



**Drinking Water Service**  
**Charters Towers Regional Council**  
**SPID 479**

**Annual Report 2023/2024**



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## Water Service Provider Details

Detail	Information
SPID	479
Name	Charters Towers Regional Council
Address	12 Mosman Street Charters Towers Qld 4820
Postal Address	PO Box 189 Charters Towers Qld 4820
Telephone	4761 5300
Email	mail@charterstowers.qld.gov.au
Water Service Areas covered by this plan	Charters Towers, Greenvale, Ravenswood, Pentland

## Glossary of terms

ADWG 2011	Australian Drinking Water Guidelines (2011). Published by the National Health and Medical Research Council of Australia
Cfu/100mL	Colony forming units per 100 millilitres
CTRC	Charters Towers Regional Council
DWQMP	Drinking Water Quality Management Plan
E. coli	Escherichia coli, a bacterium which is considered to indicate the presence of faecal contamination and therefore potential health risk
mg/L	Milligrams per litre
NTU	Nephelometric Turbidity Units
MPN/100mL	Most probable number per 100 millilitres
RG	Ravenswood Gold
SCADA	Supervisory Control and Data Acquisition
WTP	Water Treatment Plant
WSP	Water Service Provider

## 1. Introduction

This is the Drinking Water Quality Management Plan (DWQMP) report for Charters Towers Regional Council (CTRC) for the financial year 2023/24.

CTRC is a registered service provider with identification (SPID) number 479, operating under an approved DWQMP to ensure consistent supply of safe quality drinking water in order to protect public health. This is done through proactive identification and minimisation of public health related risks associated with drinking water.

This DWQMP annual report includes:

- the activities undertaken over the financial year in operating our drinking water service
- drinking water quality summary
- summary of our performance in implementing our approved DWQMP

This report is submitted to the Regulator to fulfil our regulatory requirement and is also made available to our customers through our website or for inspection upon request at a Council office.

## 2. Summary of schemes operated

CTRC Regional Council has four Water Service Areas (WSA's), including Charters Towers, Greenvale, Ravenswood and Pentland.

### Charters Towers WSA

Drinking water for Charters Towers is provided from surface water sourced from the Burdekin River via the Charters Towers Weir and pumped from the Phil Mathews pump station to the Charters Towers Water Treatment Plant (WTP). The WTP is a conventional plant utilising coagulation, flocculation, clarification, sedimentation, filtration and disinfection. The treated water is delivered to two reservoirs, each having a common inlet/outlet. Connected population is approximately 12,013 persons.

### Greenvale WSA

Water is sourced from the Burdekin River from bed-sand spears. Four spears are currently installed, of which three are operational. There is the ability for water to be injected with chlorine for iron/manganese control before being pumped to storage where further chlorine injection is implemented for disinfection. Connected population is approximately 180 persons.

### Ravenswood WSA

Water is sourced from the Burdekin River by Ravenswood Gold (RG). The water is pumped to a turkey nest dam and then to Suhrs Ck Dam. Water is then pumped to the mining operations with a portion (less than 10%) diverted to a Water Treatment Plant which supplies potable water to the town and the mining operations. Connected population is approximately 200 in the township plus a variable population in the accommodation camp and the mining administration.

### Pentland WSA

Pentland is serviced by ground water from the Glen Houghton bore field which is a groundwater recharge system. Two bores pump water to a small tank where water is disinfected with chlorine before reticulation to the township via a reservoir. Connected population is approximately 200 persons.

Water Service Area	Water Source	Treatment Processes	Treatment Capacity	Towns Supplied
Charters Towers	Charters Towers Weir on the Burdekin River	Coagulation, flocculation, clarification, sedimentation, filtration and disinfection.	17ML/day	Charters Towers
Pentland	Ground water via Bore field	Settlement, disinfection	0.8ML/day	Pentland
Greenvale	Burdekin River via 4 spears	Filtration and disinfection	1.1ML/day	Greenvale
Ravenswood	Burdekin River via turkey nest dam	Coagulation, clarification, filtration, disinfection	0.5ML/day	Ravenswood

Table 1 - Sources and Treatment Capability

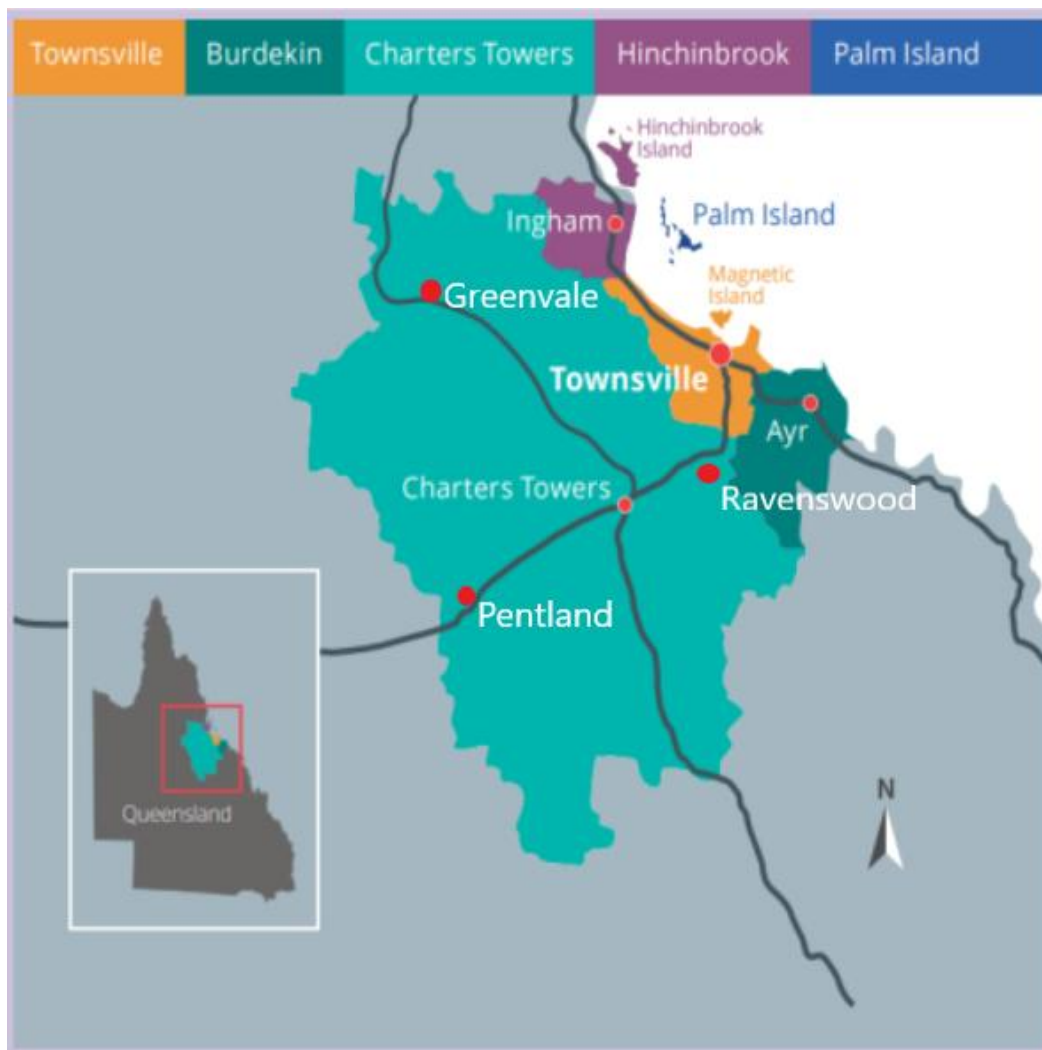


Figure 1: WSA Locations

### 3. DWQMP Implementation

The focus for management of water quality this year has been improving water sampling, compliance with the DWQMP and addressing the Risk Management Improvement Plan requirements. The Water Infrastructure Upgrade Program has continued with planning and design works for duplication of the 525mm AC trunk main and selection of a location for an intermediate reservoir to reduce the impact of surge pressures at the low end of the main. The DWQMP has been reviewed and the updated version was submitted to the Regulator and has been approved.

### 4. Verification monitoring – water quality information and summary

The results from the drinking water quality monitoring program conducted by CTRC have been compared against the Australian Drinking Water Guideline levels.

Testing for the presence of *Escherichia coli* is conducted at each of the four schemes within CTRC. Charters Towers has a population of 12,013 and therefore the required frequency is one sample per week plus one additional sample per month. Weekly Samples are collected at the reservoir and at a sampling location in the town. In addition, monthly samples are collected at three sites at the extremities of the network. In the 2023/24 financial year 156 samples were tested for E. coli, with an 'annual value' of 100.0% compliance on roll percentage.

Pentland, Greenvale, and Ravenswood all have populations less than 1000 persons, so the required minimum frequency is one sample per month for each of these schemes. In the 2023/24 financial year 43 samples from Greenvale, 50 samples from Pentland and 44 samples from Ravenswood were tested for the presence of E. coli. Greenvale, Pentland, and Ravenswood returned 'annual values' of 100%.

A summary of the key parameters for the CTRC Drinking Water Quality Verification testing program is shown in Table 2.

The compliance results for E. coli testing are shown in Tables 3-6.

A complete listing of verification results is provided in Appendix A.

Scheme name	Parameter	Number Required	Number tested	ADWG Water quality criteria	No. Non-compliant samples	Comments
Charters Towers	E. coli	152	154	0	0	
Charters Towers	pH	152	154	6.5-8.5 aesthetic	0	
Charters Towers	Free Chlorine	152	154	0.5<>5.0	0	
Charters Towers	Trihalomethanes	4	8	0.25 mg/L	0	
Charters Towers	Turbidity	12	36	5 NTU aesthetic	2	Burst main in the area causing Turbulent sample.
Charters Towers	True Colour	12	12	15 HU aesthetic	0	
Greenvale	E. coli	36	36	0	0	
Greenvale	pH	36	36	6.5 – 8.5 aesthetic	0	
Greenvale	Free Chlorine	36	36	0.5<>5.0	0	
Greenvale	Trihalomethanes	4	5	0.25 mg/L	0	
Greenvale	Turbidity	36	36	5 NTU aesthetic	17	Ongoing turbidity issues “Boil Water Alert” in place for some of the year.
Greenvale	True Colour	12	12	15 HU aesthetic	0	
Pentland	E. coli	36	36	0	0	
Pentland	pH	36	36	6.5 – 8.5 aesthetic	0	
Pentland	Free Chlorine	36	38	< 5	0	
Pentland	Turbidity	12	12	5 NTU aesthetic	0	
Pentland	True Colour	12	12	15 HU aesthetic	0	
Ravenswood	E. coli	36	36	0	0	
Ravenswood	pH	36	36	6.5 – 8.5 aesthetic	0	
Ravenswood	Free Chlorine	36	36	< 5	0	
Ravenswood	Turbidity	36	36	<5 NTU aesthetic	0	
Ravenswood	Trihalomethanes	4	8	0.25 mg/L	0	
Ravenswood	True Colour	12	12	15 HU aesthetic	0	

Table 2 - Verification Summary

WSA	Charters Towers											
Year	2023 – 2024											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	13	11	11	13	11	11	13	11	11	13	11	11
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	150	153	154	153	155	154	158	154	151	151	150	149
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	1	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 3 – Charters Towers E. coli Compliance



WSA	Greenvale											
Year	2023 – 2024											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	3	3	3	3	3	3	3	3	3	3	3	3
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	24	24	24	24	24	24	24	25	24	23	23	23
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 4 - Greenvale E. coli Compliance

WSA	Pentland											
Year	2023 – 2024											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	3	3	3	3	3	3	3	3	3	3	3	3
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12-month period	37	37	36	36	36	36	36	36	36	36	36	36
No. of failures for previous 12-month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 5 - Pentland E. coli Compliance

WSA Ravenswood												
Year	2023 – 2024											
Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
No. of samples collected	3	3	3	3	3	3	3	3	3	3	3	3
No. of samples collected in which E. coli is detected (i.e. a failure)	0	0	0	0	0	0	0	0	0	0	0	0
No. of samples collected in previous 12 month period	38	37	37	37	37	37	37	37	34	34	32	32
No. of failures for previous 12 month period	0	0	0	0	0	0	0	0	0	0	0	0
% of samples that comply	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compliance with 98% annual value	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 6 - Ravenswood E. coli Compliance

## 5. Incidents reported to the Regulator

For the reporting year 2023/24 the following incidents were notified to the Regulator under Section 102 or 102A of the Act for noncompliance issues that occurred:

**DWI-479-24-11005 – Ravenswood Water Supply Scheme – No water quality criteria:** Received our results from Nata Lab for Ravenswood Reservoir and it identified elevated Chlorates. We immediately contacted Ravenswood Gold to verify source of non-compliance. **Corrective actions taken:** Consultation was scheduled with Regulator and we provided RG with some recommendations on how to rectify the issue. Long term plan would be to convert to Chlorine Gas – but for the interim look at getting new stock of hypo and to keep it in an air coned area.

**DWI-479-23-10429 – Ravenswood Water Supply Scheme – Event:** Sample taken from Ravenswood reservoir on 21/09/2023 identified aluminium 2.55mg/L and turbidity at 1.7 NTU. CTRC has initiated discussions with Ravenswood Gold as it may be a filtration break through occurring at the WTP operated by Ravenswood Gold. **Corrective actions taken:** Reticulation system will be tested for the same suite of parameters at four sample points in the system, samples will be taken tomorrow morning (29/09/2023) and transported by road directly to the NATA lab in Townsville.

**DWI-479-24-11040 – Ravenswood Water Supply Scheme – Event:** Charters Towers Regional Council (CTRC) held a meeting with Ravenswood Gold (RG) yesterday afternoon (27 June 2024) and was made aware that RG has commissioned a new Water Treat Plant (WTP) supplying water into the Ravenswood reticulation system. CTRC was aware RG had constructed a new WTP however the asset is not owned by CTRC and CTRC had not been notified the new WTP had been commissioned prior to yesterday afternoon. **Corrective actions taken:** Contacted DRDMW to seek advice on reporting requirements and any further actions.

**DWI-479-24-10771 – Pentland Water Supply Scheme – Event:** Pentland had no water from approximately 0600 to 1530 due to a main burst in town that drained the reservoir. It happen to also be a day where Ergon had a planned outage which meant we couldn't start the pump to refill the reservoir until 1300. **Corrective actions taken:** Senior officer spoke with on-call operator and explained the importance of taking low level alarms very seriously. Sample was taken and put through out Tecta machine and results showed 0 coliform and 0 ecoli. **Further action:** Further training and implementation of an escalation process will be applied.

### Customer feedback

Month	Suspected Illness	Dirty Water	Taste and odour	Supply
Jul 2023	0	0	0	1
Aug 2023	0	0	0	0
Sep 2023	0	0	0	1
Oct 2023	0	0	0	1
Nov 2023	0	1	0	2
Dec 2023	0	0	0	2
Jan 2024	0	0	0	0
Feb 2024	0	0	0	1
Mar 2024	0	0	0	2
Apr 2024	0	0	0	0
May 2024	0	0	1	0
Jun 2024	0	0	0	2
<b>Total</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>12</b>

Table 7 - Customer Feedback

<i>Date</i>	<i>Complaint</i>	<i>Resolution</i>
3/7/2023	Greenvale Water Supply	<p>This customer has made a number of ongoing complaints and there has been a letter of correspondence sent, each time he complains we add further details to the existing letter.</p> <p>It explained the Boil Water Alert and that Council is providing free bottled water to all Greenvale Residents.</p> <p>Final paragraph detailed Councils ongoing investigations into trying to find a solution to improve the quality, in conjunction with the Defences plans to expand in the area and install a new water treatment plant.</p>
06/11/2023	Greenvale Water Supply	<p>This customer has made a number of ongoing complaints and there has been a letter of correspondence sent, each time he complains we add further details to the existing letter.</p> <p>It explained the Boil Water Alert and that Council is providing free bottled water to all Greenvale Residents.</p> <p>Final paragraph detailed Councils ongoing investigations into trying to find a solution to improve the quality, in conjunction with the Defences plans to expand in the area and install a new water treatment plant.</p>
07/02/2024	Charters Towers – Temporary Water Service Lines	<p>We had a water main burst and we had to run temporary water service lines. The customer was unhappy with the temperature of the water coming out of these lines as it was black poly and was run above ground and wanted it covered. Plumbing team covered the lines with dirt for the interim to get them out of direct sun with the future resolution to trench the line in.</p> <p>We contacted customer and advised that these temporary lines would be in place for some time until we gained the funding to upgrade the main that had failed. We explained as soon as resources and time permitted we would trench the line to get it into deeper cooler soil. The trenching work was done in Feb 2024 and customer was informed and happy.</p>

## 6. DWQMP Audit

An audit of the DWQMP was conducted in September 2022, and a copy of the Audit Report has been submitted to the Regulator. While the report found that most areas showed compliance it found that improvements to processes and systems could be made in a number of areas. Two major non-compliances were observed. These related to the methodology for collecting samples at the townships. Operators were running the sample taps for long periods as they attended to other activities. This practice has been addressed and the Operating Procedure for sample collection at the townships has been amended to ensure correct procedures. As a result of the number of Opportunities for Improvement, a working party comprised of team leaders and management which was formed to address issues noted in the Risk Management Improvement Program will also work through the issues noted in the Audit. This group meets regularly and it is expected that the work will take some time to complete.

## 7. DWQMP Review

A review of the DWQMP was undertaken during the 2023/2024 reporting period. That review identified that changes were required to DWQMP which resulted in an application being submitted to the Regulator on the 8 December 2023. The following sections of the DWQMP were amended:

Proposed Amendment	List the proposed amendment(s) to the DWQMP
Registered service details	New Manager Water & Wastewater commenced – Joe Galea Employed a Water Compliance Officer – Olivia Risdale
Details of infrastructure for providing the service	Greenvale Scheme – Replace liquid hypo system to Chlorine Gas. Installed turbidity meter. Remove access availability that includes escalation Training for Town Officer to meet compliance
Identify hazards and hazardous events	Greenvale currently on a “do not consume” alert. Ravenswood “Turbidity” breaches. Pentland “No Water” Event Identified above hazards but not limited too.
Information gathering – water quality and catchment characteristics	New compliance officer will be taking over water quality data reporting. Training will be provided.
Assessment of risks	Reviewed the risk assessment framework.
Risk management measures	Implemented regular meetings to cover all areas of DWQMP including 12 elements of the ADWG.
Operation and maintenance procedures	Current procedures to be reviewed and additional procedures as identified to be developed.
Management of incidents and emergencies	Compliance officer has been employed to manage and report incidents and emergencies.
Risk management improvement program	Escalation process developed and implemented.

Service wide support – information managements	Compliance officer employed to provide support in information management.
Operational monitoring	Procedures to be developed. Upcoming training for competencies.
Verification Monitoring	Installed turbidity meter at Greenvale. Tecta B16 machine purchased for quicker turn around on E-coli results.
Other (please details)	General changes to bring DWQMP up to date with current procedures and practices.

## Appendix A – Summary of compliance with water quality criteria

The reported statistics include results derived from repeat samples, or from emergency or investigative samples undertaken in response to a customer complaint or abnormal results.

External verification monitoring samples are taken internally but processed and analysed by Townsville Laboratories and a summary of the results for critical measures is included below.

Please refer to excel spreadsheet supplied from Townsville Labs for all results.

## Appendix B - Risk Management Improvement Program

Scheme	Risk	Action Requirement	Interim Action	Long Term Plan	Target Date for Long Term Action	Actions to Date
Charters Towers	Very High	Replace the concrete reservoir as it is not in good condition	Monitor roof condition, Seal off points of entry	Reservoir and rising main project is currently in the design phase - this will result in the decommissioning of the concrete reservoir	2030	Planning Stage Complete. Currently in design and to be scheduled as funding is available.
Charters Towers	Very High	Investigate options to create a larger roofed treated water storage	Monitor for evidence of possums or birds gathering above the tank	The WIUP has made available the Mod 2 clarifier tank. Previous consideration of turning it into a treated water storage has now been developed into a requirement, as the existing CWT has developed serious leakage around its base.	2025	24/11/22 In progress. Module 2 to be converted to a covered Clear Water Tank. Expect project completion early 2025.



Scheme	Risk	Action Requirement	Interim Action	Long Term Plan	Target Date for Long Term Action	Actions to Date
Charters Towers	High	Conduct Health Based Targets assessment of the raw water and treatment to determine if UV treatment is warranted	Increase sampling of raw water for E. coli as an indicator for crypto to form baseline data for the study	Conduct a health-based targets assessment of the raw water	2025	To be commenced early 2025
Charters Towers	High	Dedicated inlet and outlet mains at the reservoir to ensure adequate turnover	Utilise re-chlorination system to maintain residual in the reservoirs	This forms part of the rising main and reservoir replacement project	2027	Rechlorination system is in place. Planning Stage Complete. Reservoir mains currently in design and to be scheduled as funding is available.
Greenvale	Very High	Full Health Based Target Assessment required to determine suitable level of treatment required for crypto/giardia		It is expected that this work will form part of the baseline for possible defence upgrades of the water system at Greenvale	2026	On hold
Greenvale	Very High	Investigation of full water treatment system		On hold until Defence requirements in Greenvale are finalised as the water system will be upgraded	2028	With consultants
Greenvale	High	Reservoir roof improvement program to ensure they are sealed against vermin and runoff		Complete review of all reservoirs is to be conducted (currently resource constrained)	2026	On Hold

Scheme	Risk	Action Requirement	Interim Action	Long Term Plan	Target Date for Long Term Action	Actions to Date
Greenvale	High	Improve asset mapping capability to reduce the risk of cross connections		Corporate system is moving towards asset mapping.	2026	On Hold
Pentland	Very High	Document treatment process, identify failure modes, label equipment and pipework. Implement a maintenance authorisation system.		Conduct complete review of infrastructure and procedures	2026	Not Started
Pentland	Moderate	Regular flushing program for Pentland Reticulation		Reticulation to establish flushing program for townships	2025	Not started
Ravenswood	Very High	Produce updated drawings of the water and sewerage systems		Reticulation task to confirm main locations	2025	To be completed under new agreement with Ravenswood Gold
Ravenswood	High	Consider changing to gas chlorination in order to avoid long holding times for hypo		To be addressed in the design of the relocated WTP	2025	Ravenswood Gold has advised that the Sodium Hypochlorite storage system will be air conditioned to minimise formation of decay products Issues for agreement include potential Stamp Duty ~ \$1M, and risk management.