pesticide	
	Low Level Reservoirs	Heavy Metals	
Glenvale	Consumer Taps	Turbidity	
	Consumer Taps	Microbiological	
	Consumer Taps	Aluminium	
	Consumer Taps	Iron and Manganese	
	Consumer Taps	Standard Chemical	
	Consumer Taps	Disinfection By-products	
	Consumer Taps	Herbicide and Pesticide	
	Consumer Taps	Heavy Metals	

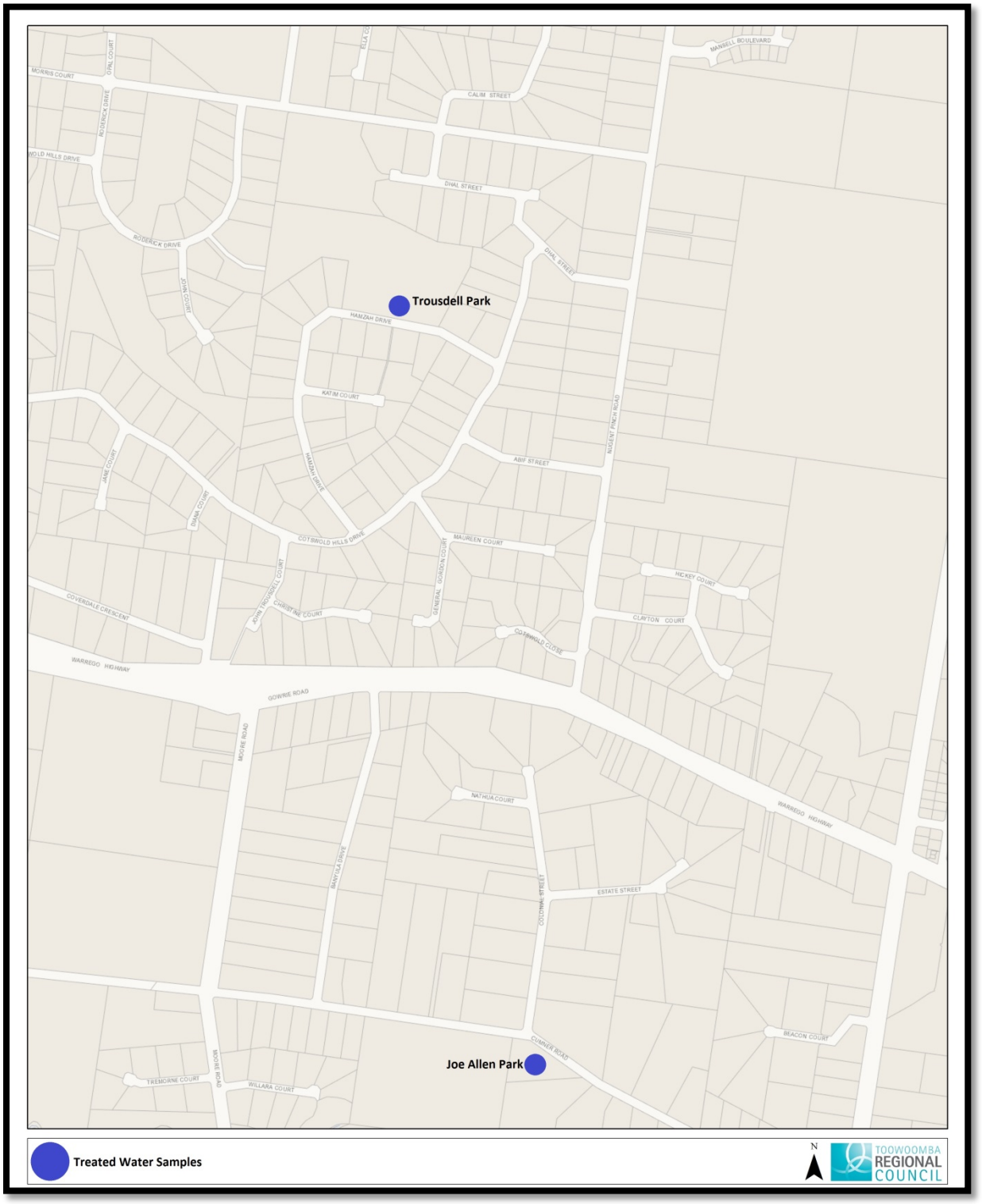
Table 2: Water Samples – Northern Operations Field Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Glenvale	Low Level Reservoirs	Free Chlorine	Minimum Twice Weekly
Glenvale	Consumer Taps	Free Chlorine	Weekly

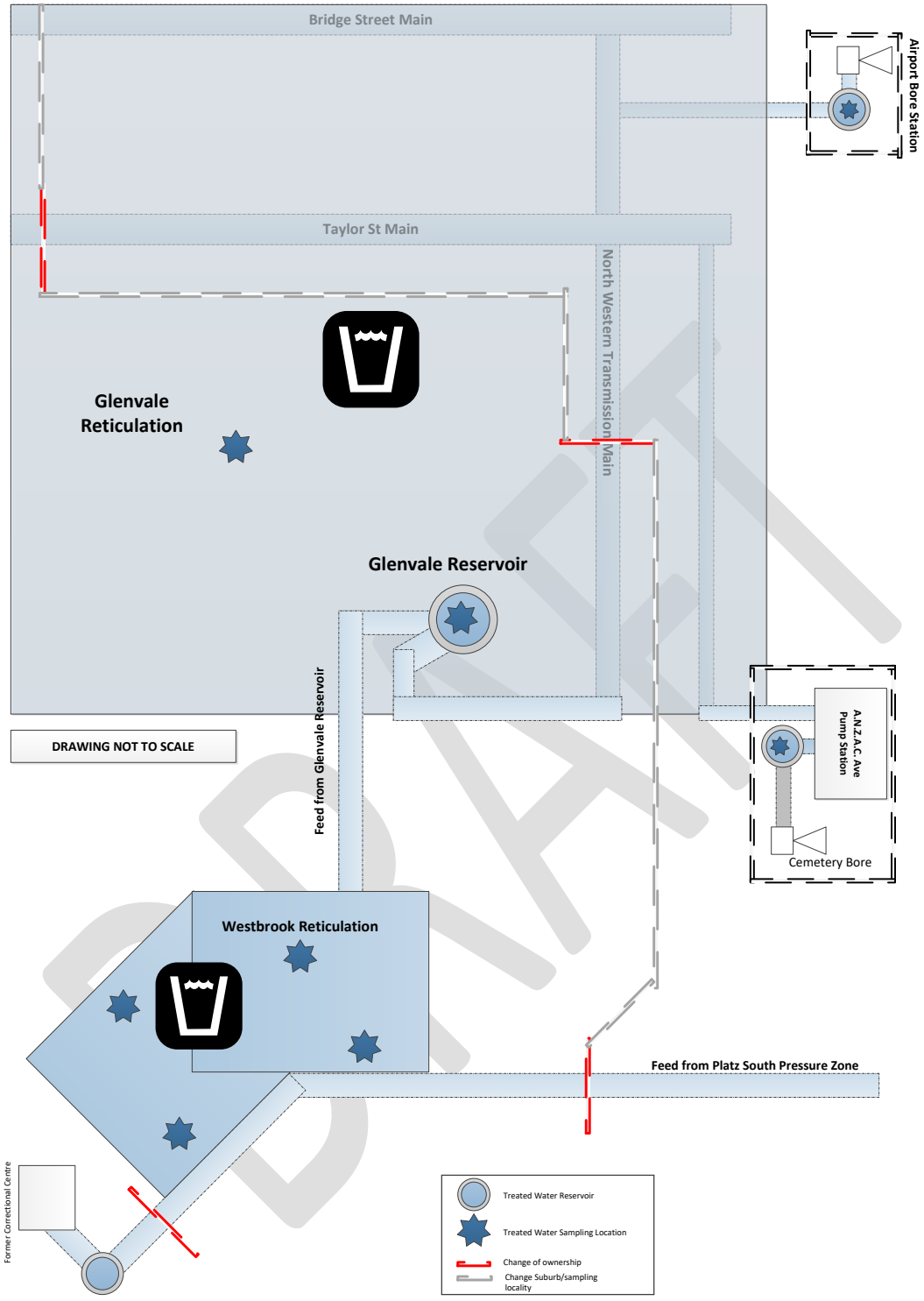
Glenvale Reticulation Map



Cotswold Hills and Torrington Reticulation Map



Glenvale Water Supply Schematic



Gowrie Mountain Water Sampling

Water Quality Sampling Task list

Table 1 and 2 are a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Gowrie Mountain	Rowland Court	Low Level Reservoir	GM01	GRAB
Gowrie Mountain	End of Rowland Court	High, Low Level Reservoirs	GM02	GRAB

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Gowrie Mountain	Jannusch Road	Bus Shelter Shed	GM03	GRAB
Gowrie Mountain	Outside Fence of 9 Jannusch Road	Jannusch Road	GM04	GRAB

NOTE: Operator Field testing results to be recorded on Northern Operations Monthly Turbidity and Free Chlorine Record Sheets DM#6260536

NOTE

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Gowrie Mountain	Low Level Reservoir	Turbidity	
	Low Level Reservoir	Microbiological	
	Low Level Reservoir	Aluminium	
	Low Level Reservoir	Iron and Manganese	
	Low Level Reservoir	Standard Chemical	
	Low Level Reservoir	Disinfection By-products	
	Low Level Reservoir	Herbicide and Pesticide	
	Low Level Reservoir	Heavy Metals	
Gowrie Mountain	High, Low Level Reservoirs	Turbidity	
	High, Low Level Reservoirs	Microbiological	
	High, Low Level Reservoirs	Aluminium	
	High, Low Level Reservoirs	Iron and Manganese	
	High, Low Level Reservoirs	Standard Chemical	
	High, Low Level Reservoirs	Disinfection By-products	
	High, Low Level Reservoirs	Herbicide and Pesticide	
	High, Low Level Reservoirs	Heavy Metals	

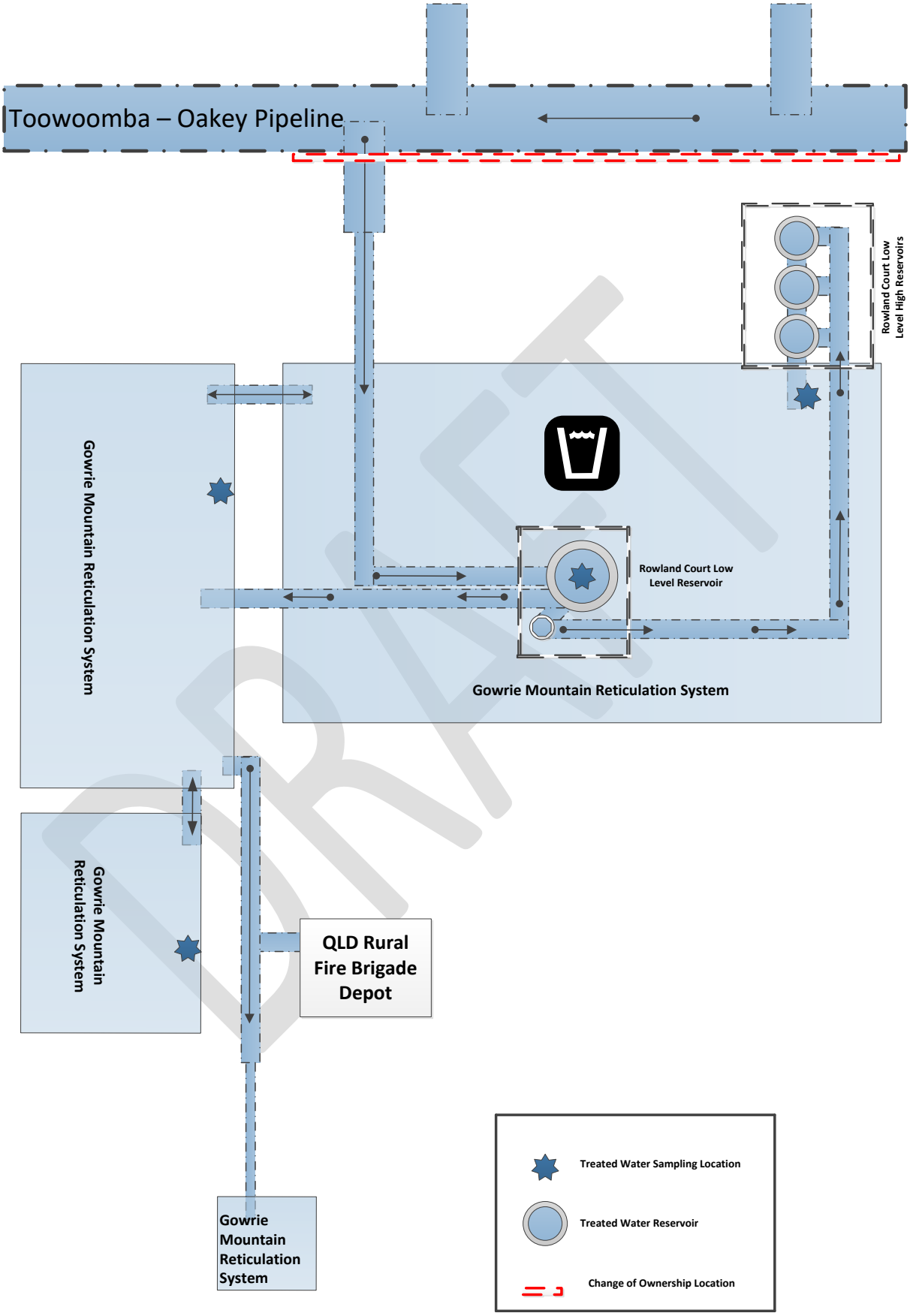
Gowrie Mountain	Consumer Taps	Turbidity	
	Consumer Taps	Microbiological	
	Consumer Taps	Aluminium	
	Consumer Taps	Iron and Manganese	
	Consumer Taps	Standard Chemical	
	Consumer Taps	Disinfection By-products	
	Consumer Taps	Herbicide and Pesticide	
	Consumer Taps	Heavy Metals	

Table 2: Water Samples – Northern Operations Field Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Gowrie Mountain	Low Level Reservoirs	Free Chlorine	Minimum Twice Weekly
Gowrie Mountain	High, Low Level Reservoirs	Free Chlorine	Minimum Twice Weekly
Gowrie Mountain	Consumer Taps	Free Chlorine	Weekly

Gowrie Mountain Reticulation Map

Gowrie Mountain Water Supply Schematic



Westbrook Water Sampling

Water Quality Sampling Task list

Table 1 and 2 are a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Westbrook	Westbrook Park Main Street	Main Street	W01	GRAB
Westbrook	CNR Gwenda Drive and Ferguson Road	SPS N	W02	GRAB
Westbrook	Barwick Street at public BBQ	Centenary Park	W03	GRAB
Westbrook	Jacob Court	Jacob Court Park	W04	GRAB

NOTE: Operator Field testing results to be recorded on Northern Operations Monthly Turbidity and Free Chlorine Record Sheets DM#6260536

NOTE

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

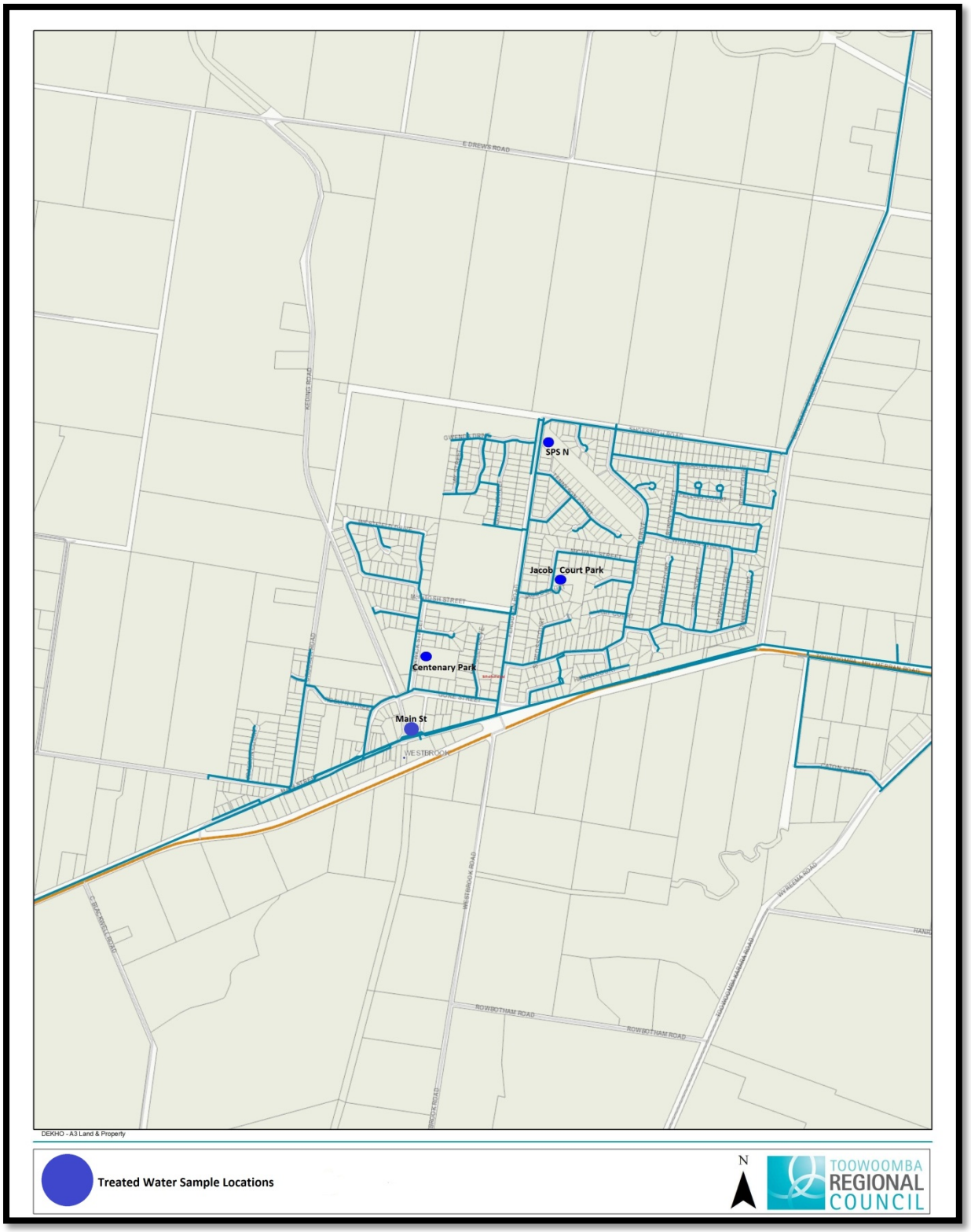
Table 1: Water Samples – Laboratory Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Westbrook	Consumer Taps	Turbidity	
Westbrook	Consumer Taps	Microbiological	
Westbrook	Consumer Taps	Aluminium	
Westbrook	Consumer Taps	Iron and Manganese	
Westbrook	Consumer Taps	Standard Chemical	
Westbrook	Consumer Taps	Disinfection By-products	
Westbrook	Consumer Taps	Herbicide and Pesticide	
Westbrook	Consumer Taps	Heavy Metals	

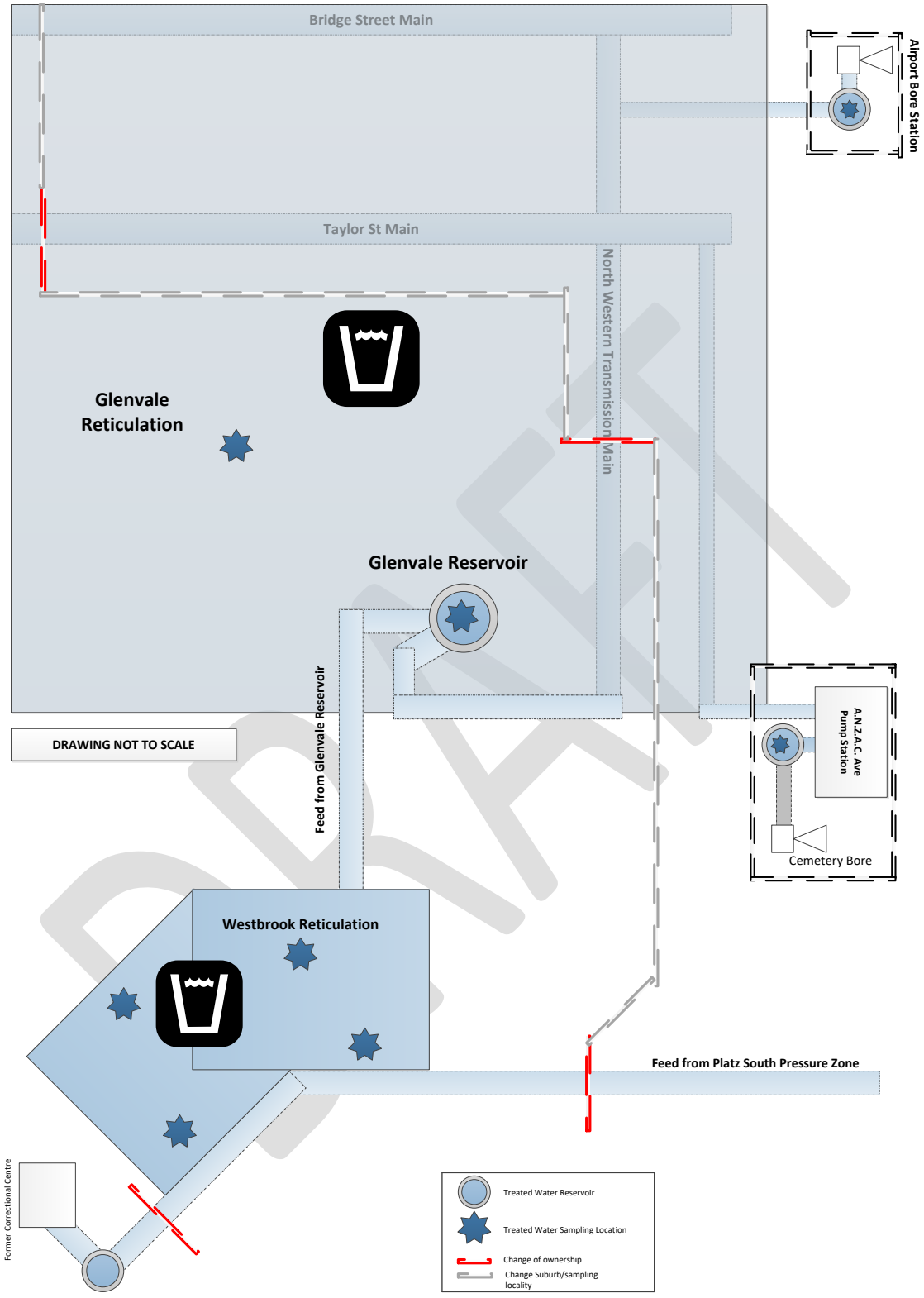
Table 2: Water Samples – Northern Operations Field Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Westbrook	Consumer Taps	Free Chlorine	Minimum Twice Weekly

Westbrook Reticulation Map



Westbrook Water Supply Schematic



Appendix G

Cressbrook Water Treatment Plant Water Sampling

Water Quality Sampling Task list

Table 1, 2,3 and 4 a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Cressbrook WTP	Inside WTP Building	Raw Water from Cressbrook Dam		GRAB
Cressbrook WTP	Inside WTP Building	Treated Water (after filter)		GRAB
Cressbrook WTP	*sample tap on side of WTP Building	Clearwater Reservoir		GRAB
Cressbrook WTP	Sample tap on pipework on side of Clearwater tank			GRAB
Cressbrook Reticulation	Above Camping Grounds	Camp Tanks		GRAB

*To collect sample operational staff need to ensure that transfer pump is running before collecting sample. Refer to DM#5718546, QP-M-136 for further details

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Cressbrook	Picnic Area	Consumer Tap		GRAB
Cressbrook	Camping Grounds	Consumer Tap		GRAB

Table 3: Wastewater Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE

Currently there is no requirement for sampling and testing to be undertaken at the Cressbrook Wastewater facility, therefore table 3 has been greyed out. Should the need arise for samples to be collected and analysed then table 3 will be changed to reflect the required sampling/testing.

Table 4 Water Treatment Plant Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID	SAMPLE TYPE	FREQUENCY
Cressbrook	WTP	Raw Water – Turbidity		GRAB	Daily *(When Operational)*
Cressbrook	WTP	Raw Water – pH		GRAB	Daily *(When Operational)*
Cressbrook	WTP	Raw Water – Hardness		GRAB	Daily *(When Operational)*
Cressbrook	WTP	Raw Water – Alkalinity		GRAB	Daily *(When Operational)*
Cressbrook	WTP	Raw Water – Colour		GRAB	Daily *(When Operational)*
Cressbrook	WTP	Treated Water – Turbidity		GRAB	Daily *(When Operational)*
Cressbrook	WTP	Treated Water – Free Chlorine		GRAB	Daily *(When Operational)*
Cressbrook	WTP	Clearwater – pH		GRAB	Daily *(When Operational)*
Cressbrook	WTP	Clearwater – Hardness		GRAB	Daily *(When Operational)*
Cressbrook	WTP	Clearwater Alkalinity		GRAB	Daily *(When Operational)*
Cressbrook	WTP	Clearwater Colour		GRAB	Daily *(When Operational)*
Cressbrook	WTP	Clearwater Free Chlorine		GRAB	Daily *(When Operational)*

Note: *the Cressbrook Water Treatment Plant only operates (treats water), when there is a demand. This means that Operational staff may only treat water 1 day per week, or may treat water 7 days a week when the camp grounds are full or high demand in the Picnic Area. This varies on Public holidays and seasonal variation. Daily (When Operational) indicates that operational staff only sample from this location when the treatment plant is running (due to demand). Operation of the Cressbrook WTP is manually undertaken by trained operator's onsite.*

Note: Currently staff at the Cressbrook WTP, do not have the facilities to test for some parameters. These parameters have been highlighted grey in the previous tables. Once Water Operations have purchased the required equipment, operational staff should be able to then test these parameters using the correct equipment.

Until then Water Operations Dam Operational Staff will rely on Toowoomba Regional Council Laboratory Services testing and analysis for these Parameters.

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

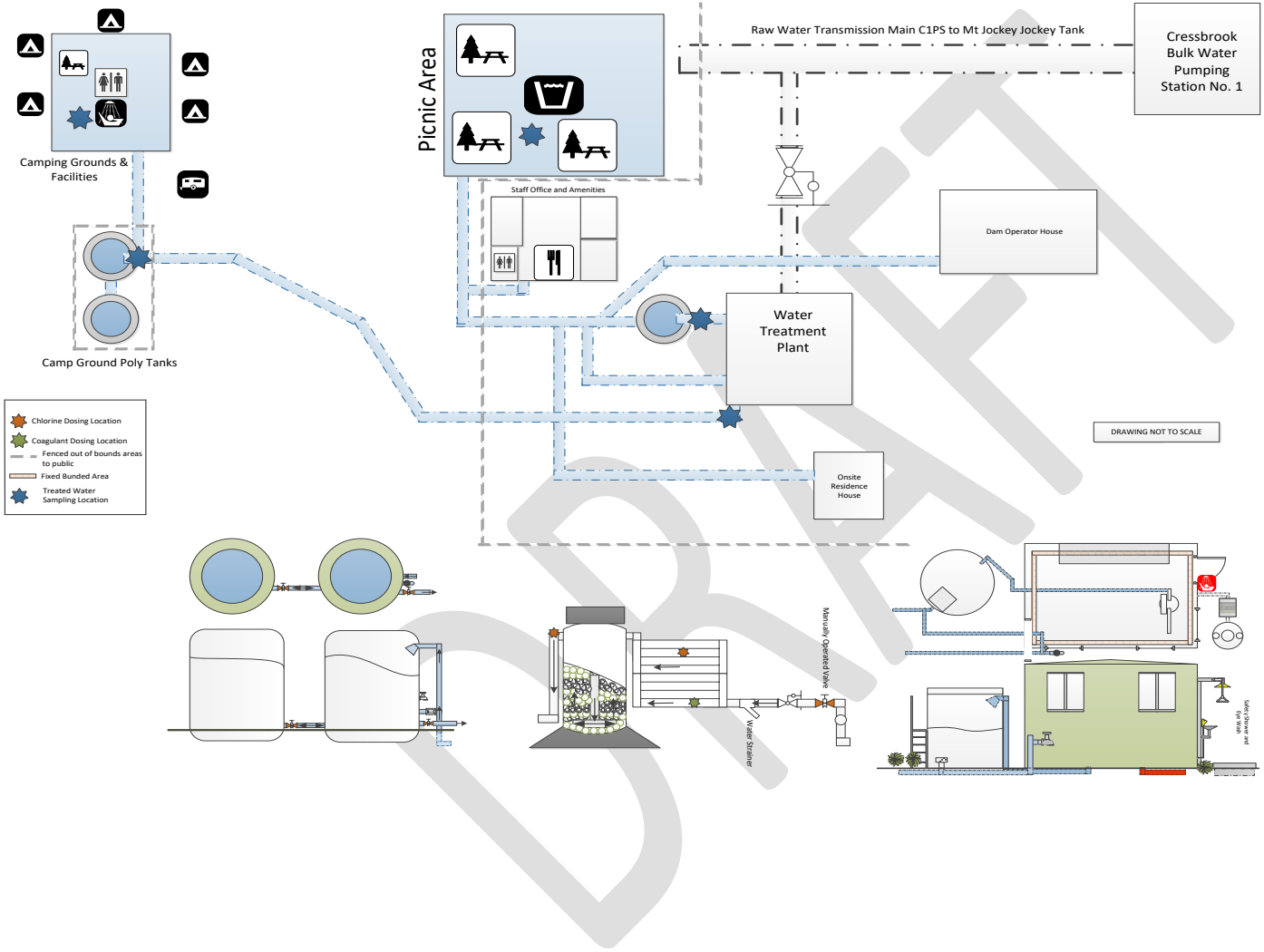
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Cressbrook	WTP Raw Water	Turbidity	Weekly/Event
	WTP Raw Water	Microbiological	Weekly/Event
	WTP Raw Water	Standard Chemical	Monthly/Event
	WTP Raw Water	Herbicide and Pesticide	6 Monthly/Event
	WTP Raw Water	Heavy Metals	6 Monthly/Event
Cressbrook	WTP Clearwater	Turbidity	Weekly/Event
	WTP Clearwater	Microbiological	Weekly/Event
	WTP Clearwater	Aluminium	Weekly/Event
	WTP Clearwater	Iron and Manganese	Weekly/Event
	WTP Clearwater	Standard Chemical	Monthly/Event
	WTP Clearwater	Disinfection By-Products	3 Monthly
	WTP Clearwater	Herbicide and Pesticide	6 Monthly/Event
	WTP Clearwater	Heavy Metals	6 Monthly/Event
	WTP Clearwater	Toxins	Event

Table 2: Water Samples – Dam Operator Field Testing

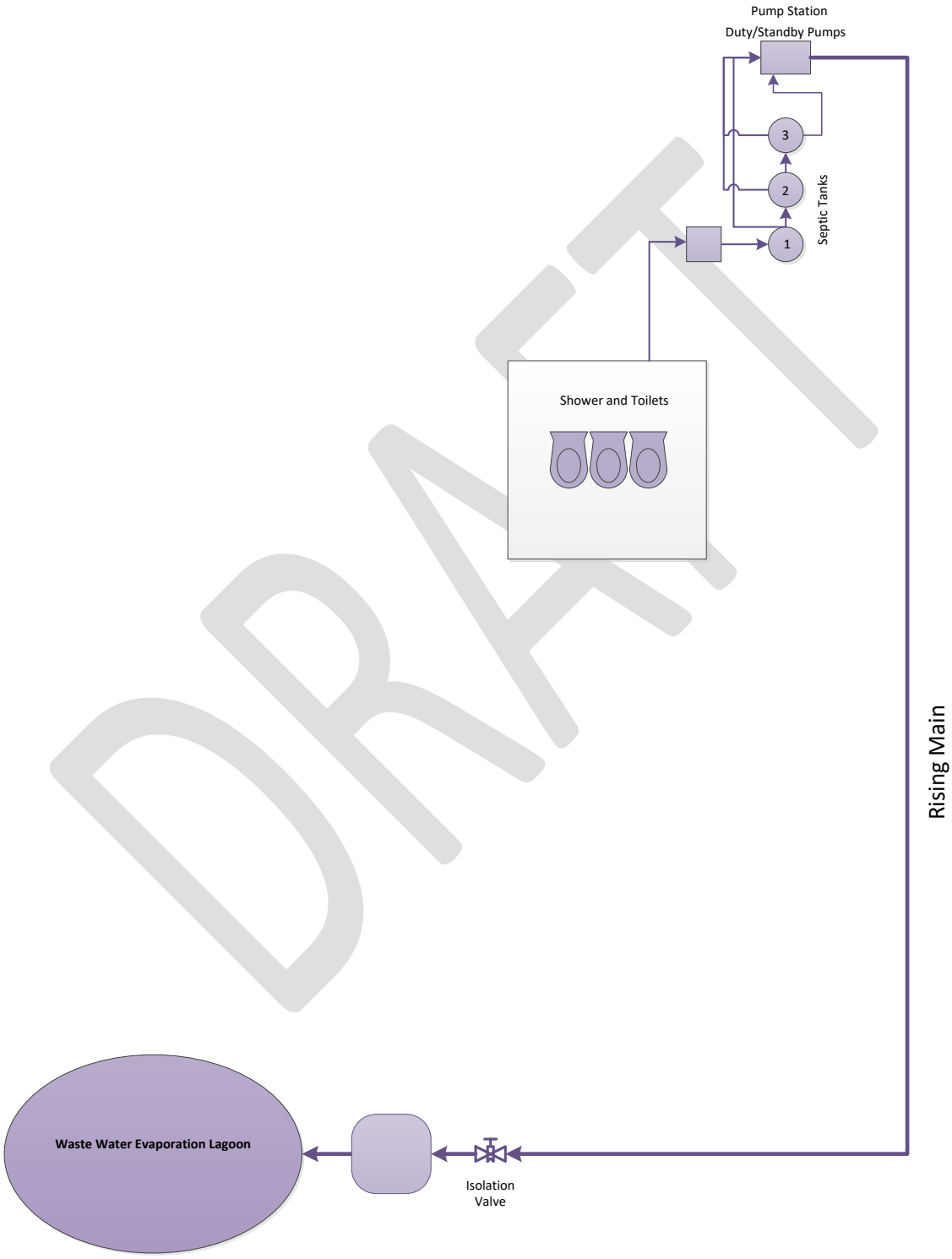
SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Cressbrook	WTP Raw Water	Turbidity	Daily*(When Operational)*
Cressbrook	WTP Raw Water	Colour	Daily*(When Operational)*
Cressbrook	WTP Raw Water	Hardness	Daily*(When Operational)*
Cressbrook	WTP Raw Water	Alkalinity	Daily*(When Operational)*
Cressbrook	WTP Raw Water	pH	Daily*(When Operational)*
Cressbrook	WTP	Free Chlorine	Daily*(When Operational)*
Cressbrook	WTP	Turbidity	Daily*(When Operational)*
Cressbrook	Clearwater Reservoir	Free Chlorine	Daily(5)
Cressbrook	Clearwater Reservoir	Turbidity	Daily(5)
Cressbrook	Camp Tanks	Free Chlorine	2 x Weekly
Cressbrook	Consumer Taps	Free Chlorine	2 x Weekly

Cressbrook Reticulation Map

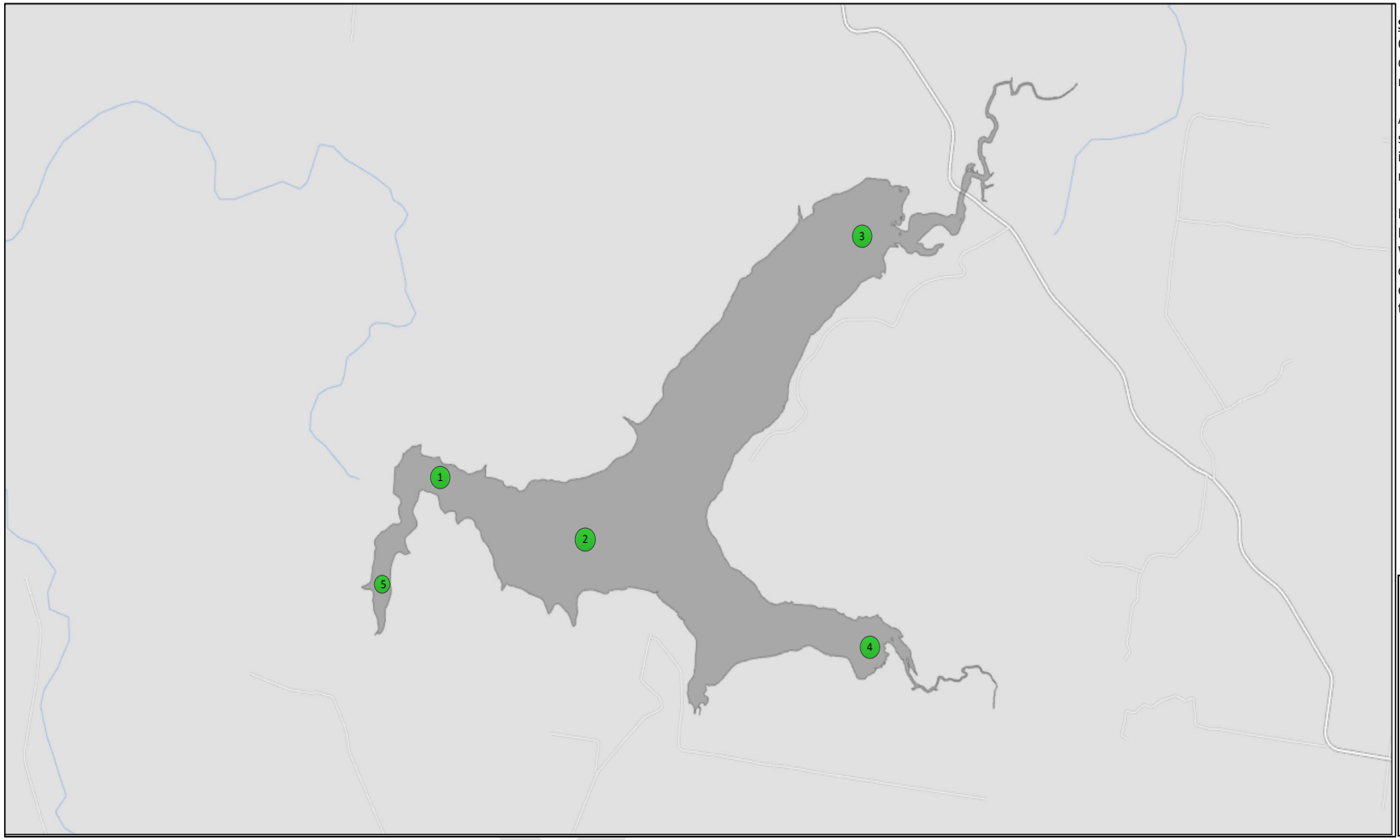
Cressbrook WTP and Reticulation Schematic



Cressbrook Wastewater Schematic



Cooby Dam Water Quality Monitoring Locations



Sampling Program
Composite samples to be collected from each location marked with a green dot.

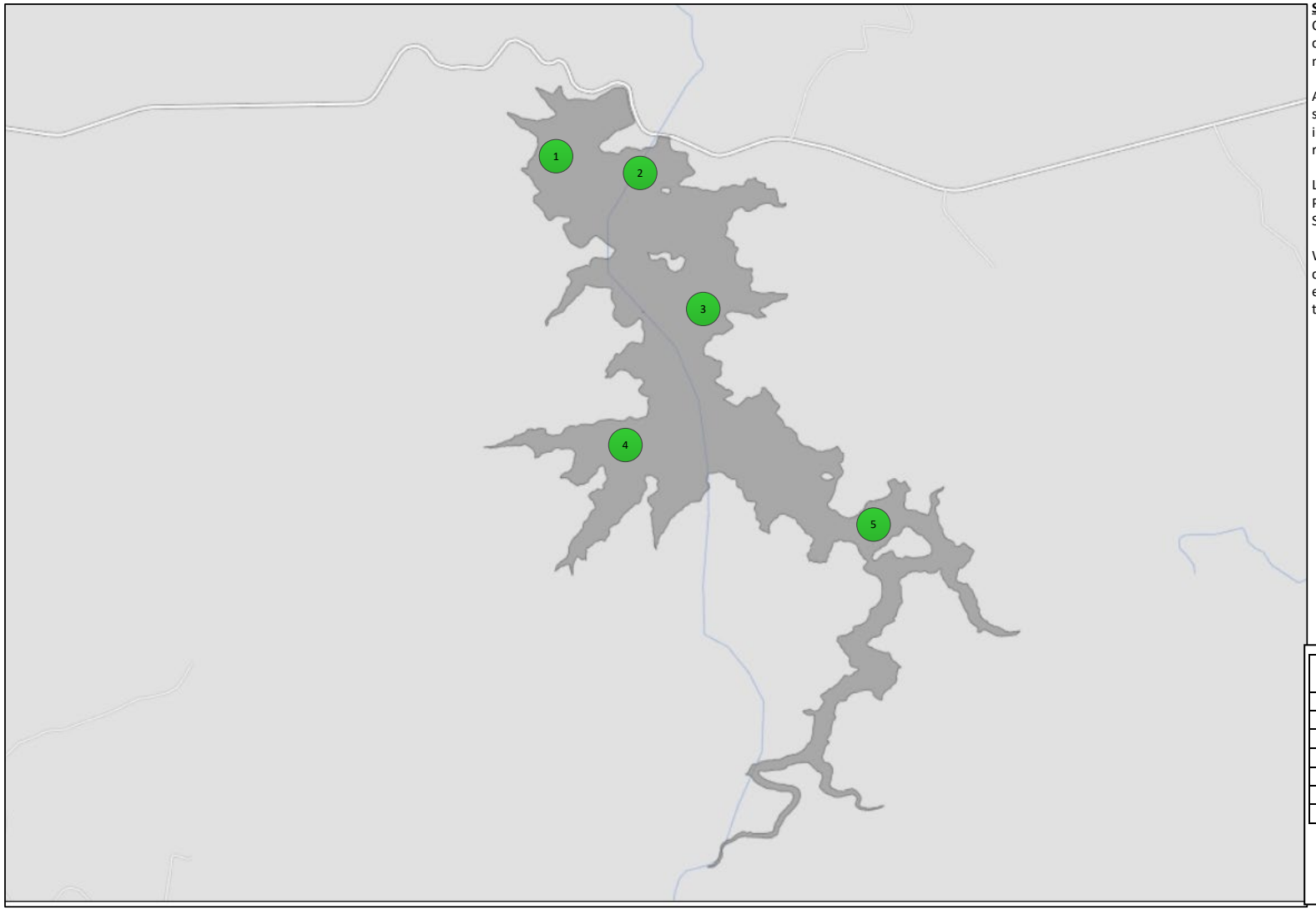
Any locations that cannot be sampled are to be recorded in operational diaries and relevant spread sheets.

Location 1 is the Cooby Dam Pumping Station Tower. Weekly Samples are collected at this location at each on of the intakes at the tower.

Parameter	Location				
	1	2	3	4	5
Micro	W	M	M	M	M
Algae	W	M	M	M	M
Chemical	W	M	M	M	M
Metals					
Pesticides					
Herbicides					
Physical	W				

Physical sampling is conducted using water quality analyser at each intake level

Perseverance Dam Water Quality Monitoring Locations



Sampling Program
Composite samples to be collected from each location marked with a green dot.

Any locations that cannot be sampled are to be recorded in operational diaries and relevant spread sheets.

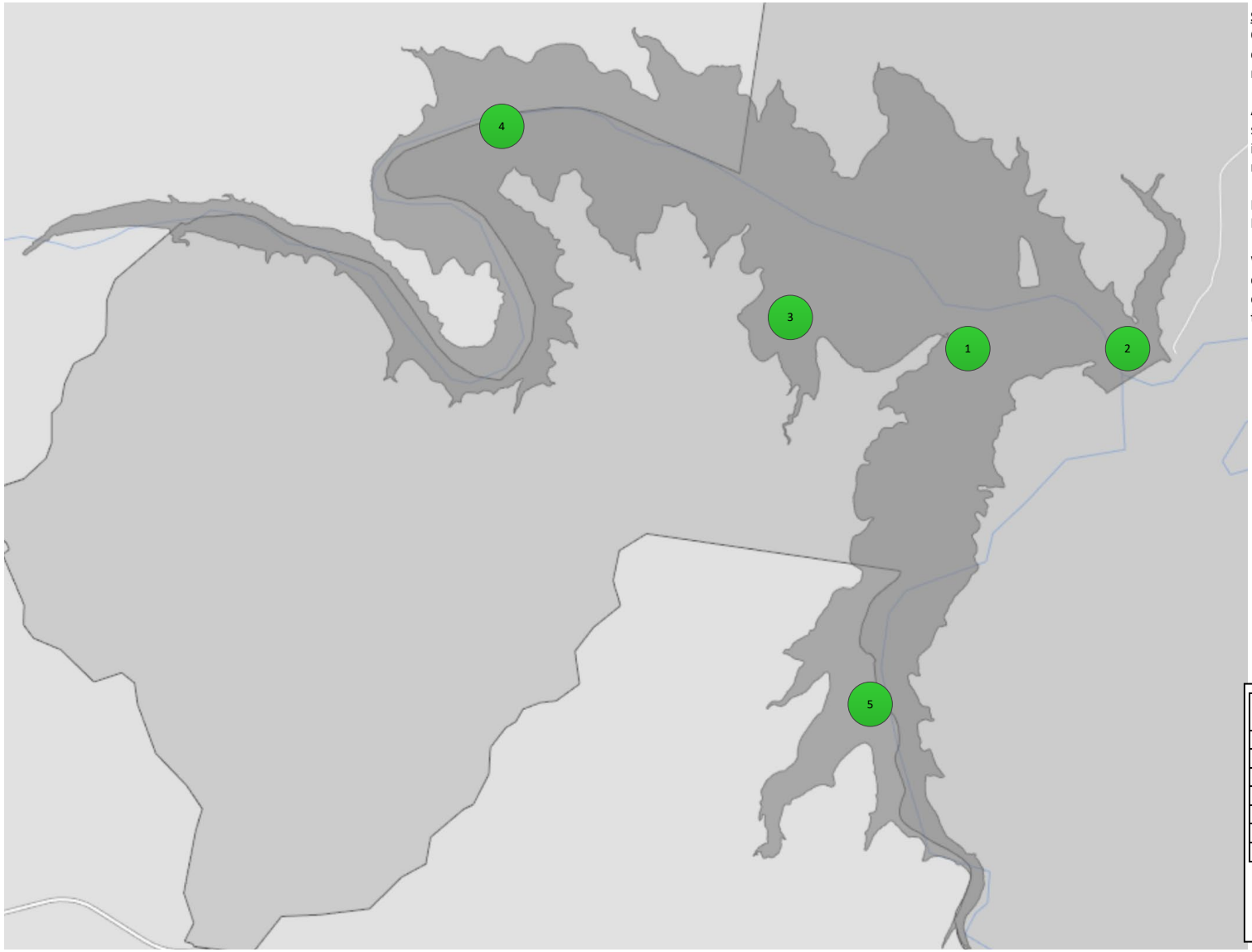
Location 1 is the Perseverance Dam Pumping Station Tower.

Weekly Samples are collected at this location at each on of the intakes at the tower.

Parameter	Location				
	1	2	3	4	5
Micro	W	M	M	M	M
Algae	W	M	M	M	M
Chemical	W	M	M	M	M
Metals					
Pesticides					
Herbicides					
Physical	W				

Physical sampling is conducted using water quality analyser at each intake level

Cressbrook Dam Water Quality Monitoring Locations



Sampling Program
Composite samples to be collected from each location marked with a green dot.

Any locations that cannot be sampled are to be recorded in operational diaries and relevant spread sheets.

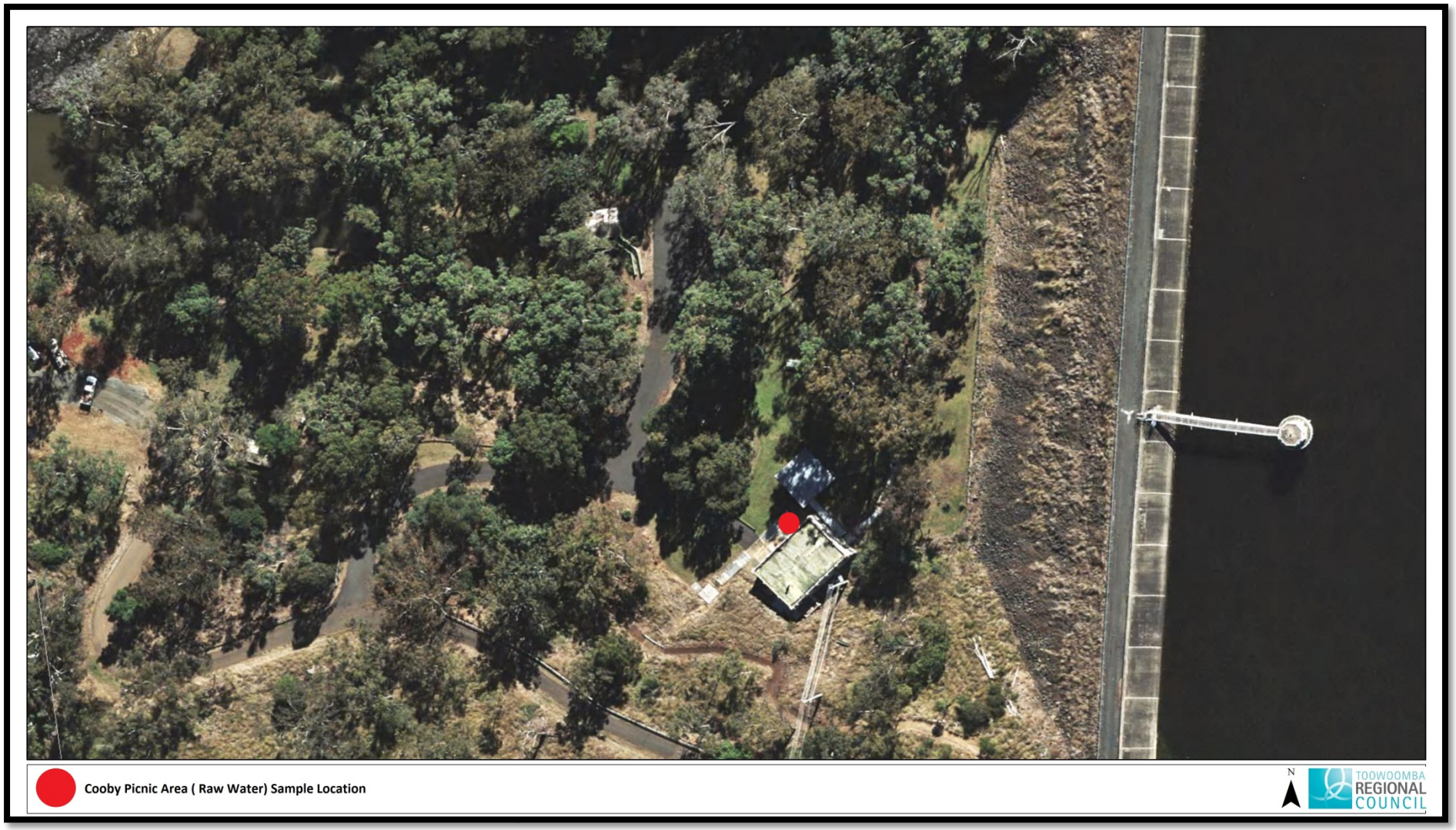
Location 1 is the Cressbrook Dam Pumping Station Tower.

Weekly Samples are collected at this location at each on of the intakes at the tower.

Parameter	Location				
	1	2	3	4	5
Micro	W	M	M	M	M
Algae	W	M	M	M	M
Chemical	W	M	M	M	M
Metals					
Pesticides					
Herbicides					
Physical	W				

Physical sampling is conducted using water quality analyser at each intake level

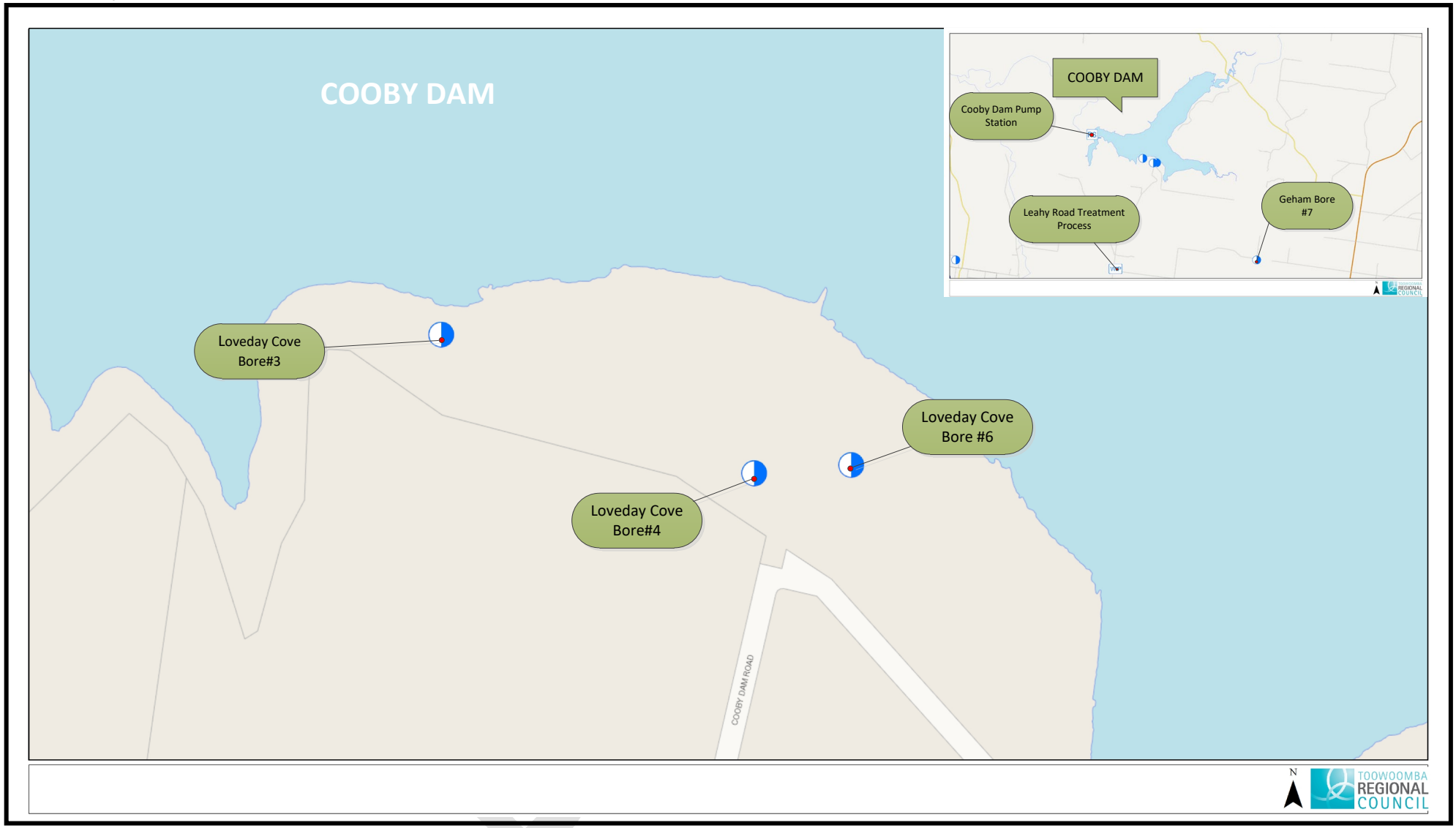
Cooby Dam Picnic Area Water Sampling Locations



Cooby Dam Emergency Bores Sample Locations

Table below shows location to emergency bore details. In the event of extended drought conditions Toowoomba Regional Council use bores (42, 43), to supply emergency water to Cooby Dam. In the event that the emergency bores are activated Dam Staff are to collect water quality samples listed in this manual. Once initial set of samples are collected and tested a frequency of further testing will determined by the ***Manager Water Operations*** and ***relevant Branch Support Staff.***

Map ID	Asset ID	Asset Name	Purpose	Location	Total Depth	Comments
39	HFBAB7	Geham Bore GAD#7	Town Water Supply	Reushle Road		Bore not owned by Toowoomba Regional Council
38	HfGAB6	GAB Loveday Cove Bore #6	Irrigation	Loveday Cove	72m	Bore Owned by Parks and Recreation TRC
42	HFGAB2	GAB Loveday Cove Bore #4	Town Water Supply Emergency Only	Loveday Cove (East)	500m	
43	HfGAB3	GAB Loveday Cove Bore #3	Town Water Supply Emergency Only	Loveday Cove (west)	502m	
44	HfGAB4	GAB Cooby Pipeline Road Bore #4	Town Water Supply – Not in use	Cooby Pipeline Road	540m	
45	HfGAB5	GAB Patten Road Bore #5	Town Water Supply – Not in use	Patten Road	503m	


COOBY DAM
Loveday Cove Bore#3
Loveday Cove Bore #6
Loveday Cove Bore#4
COOBY DAM ROAD
COOBY DAM
Cooby Dam Pump Station
Leahy Road Treatment Process
Geham Bore #7
N
TOOWOOMBA REGIONAL COUNCIL

Map Shows bore location and Map ID

Toowoomba Dam Seepage Meter Water Sampling

Water Quality Sampling Task list

Table 1, lists of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Seepage Meter Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Cressbrook Dam	Inside Piezometer Meter Building	Seepage Water from Cressbrook Dam Wall	S1 Cressbrook	GRAB
Cressbrook Dam	Inside Piezometer Meter Building	Seepage Water from Cressbrook Dam Wall	S2 Cressbrook	GRAB
Perseverance Dam	V-Notch			GRAB
Cooby Dam	V-Notch			GRAB

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

Appendix H

Mount Kynoch Water Treatment Plant Sampling

Water Quality Sampling Task list

Table 1, 2 and 3 are a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Mount Kynoch WTP	Inside Valve House	Raw Water from Pechey Gravity Transmission Mains		GRAB
Mount Kynoch WTP	Tap at Garden in WTP Compound	Raw Water from Cooby Transmission Main		GRAB
Mount Kynoch WTP	Inside Operator Lab	Filtered Water		GRAB
Mount Kynoch WTP	Inside Operator Lab	Settled Water*		GRAB
Mount Kynoch WTP	Inside Operator Lab	Clear Water		GRAB
Mount Kynoch WTP	Northern and Southern channels	Pre Filter Chlorine Residual		GRAB
Mount Kynoch WTP	Sludge Thickener	Sludge Thickener Return		GRAB
Mount Kynoch WTP	Filtered Water Gallery	Filtered Water from Filters 1 to 8		GRAB
Mount Kynoch WTP	Filtered Water Gallery	Post Fluoride Dosing		GRAB
Mount Kynoch WTP	Sludge Thickener Balance Tank	Trade Waste		GRAB
Mount Kynoch WTP	Blue Mountain Hydrovar Station	Reservoir Sample		GRAB

*To be collected when running the water treatment plant in conventional treatment.

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE

*For consumer tap sampling please refer to the Toowoomba Reticulation Sampling of this manual

Table 3: Wastewater Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE

*For Toowoomba Wastewater Sampling please refer to Wetalla WRF and AWTP manuals

Table 3 Water Treatment Plant Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID	SAMPLE TYPE	FREQUENCY
Mt. Kynoch	WTP	Raw Water - Turbidity		GRAB	*Daily (7)*
Mt. Kynoch	WTP	Raw Water - Turbidity		Online	*Continuous*
Mt. Kynoch	WTP	Raw Water –pH		GRAB	*Daily (7)*
Mt. Kynoch	WTP	Raw Water – Hardness		GRAB	*Daily (7)*
Mt. Kynoch	WTP	Raw Water – Alkalinity		GRAB	*Daily (7)*
Mt. Kynoch	WTP	Raw Water – Colour		GRAB	*Daily (7)*
Mt. Kynoch	WTP	Clear Water Treated Water – Turbidity		GRAB	*Daily (7)*
Mt. Kynoch	WTP	Clear Water Treated Water – Turbidity		Online	*Continuous*
Mt. Kynoch	WTP	Filtered Water – Turbidity		GRAB	*Daily (7)*
Mt. Kynoch	WTP	Filtered Water – Turbidity		Online	*Continuous*
Mt. Kynoch	WTP	Clear Water Treated Water – Free Chlorine		GRAB	*Daily (7)*
Mt. Kynoch	WTP	Clear Water Treated Water – Free Chlorine		Online	*Continuous*
Mt. Kynoch	WTP	Clear Water Treated Water – Total Chlorine		GRAB	*Daily (7)*
Mt. Kynoch	WTP	Clear Water Treated Water – pH		GRAB	*Daily (7)*
Mt. Kynoch	WTP	Clear Water Treated Water – Hardness		GRAB	*Daily (7)*
Mt. Kynoch	WTP	Clear Water Treated Water – Alkalinity		GRAB	*Daily (7)*
Mt. Kynoch	WTP	Clear Water Treated Water – Colour		GRAB	*Daily (7)*
Mt. Kynoch	WTP	Clear Water Treated Water – Fluoride			
Mt. Kynoch	WTP	Reservoir Treated Water – Turbidity		GRAB	*Daily (7)*
Mt. Kynoch	WTP	Reservoir Treated Water – Free Chlorine		GRAB	*Daily (7)*
Mt. Kynoch	WTP	Reservoir Treated Water – Total Chlorine		GRAB	*Daily (7)*
Mt. Kynoch	WTP	Reservoir Treated Water – pH		GRAB	*Daily (7)*
Mt. Kynoch	WTP	Reservoir Treated Water – Hardness		GRAB	*Daily (7)*
Mt. Kynoch	WTP	Reservoir Treated Water – Alkalinity		GRAB	*Daily (7)*
Mt. Kynoch	WTP	Reservoir Treated Water – Colour		GRAB	*Daily (7)*

Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

NOTE: Mt Kynoch Water Treatment Plant Operator Daily Testing to be recorded on Mt Kynoch Operators QP-FRM-025 Daily Tests and Duties DM#2216310

Water Quality Sampling Frequency List

Tables 1 and 2 area list of the sampling frequencies

Sampling Frequency

Table 1: Water Samples – Laboratory Testing

SAMPLING LOCATION		SAMPLING TYPE	FREQUENCY
Mt. Kynoch	Raw Water Supplies	Turbidity	Daily/Event
	Raw Water Supplies	Microbiological	Daily /Event
	Raw Water Supplies	Standard Chemical	Monthly/Event
	Raw Water Supplies	Herbicide and Pesticide	6 Monthly/Event
	Raw Water Supplies	Heavy Metals	6 Monthly/Event
	Raw Water Supplies	Toxins	
Mt. Kynoch	WTP	Turbidity	Daily /Event
	WTP	Microbiological	Daily /Event
	WTP	Aluminium	Daily /Event
	WTP	Iron and Manganese	Daily /Event
	WTP	Standard Chemical	Monthly/Event
	WTP	Disinfection By-Products	3 Monthly
	WTP	Herbicide and Pesticide	6 Monthly/Event
	WTP	Heavy Metals	6 Monthly/Event
	WTP	Fluoride	Daily/Monthly
	WTP	Toxins	Event

Note:

Mount Kynoch Water Treatment Plant supplies treated drinking water to different water supply schemes, these schemes include;

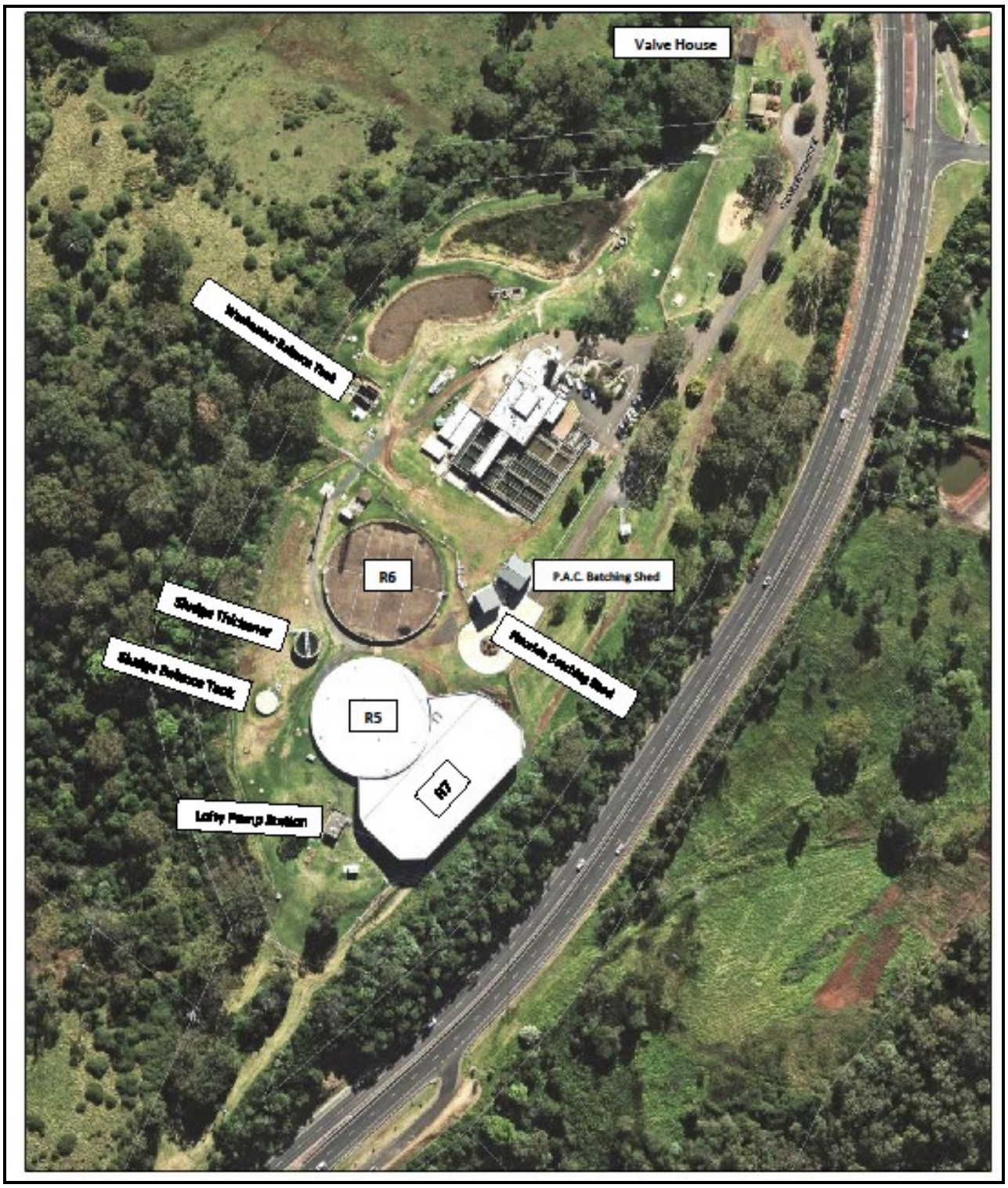
- Highfields (*includes Kleinton, Cabarlah, Cawdor, Meringandan East*)
- Goombungee
- Meringandan West

- Gowrie Junction
- Gowrie Mountain
- Kingsthorpe
- Oakey (*including Jondaryan*)
- Glenvale and Westbrook
- Southern Operational schemes once connected to the Toowoomba Water Supply

Mount Kynoch Staff will verbally notify the water operational staff, who are in charge of these schemes if any treated drinking water fails to meet the current ADWG Health limits and/or current DWQMP limits.

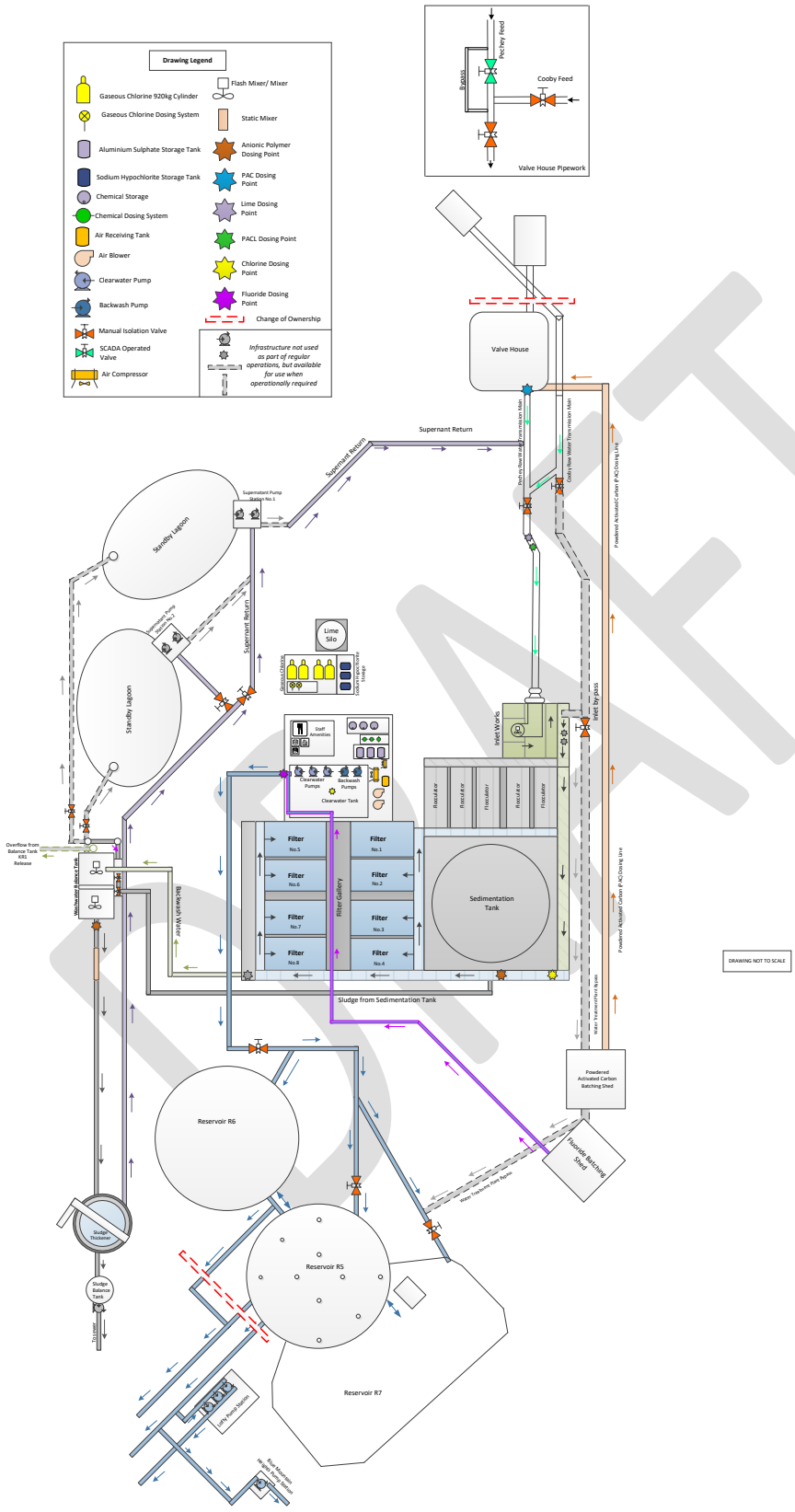
Verbal notice will be given in the first instance followed by written notice. Written notice will also list current actions being undertaken to correct incident/event. Once the incident/event has been corrected then verbal notification again will be given from the Mount Kynoch staff to the operational staff in charge of the aforementioned water supply schemes.

Kynoch Water Treatment Plant Map



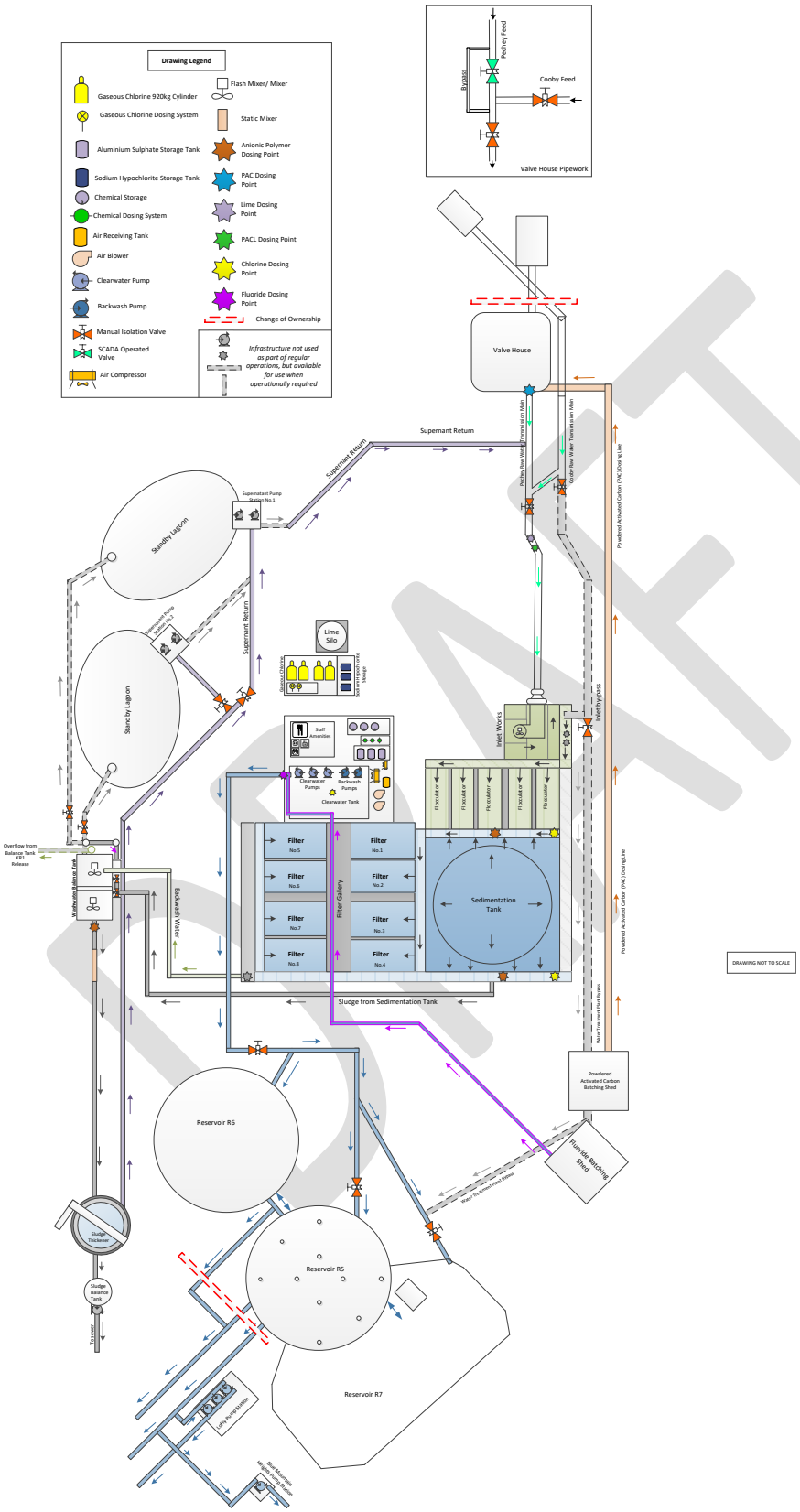
Kynoch Water Treatment Plant Schematic

Contact Filtration



Kynoch Water Treatment Plant Schematic

Conventional Filtration



Appendix I

Toowoomba Reticulation Sampling

Water Quality Sampling Task list

Table 1 and 2 are a list of the sampling locations, ID, description and sample type

Sampling locations, identification and types

Table 1: Water Samples – Treated Water Reservoirs

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
Mt Kynoch	Shuttlewood Court Mt Kynoch, Off New England Highway	Kynoch Reservoir No. 1	R5	GRAB
Mt Kynoch	Shuttlewood Court Mt Kynoch, Off New England Highway	Kynoch Reservoir No.2	R6	GRAB
Mt Kynoch	Shuttlewood Court Mt Kynoch, Off New England Highway	Kynoch Reservoir No. 3	R7	GRAB
Mt Lofty	At End of North Street, just after video avenue, Mount Lofty	Lofty Reservoir	R9	GRAB
Picnic Point	Tourist Road, Rangeville	Picnic Point elevated Reservoir	R11	GRAB
Picnic Point	CNR Tourist Road and Heller Street Rangeville	Picnic Point Fire Fighting Tank		GRAB
Gabbinbar No.1	Nelson Street	Gabbinbar Low Level Reservoir	R12	GRAB
Gabbinbar No.2	Nelson Street	Gabbinbar Low Level Reservoir	R13	GRAB
Platz Reservoir	Gateway at end of Birch Court, Darling Heights	Platz Low Level Reservoir	R14	GRAB
Freneau Pines Reservoir	Poplar Street, Newtown	Freneau Pines Low level	R15	GRAB
Freneau Pines Reservoir	Poplar Street, Newtown	Freneau Pines Elevated Reservoir	R16	GRAB
Stuart Street Reservoir	Stuart Street	Stuart St Low Level Reservoir	R17	GRAB
Rowena Reservoir	Entrance of Memory Street,	Rowena Low Level Reservoir	R18	GRAB

	Harristown			
Horner's Reservoir	CNR Geddes Street and Wilma Street, Centenary Heights	Horner's Low Level Reservoir	R19	GRAB
Gabbinbar High	Nelson Street	Gabbinbar Elevated Reservoir	R22	GRAB

Table 2: Water Samples – Consumer Taps

SAMPLING LOCATION			DESCRIPTION	SAMPLING ID	SAMPLE TYPE
Suburb	Pressure Zone & Physical Location				
Toowoomba City	City Pressure Zone	Cnr Ruthven and Chalk Drive	Cathro Park	C1	GRAB
North Toowoomba	City Pressure Zone	Jellicoe Street	Martin Klein Park	C2	GRAB
Newtown	Freneau Pines Pressure Zone	Tyson Street,	George Orford Park	FP1	GRAB
Harristown	Gabbinbar Pressure Zone	Cnr Talbot Street and Sybyl Street	Harristown Park	G1	GRAB
Harristown	Gabbinbar Pressure Zone	Cnr Chevoit Street and Panda Street	Smithfield Park	G2	GRAB
Rangeville	Gabbinbar Pressure Zone	Meibusch Street	Rangeville Park	G4	GRAB
Middle Ridge	Gabbinbar Pressure Zone	Stenner Street	Middle Ridge Park	G6	GRAB
Rangeville	Horners Pressure Zone	Cnr James Street and Kitchener Streets	Toowoomba Visitor Information Centre	H1	GRAB
East Toowoomba	Horners Pressure Zone	Burstow Street	East Creek Park	H2	GRAB
South Toowoomba	Horners Pressure Zone	South Street	City Golf Club	H3	GRAB
South Toowoomba	Horners Pressure Zone	Bright Street	Lake Annand	H4	GRAB
Harlaxton		Cnr Dwyer street an Goombungee Road	Blue Mountain Reserve	K1	GRAB
East Toowoomba	Mt Lofty Pressure Zone	Lindsay Street Toowoomba	Queens Park	K2	GRAB
South Toowoomba	Northern Pressure Zone	Peachey Street	Clewlley Park	K3	GRAB
	Kynoch		Bedford Street	K6	GRAB

	Pressure Zone		Landfill		
Drayton	Platz Southern Pressure Zone	Gipps Street	Earnest Peak Park	P2	GRAB
Rangeville	Picnic Point Pressure Zone	Between Parson Street and Maker Street	Parsons Park	PP1	GRAB
East Toowoomba	Horners Pressure Zone	Cnr Herries Street and Horton Street	Creek Street		GRAB
Harristown	Platz Zone	Stephen St	Stephen St Work Shop		GRAB

Table 3: Water Samples – Treated Water Pumping Stations

SAMPLING LOCATION			DESCRIPTION	SAMPLING ID	SAMPLE TYPE
Suburb	Pressure Zone & Physical Location				
Harristown	Gabbinbar Pressure Zone	ANZAC Ave	ANZAC Pumping Station		GRAB
Newtown	Freneau Pines	Hursley Road	Hursley Pumping Station		GRAB
Centenary Heights	Gabbinbar Pressure Zone	Cnr Ramsay Street and Stenner Street	Ramsay Street Pumping Station		GRAB

Table 4: Water Samples – Treated Water Sampling from sewage Pumping Stations

SAMPLING LOCATION			DESCRIPTION	SAMPLING ID	SAMPLE TYPE
Suburb	Pressure Zone & Physical Location				
Rangeville	Gabbinbar Pressure Zone	Kara View Court	Sewage Pumping Station No. 45	G3	GRAB
Middle Ridge	Gabbinbar Pressure Zone	Rowbotham Street	Sewage Pumping Station No.37	G5	GRAB
Darling Heights	Gabbinbar Pressure Zone	Handley Street	Sewage Pumping Station No.15	G7	GRAB
Harristown		Cnr Alderley Street and ANZAC Ave	Sewage Pumping Station No.5	K4	GRAB
Glenvale		Glenvale Road	Sewage Pumping Station No.53	K5	GRAB
Prince Henry	Lofty Pressure	Laneway off	Sewage	L1	GRAB

Heights	Zone	Panorama Crescent	Pumping Station No.27		
Rangeville	Lofty Pressure Zone	Eymaru Street	Sewage Pumping Station No.33	L2	GRAB
Drayton	Platz Southern Pressure Zone	Brisbane Street Connection	Sewage Pumping Station No.4	P1	GRAB

Table 5: Water Samples – Bore Stations

SAMPLING LOCATION			DESCRIPTION	SAMPLING ID	SAMPLE TYPE
Suburb	Pressure Zone & Physical Location				
Rangeville		End of Acacia Street	Acacia St Bore Station		GRAB
Wilsonton		End of Ledbury Court	Airport Bore Station		GRAB
Wilsonton		End of Ledbury Court	Airport Bore Station		Online Continuous Free Chlorine
Kearney Springs		Alderley Street	Alderley Street Bore Station		GRAB
Rangeville	Gabbinbar	Cnr Ballin Drive and MacKenize Street	Ballin Drive Bore Station		GRAB
Centenary Heights	Gabbinbar & Horners	MacKenize Street	Eastern Valley		GRAB
Kearney Springs	Gabbinbar	Cnr Ruthven Street and Nelson Street	Freyling Park Bore Station		GRAB
Kearney Springs	Gabbinbar	Cnr Ruthven Street and Nelson Street	Freyling Park Bore Station		Online Continuous Free Chlorine
Centenary Heights	Gabbinbar	Cnr MacKenzie Street and Stenner Street	Gabbinbar Triangle Bore Station		GRAB
Centenary Heights	Gabbinbar	Cnr MacKenzie Street and Stenner Street	Gabbinbar Triangle Bore Station		Online Continuous Free Chlorine
Toowoomba City	City and Northern	Behind Milne Bay swimming Pool, Herries Street	Milne Bay Bore Station		GRAB
Kearney Springs	Gabbinbar	Gateway Entrance off	Nell E Robinson Bore		GRAB

		Damian Crescent	Station		
Newtown		Pottinger Street	Newtown Park Bore Station		GRAB
Newtown		Pottinger Street	Newtown Park Bore Station		Online Continuous Free Chlorine
East Toowoomba	Lofty Pressure Zone	Queens park of Margaret Street	Queens Park Bore Station		GRAB
South Toowoomba	City Pressure Zone	Cnr Water Street South and Stephen Street	Stephen Street Bore Station		GRAB
Wilsonton Heights		Cnr Wine Drive and Tor Streets	Wine Drive Bore Station		GRAB
Wilsonton Heights		Cnr Wine Drive and Tor Streets	Wine Drive Bore Station		Online Continuous Free Chlorine

NOTE:

Currently the Gabbinbar Triangle Bore station is not being utilised for supply of treated drinking water. This is due to the elevated nitrate, (often exceeding the AWDG Health Limit), that has been found in the bore. At present it is not known if the bore will return to production or not. Should TRC consider the bore to unsuitable for drinking water then it will be removed from this manual once a formal decision has been made, until then it will remain in the manual and stay greyed out

NOTE:

Currently the Wine Drive Bore Station is offline. This is due to the aquifer that the bore draws from being depleted shortly after commissioning and use for production. It is not known at this stage if a formal discussion has been made to return this bore to service again or not. Should TRC consider the bore to unsuitable for drinking water then it will be removed from this manual once a formal decision has been made, until then it will remain in the manual and stay greyed out

Table 6: Water Samples – Treated Bulk Water Off takes

SAMPLING LOCATION			DESCRIPTION	SAMPLING ID	SAMPLE TYPE
Suburb	Pressure Zone & Physical Location				
Cotswold Hills		Cnr Bridge Street and Boundary Street	Bridge Street Bulk Water Off take	DP5	GRAB
Wilsonton		Cnr Gardner Court and Boundary Street	Taylor Street Bulk Water Off Take	DP6	GRAB
Kingsthorpe		Off Warrego Highway down Chamberlain Road (Dry weather	Chamberlain Road Bulk Water Off Take	DP7/8/11	GRAB

		access only)			
Gowrie Junction		Cnr Gowrie Junction Road and Holmes Road	Gowrie Junction Bulk water Off Take	DP10	GRAB

Table 7 Wastewater Samples

SAMPLING LOCATION		DESCRIPTION	SAMPLING ID No.	SAMPLE TYPE
				GRAB
				GRAB

Wastewater Samples are collected from a dedicated and trained team of operational staff from the Wetalla WRF and Wetalla AWTP. Sample locations for these sites can be found in respective Wetalla Operational Manuals.

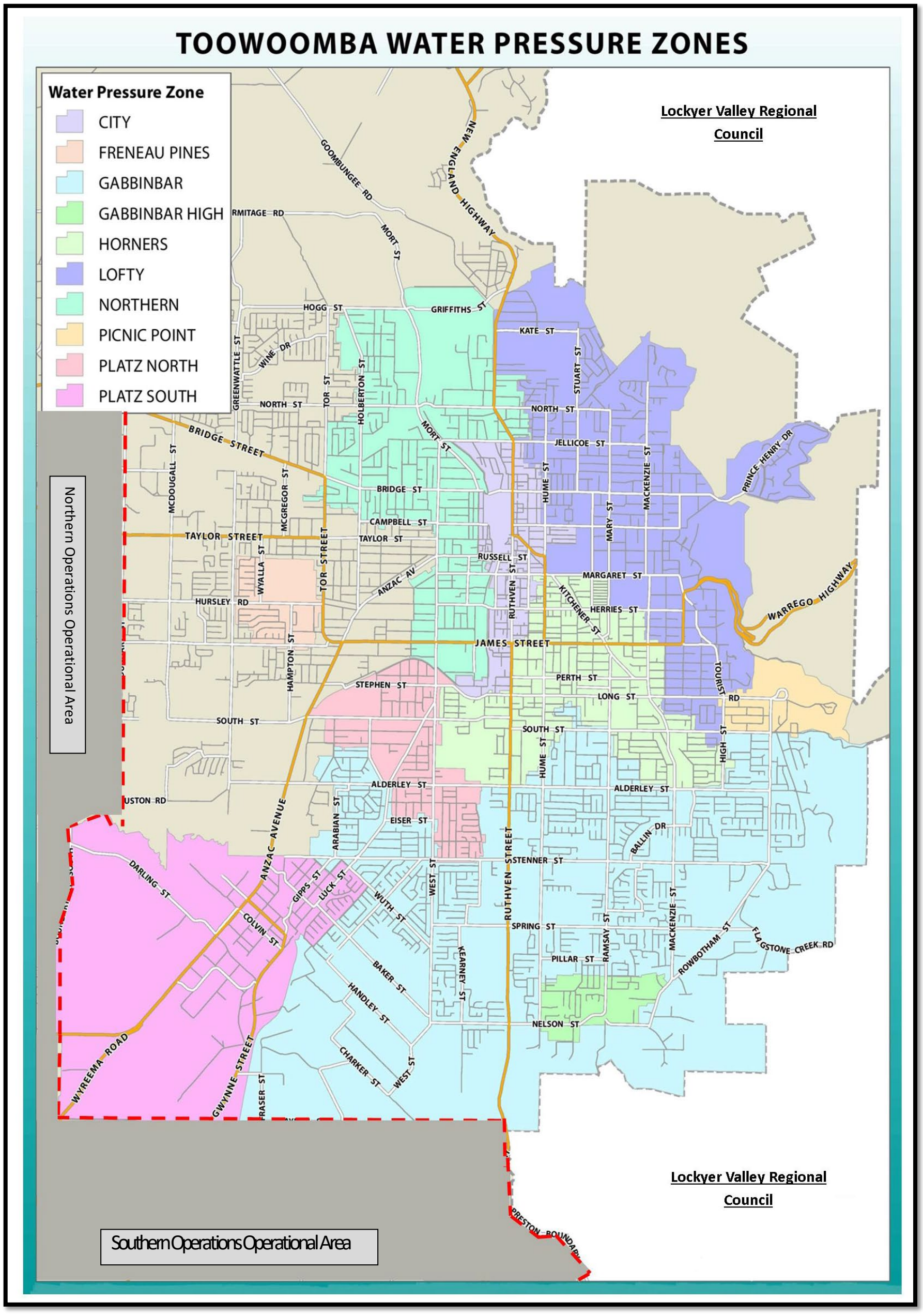
NOTE: Operator Field testing results to be recorded on Town Run Chlorine and Hardness Record Sheet DM#2613165

NOTE

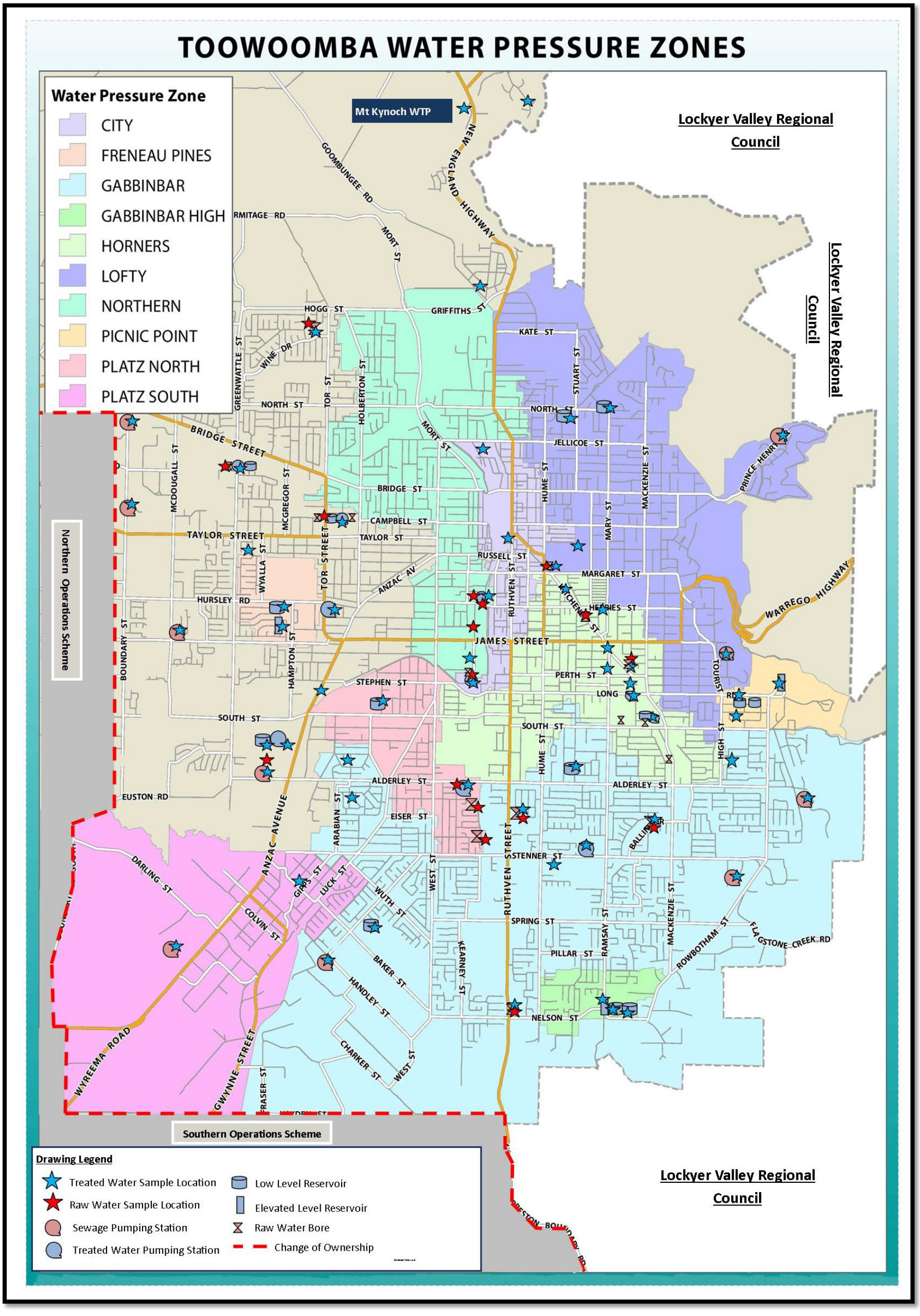
Sampling Locations, identification and types

NOTE: ANY SAMPLES THAT ARE UNABLE TO BE COLLECTED ON THE REQUIRED DAY ARE TO BE NOTED IN THE OPERATOR DIARY

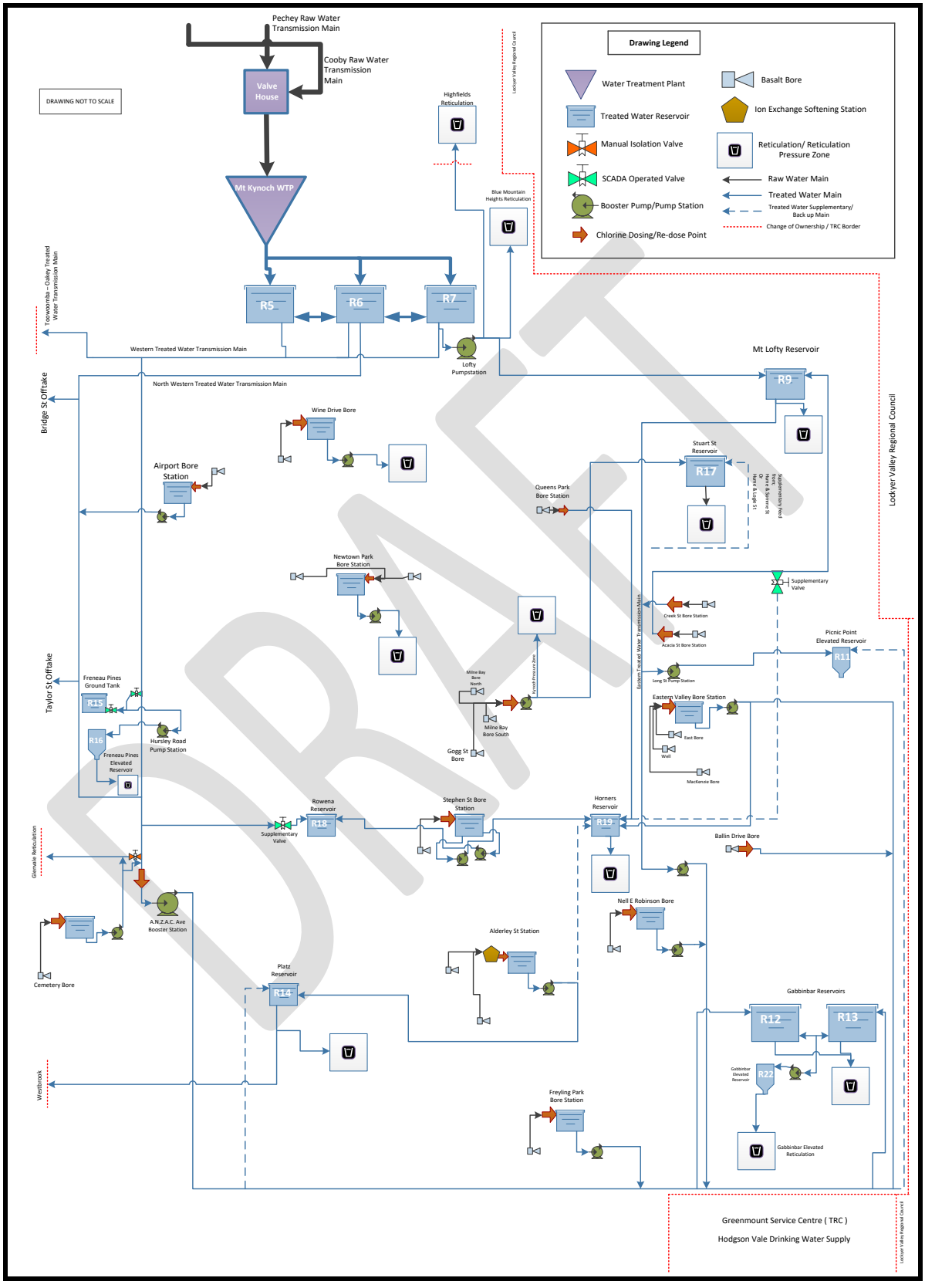
Toowoomba Reticulation Map



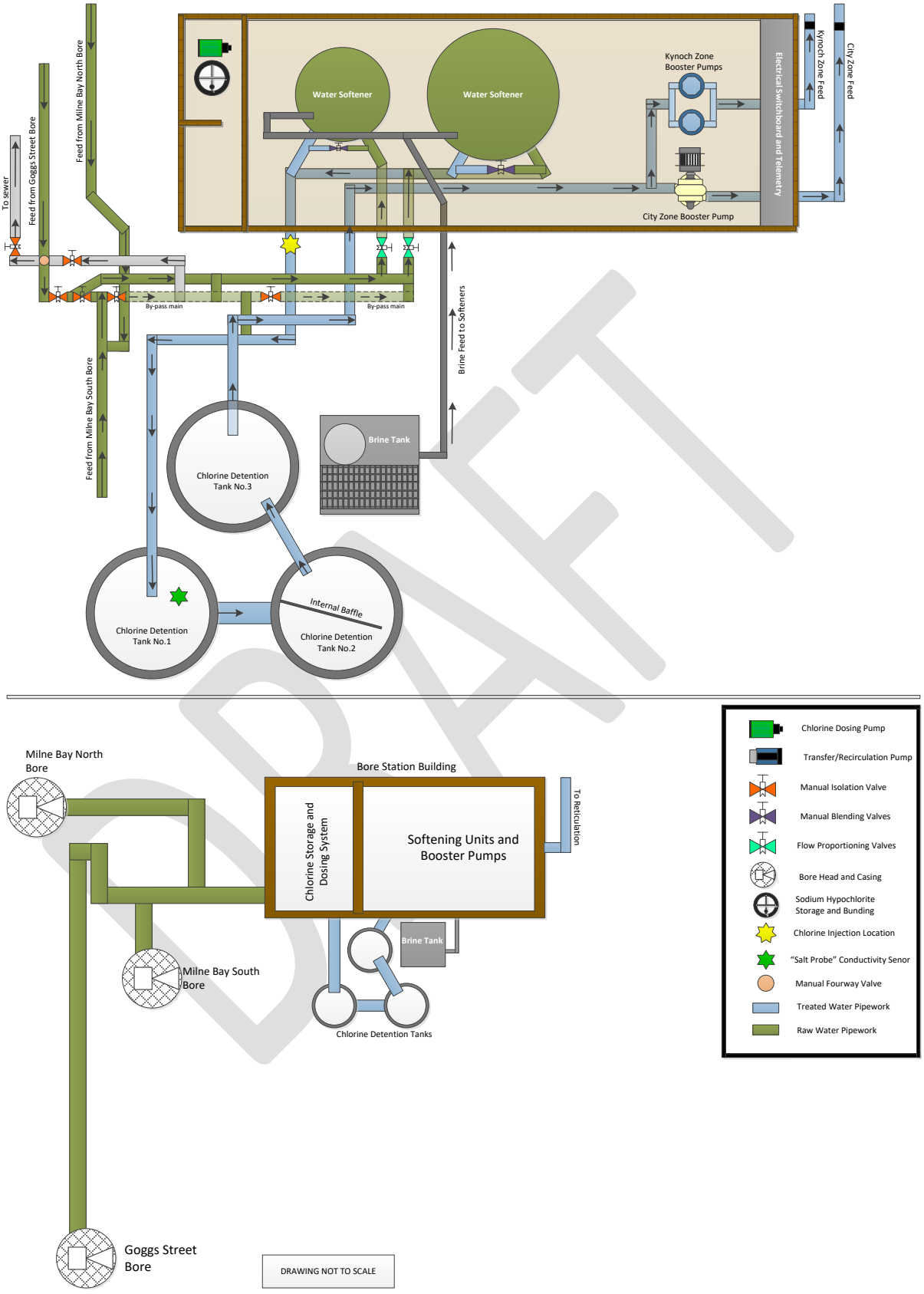
Toowoomba Reticulation Map with Current Sample Locations



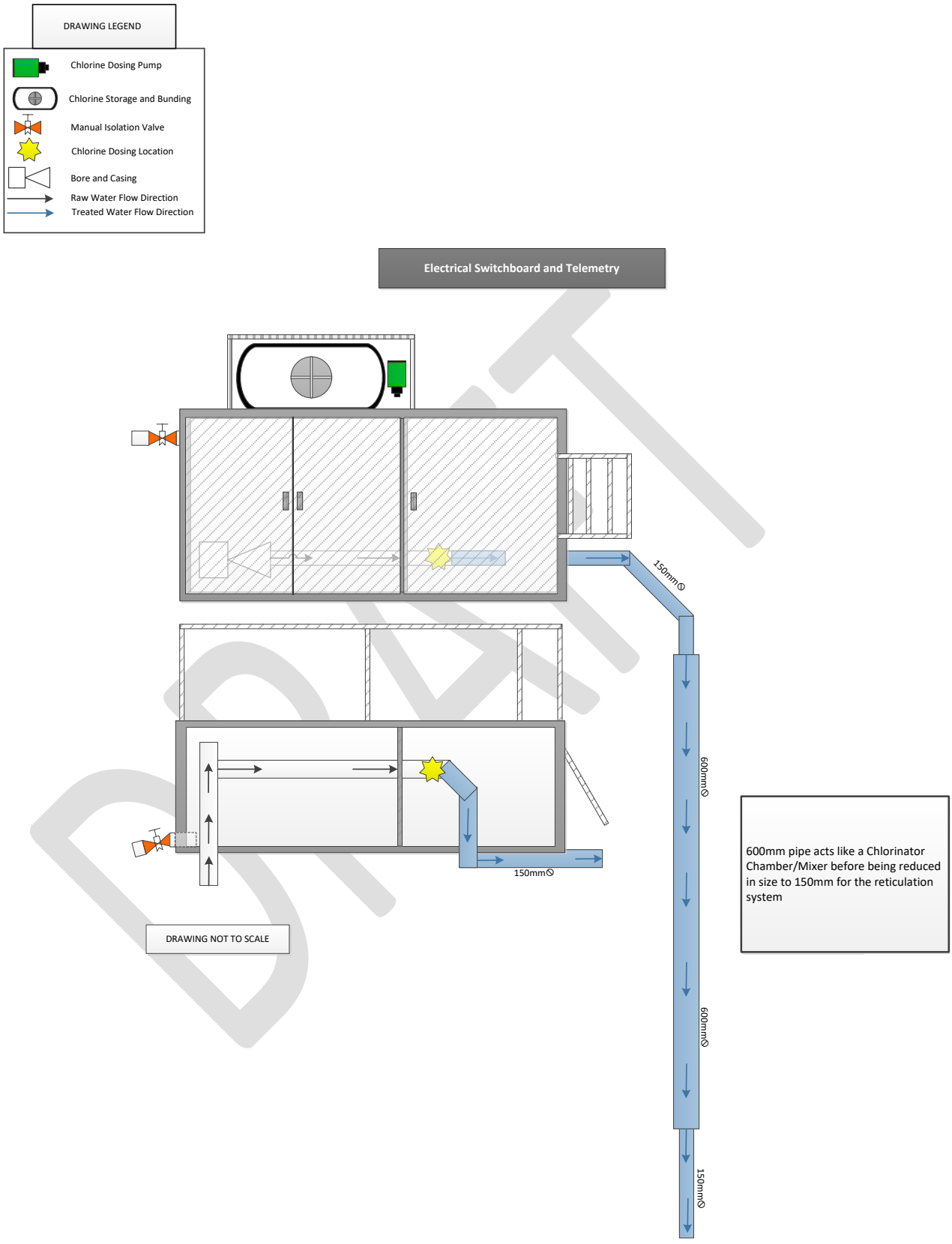
Toowoomba Reticulation Schematic



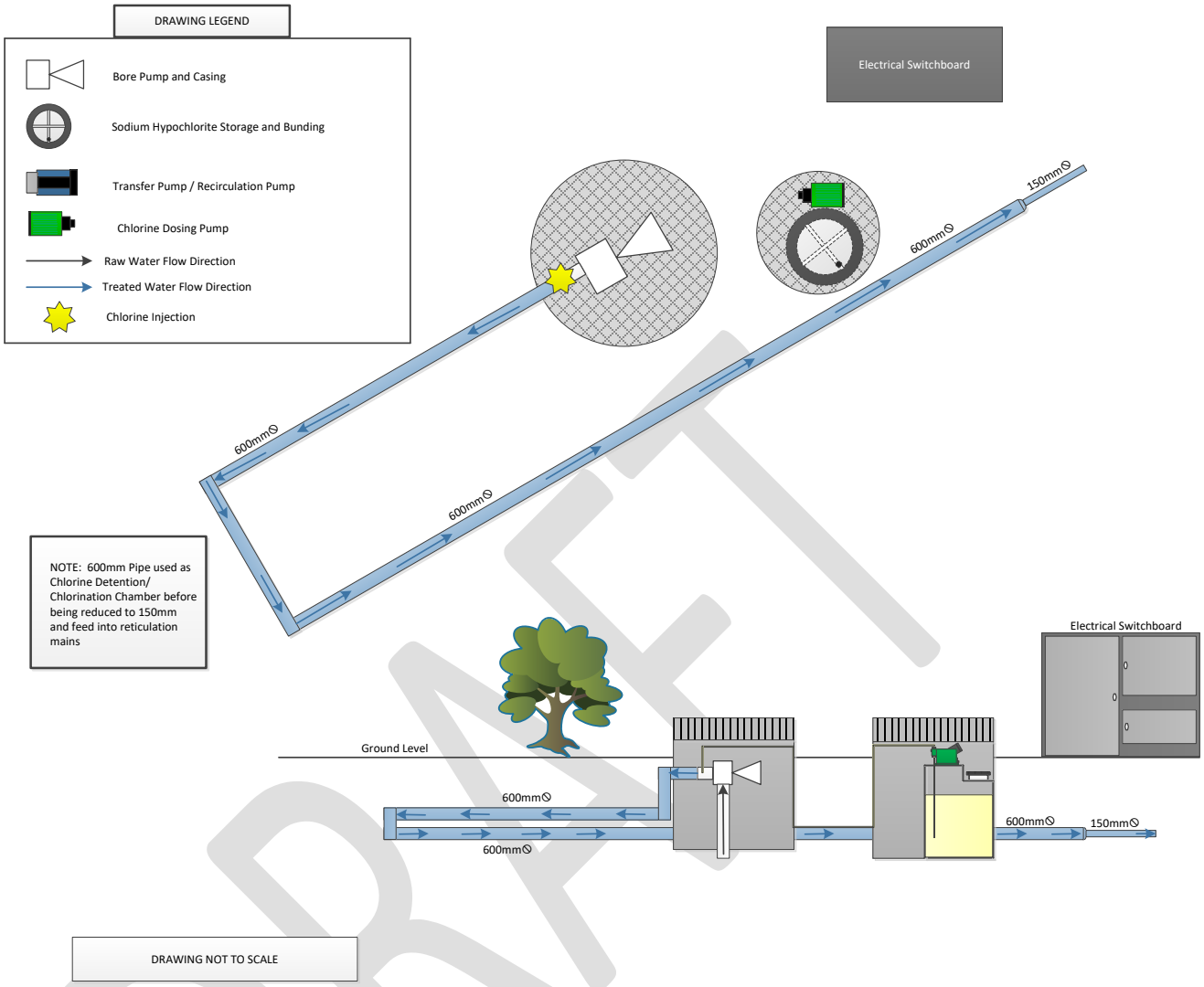
Milne Bay Bore Station



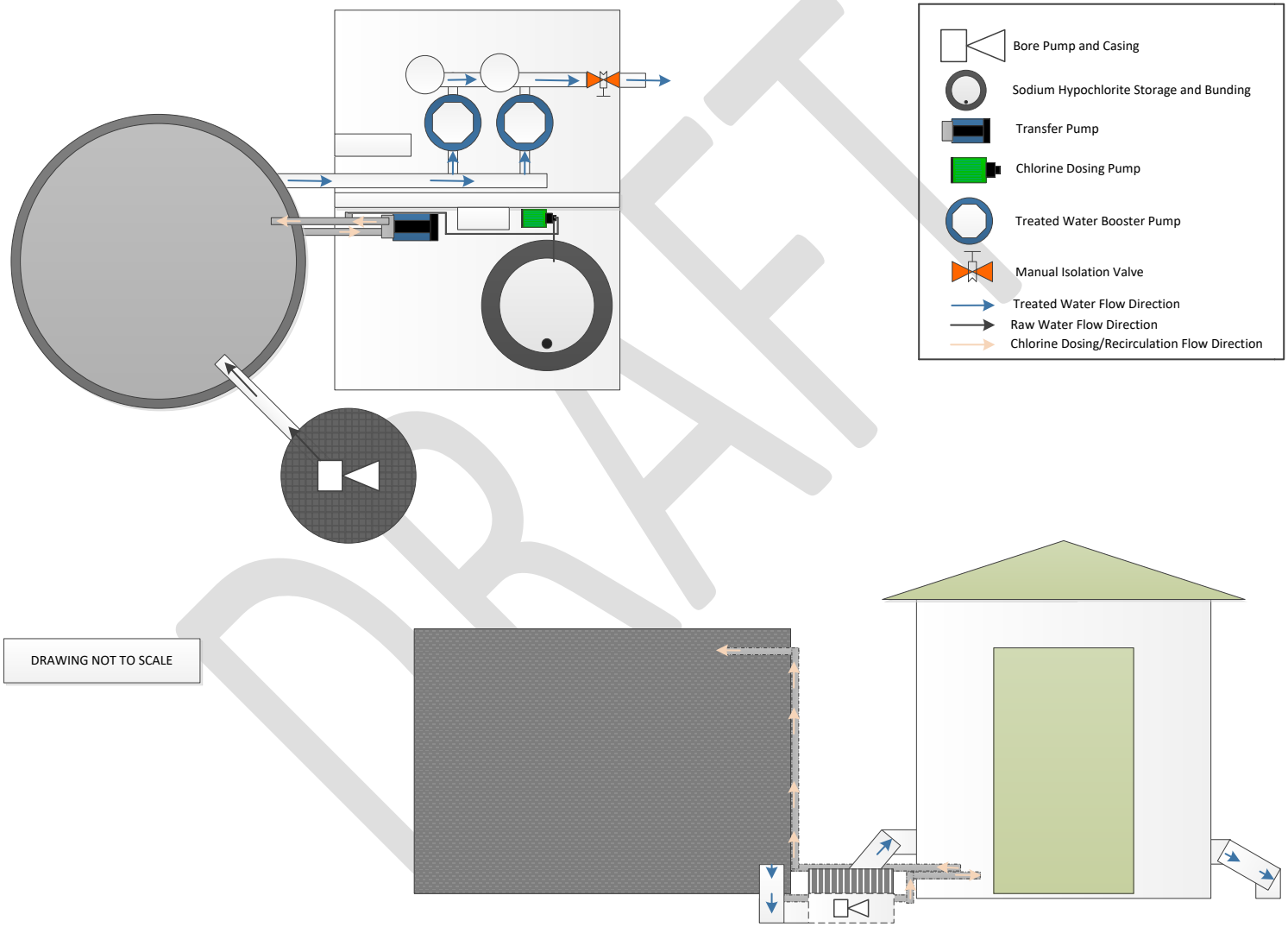
Creek Street Bore Station



Ballin Drive Bore Station



General Bore Station Layout



Laboratory Services Testing

Microbiological Samples

Short Microbiological analysis consists of:

Parameter	Unit of Measure
• Total Plate Count	CFU/mL
• Total Coliform	CFU/100mL
• E.coli or Thermotolerant Coliform	CFU/100mL

Standard Microbiological analysis consists of:

Parameter	Unit of Measure
• Total Plate Count	CFU/mL
• Total Coliform	CFU/100mL
• E.coli or Thermotoerant Coliform	CFU/100mL
• Enterococcus	CFU/100mL
• Pseudomonas	CFU/100mL

Disinfection By-Products

Total Trihalomethanes (THM's)

THM's analysis consists of:

Parameter	Unit of Measure
• Chloroform	µg/L
• Dibimochloromethanse	µg/L
• Bromodischloromethane	µg/L
• Bromoform	µg/L

Chemical Analysis

Listed below are parameters that are tested for Chemical Analysis

Parameter	Unit of Measure
pH	Units
Conductivity	uS/cm
Total Hardness	$CaCO_3$
Total Alkalinity	$CaCO_3$
Molybdate Reactive Silica	mg/L
Total Iron	mg/L
Total Manganese	mg/L
Calcium	mg/L
Magnesium	mg/L
Sodium	mg/L
Potassium	mg/L
Sulphate	mg/L SO_4
Chloride	mg/L
Nitrate	mg/L
Phosphate	mg/L PO_4
Temporary Hardness	mg/L $CaCO_3$
Bicarbonate Alkalinity	mg/L $CaCO_3$
Carbonate Alkalinity	mg/L $CaCO_3$
Hydroxide Alkalinity	mg/L $CaCO_3$
Free Carbon Dioxide	mg/L
Total Dissolved Ions	mg/L
Total Dissolved Solids	mg/L
Figure of Merit	
Saturation Index	
Residual Alkalinity	meq/L $CaCO_3$
Sodium Absorption Ration	

Heavy Metals

Heavy metals are outsourced to ALS for testing. There are two different heavy metals suits from ALS and they are:

8 Heavy Metals

Analysis	Unit of Measure
Arsenic	mg/L
Cadmium	mg/L
Chromium	mg/L
Copper	mg/L
Nickel	mg/L
Lead	mg/L
Zinc	mg/L
Mercury	mg/L

13 Heavy Metals

Analysis	Unit of Measure
Arsenic	mg/L
Barium	mg/L
Beryllium	mg/L
Cadmium	mg/L
Chromium	mg/L
Cobalt	mg/L
Copper	mg/L
Lead	mg/L
Manganese	mg/L
Mercury	mg/L
Nickel	mg/L
Vanadium	mg/L
Zinc	mg/L

Pesticides

Pesticide suite is outsourced to ALS for testing. ALS Pesticide Suite Contains:

Analysis	Unit of Measure
Alpha-BHC	µg/L
HCB	µg/L
Beta-BHC & Gamma-BHC	µg/L
Delta BHC	µg/L
Heptachlor	µg/L
Aldrin	µg/L
Heptachlor epoxide	µg/L
Chlordane-trans	µg/L
Endosulfan 1	µg/L
Chlordan-cis	µg/L
Dieldrin	µg/L
4,4'-DDE	µg/L
Endrin	µg/L
Endosulfan 2	µg/L
4,4'-DDD	µg/L
Endrin Aldehyde	µg/L
EndrosulfanSulfate	µg/L
4,4'-DDT	µg/L
Endrin Ketone	µg/L
Methoxychlor	µg/L
Dichlorvos	µg/L
Demeton-S-methyl	µg/L
Moncrotophos	µg/L
Dimethoate	µg/L
Diazion	µg/L
Chlorpyrifos-methyl	µg/L
Parathion-methyl	µg/L
Malathion	µg/L
Fenthion	µg/L
Chlorpyrifos	µg/L
Parathion	µg/L
Pyrimphos-ethyl	µg/L
Chlorfenvinphos	µg/L
Bromophos-ethyl	µg/L
Fenamiphos	µg/L
Prothiofos	µg/L
Ethion	µg/L
Carbonphenothion	µg/L
Azinphos-methyl	µg/L

Operator Notes/Review