

WATER & WASTE COMMITTEE**20 MAY 2009****1****CONTINUED DRINKING WATER QUALITY FAILURES IN PORT DOUGLAS WATER SUPPLY - DIVISION 10****B Gardiner:26/6/1-01: #2039184****RECOMMENDATION:****It is recommended that Council:**

- 1. Temporarily chlorinate Flagstaff 2 and Craiglee reservoirs in Port Douglas to maintain an effective residual disinfection level to ensure the water meets the regulatory standards**
- 2. Continue consultation with the community via the Douglas Community Water Reference Group until a choice is made on long-term management of the Port Douglas supply.**
- 3. Advise Queensland Health and the Office of the Drinking Water Regulator of the proposed actions.**

INTRODUCTION:

The water supplied to properties in Division 10 receives a high level of water treatment through ultrafiltration followed by ultraviolet (UV) disinfection. However, the UV disinfection process does not provide any long-term disinfection once the water leaves the treatment plant and enters the pipe network. The water is therefore subject to potential contamination from water pipes break, contamination in reservoirs, backflow of contaminated water into the system, or if water sits stagnant in water pipes on your property.

Even though Council has implemented a drinking water quality management plan and staff have maintained the pipe network and reservoirs to a high standard, water in the supply system has failed to meet drinking water health standards on a number of occasions. As a result Queensland Health and the Office of the Drinking Water Regulator have directed Council to take action to ensure that the water supplied to customers is safe.

This report seeks to provide Council with options for consideration in managing water quality in the Division 10 water supplies.

BACKGROUND:

Council considered a detailed report in May 2008 on a range of issues with regard to the three water supplies in the former Douglas Shire. In that report Council were advised of the difficulties that may occur with regard to meeting the drinking water standards with the lack of residual disinfection in the water supply.

At the same May 2008 meeting, Council resolved as follows:

That council supports the continuation of the current chemical free treatment methods in the former douglas shire as it currently complies with the Australian Drinking Water Quality Guidelines.

In September 2008 Council resolved to set up the Douglas Community Water Reference Group to assist and advise Council on management of water supplies in Division 10. This group has met on 3 occasions and minutes of meetings have been provided to Council following each of these meetings.

State of the water supply systems at the time of merger

Council has been previously advised of the state of the supplies at the time of the merger. In summary the following were the key items at the time of merger or shortly thereafter:

- No valid water extraction licenses held
- Water treatment plants in a state of poor maintenance
- Membrane filters clogged due to physical disconnection of the clean-in-place process resulting in significantly reduced capacity
- Outdated future water demand planning
- Lack of water storage in the network
- Very high per capita water demand (over double Cairns City demand)
- High water pressures in the reticulation network
- Some water reservoirs in a poor state of repair.

Operational Improvements since March 2008

A range of operational improvements and maintenance items have been actioned since the merger at a cost of approximately \$844,000 dollars. Actions have included but not been limited to the following:

- Repairs and maintenance including electrical and mechanical items
- Replacement or redirection of pipes
- Installation of flow meters to improve operational efficiency
- Upgrade of telemetry system for remote monitoring and operations
- Diversion of backwash waters from sewer
- Reservoir repairs and maintenance
- External consultancy advice.

In addition the water quality testing costs have been \$116,000 year to date compared to approximately \$140,000 for the rest of Cairns due to the increase in repeat and additional testing due to water quality failures.

Water quality testing

Despite careful maintenance and cleaning of the water reservoirs and pipe networks, over the past 8 months weekly water testing has revealed that the drinking water has not met the Australian Drinking Water Guidelines as follows (details in attachment X):

1. Reservoir testing – 48 failures for E Coli
2. Pipe network testing – 9 failures for E Coli

E Coli is an indicator that is only found in the gut of animals and humans and is passed into the water supply from faecal matter. There are many different stains of E Coli, some of which are harmful and some which are not. However, there may also be other harmful bacteria, viruses and protozoa present in the supply from the faecal matter that produced the E Coli.

E Coli is relatively easy to test for while many other biological contaminants such as viruses and protozoa are not. E Coli is therefore used as an indicator and if it is found it tells us that there is faecal contamination in the water supply.

Failures have been primarily at the reservoirs as follows:

E Coli failures in Division 10 water supplies since August 2008

Location	Properties Supplied	No of failures in 2009
Rocky Point Reservoir	25	7 – temporary chlorination in place currently
Flagstaff Hill 2 Reservoir	Central parts of Port Douglas	9
Craiglee Reservoir	Most of Port Douglas	9 (+ 3 additional while off-line)
Port Douglas pipe network	Various	7
Daintree Village	Approximately 50	1
Flagstaff 1	Approximately 200	7 – off-line since Nov 08
Flagstaff 3	Approximately 25	7 – off-line since Nov 08
Mowbray	Approximately 150	1 – off-line since Oct 08
Dagmar Heights	Approximately 20	5 – permanent boil water advice in place

The Rocky Point reservoir is currently being chlorinated while alternate methods of operating the supply network are trialled to establish if the system can be operated without chlorination. This is being undertaken in consultation with the residents supplied by the reservoir.

The majority of water supplied to Port Douglas flows through the Craiglee reservoir. The town centre and surrounding areas can be supplied directly from Craiglee reservoir or from Flagstaff Hill 2 depending on the demand and the water level in the reservoirs.

When reservoirs have failed water quality tests, they have been chlorinated and flushed then re-tested. In the majority of cases the re-testing has shown that the water has met the drinking water guidelines.

When failures in the pipe network have been detected, the area around the failure has been flushed thoroughly and the water re-tested. In all cases the re-test has met the drinking water guidelines.

It should also be noted that 4 reservoirs have been permanently taken off-line due to continued water quality failures. These are Flagstaff 1 and 3 in Port Douglas, Mowbray and Cassowary.

Dagmar Heights supply is taken from a groundwater bore to a reservoir then direct to residents with no treatment applied. A permanent boil water alert is in place for this small system currently.

Drinking water standards

There are 2 main guidelines or regulatory documents relating to drinking water quality in Australia.

1. The Australian Drinking Water Guidelines (2008)

These guidelines state:

'No sample of drinking water should contain any E Coli'

2. The Public Health Regulation (2005)

Section 18ACc of the Public Health Regulation (through reference to schedule 3A) states that E Coli must not be detected in a drinking water supply. Under the provisions of the Health Act (2005) it is an offence to supply unsafe water:

S57 C When drinking water is unsafe

*Drinking water is **unsafe** at a particular time if it would be likely to cause physical harm to a person who might later consume it, assuming nothing happened to it after that particular time and before being consumed by the person that would prevent it being used for its intended use.*

S57E Supply of unsafe drinking water

*A drinking water service provider **must not supply drinking water** that the provider knows, or **reasonably ought to know**, is unsafe.*

Maximum penalty - 3000 penalty units or 2 years imprisonment

The standard test for E Coli requires a 100ml sample to be filtered and incubated overnight in a laboratory. If 1 or more bacterial colonies form, then this is taken to be the number of organisms in a 100ml sample. Hence if 1 E Coli is found from a 100ml water sample taken from a 10 million litre reservoir (eg Reef Park reservoir), then it is possible that there will be up to **100 million** bacteria in that reservoir together with any other contaminants (eg bacteria, viruses, pathogens) present in the faecal matter that may be associated with the E Coli.

COMMENT:

Government Authority Advice

Queensland Health administers the Health Act and has advised Council on several occasions that they consider the addition of a residual disinfection to the water supply is strongly recommended.

With regard to the recent E Coli failures, Queensland Health has also advised that the ongoing detection of E. coli in this drinking water supply indicates that the treatment process and/or reticulation system is not currently capable of guaranteeing a safe drinking water supply.

Queensland Health has advised that (full copy in attachment XX):

'It is acknowledged that the Cairns Regional Council and the Douglas Community Water Reference Group are working towards a long term solution to the non-compliances affecting the drinking water supplies in the old Douglas Shire region. However, until the safety of the drinking water from these supplies can be guaranteed, a method of disinfection should be utilised. In order to comply with statutory requirements, Cairns Regional Council must now take steps to ensure that the treatment and reticulation of the affected Port Douglas supply ensures provision of drinking water that is safe.'

Please note that this is the second warning of this nature Please note that this is the second warning of this nature issued to council within the last month regarding the safety of a drinking water supply in the old Douglas Shire area.

I remind you that Queensland Health is obligated to enforce the aforementioned legislation and whilst we would rather resolve this issue in partnership with Council's, we may have no alternative but to proceed to enforce the Public Health Act 2005, if this supply continues to fail the prescribed microbiological standard.'

Additional advice has been received following the failures in May.

The Office of the Water Supply Regulator has also requested Council's advice on actions intended to ensure the water supply meets the Health Standards.

As you are aware, we have notified Queensland Health of our concerns over the long term health issues with the Flagstaff Reservoir and the lack of disinfection in that system. Our response to this issue is consistent with (Queensland Health); that is that we expect the Cairns Regional Council to develop a response that is applicable to your systems.

Why was there never a problem before?

Douglas Shire Council surveyed residents in February 1997 on preferred water treatment options. This survey (copy in attachment X) included a covering letter that stated the following:

'It should also be noted that Option 5 Conventional Treatment and Option 6 Microfiltration, whilst they remove and are effective against Giardia and Cryptosporidium, may not provide the required levels of disinfection and Council may ultimately, notwithstanding the selection of any particular option, still have to consider some form of disinfection e.g. chlorination to bring water quality up to standards accepted by the World Health Organisation (WHO).'

Hence the Douglas Shire Council knew at the time that the treatment choice was made that there was a likelihood that the water supplies would need to have some form of residual disinfection in the future.

Following the construction of the water treatment plants in October 2004, Douglas Shire undertook routine water testing in the pipe network generally on a monthly basis at up to 12 locations which did not include reservoirs. Water testing did result in the occasional E Coli failure but upon re-testing results were clear.

This is not surprising as the testing procedure requires a 250ml water sample from a flowing pipe. E Coli are randomly distributed in the water column and the water in the pipe network flows under pressure. Hence the likelihood of actually collecting E Coli if it was in low levels in the supply is low.

Since March 2008, CRC has been testing the water on a weekly basis in 22 locations across the network which includes all 8 reservoirs that are currently in service.

Douglas Shire Council did not test water in the reservoirs. The first time the reservoirs were tested in August last year, 7 out of 13 failed the Drinking Water Guidelines. Reservoirs are the main potential source of contamination into the water system. This resulted in a boil water alert being put in place until reservoirs were maintained and water testing results were clear of contamination.

It is therefore highly likely that there have always been low levels of E Coli in the water supply at times but the testing regime has not detected it. This is particularly more likely where the state of repair and cleanliness of some of the reservoirs was less than desirable.

Requirements for reporting water quality failures have come in to force on 1 January 2009 under the provisions of the Water (Safety and Reliability) Act 2008. This requires Council to report any failures to the regulator who is then able to take action as they see fit to ensure water provided to consumers is safe.

Contamination of the water supply with Giardia

There have been some concerns expressed by residents in Port Douglas that they have contracted Giardia from the water supply. Council staff have investigated the potential for Giardia contamination to occur and advise the following:

- Giardia is a single cell parasite present in the faeces of infected animals or humans. There are different species of Giardia that do not cause illness.
- Giardia cysts can be found in the environment in water catchments, on uncooked food, bathroom surfaces, toys, nappies, and can be transferred from person to person if infection is present.
- Levels of giardia in the catchments in the Cairns and Port Douglas areas are low from testing results
- Giardia cysts are between 8 and 12 microns in size. Hence ultrafiltration is extremely effective in removing Giardia cysts if there are present.
- Chlorine disinfection has been shown to be effective against Giardia while UV irradiation has not.
- Diagnosis of giardia requires stool samples to be tested and often requires multiple tests before the presence of Giardia is confirmed.
- Giardia is relatively easily treated with antibiotics.
- Queensland Health has advised that there have been no cases of giardia reported from the Port Douglas area in the recent past.
- Queensland Health does not recommend routine testing for Giardia in a water supply network due to the effectiveness of treatment processes, the difficulties in detection, and the lack of direct correlation between Giardia detection in a water supply and illness.

Council's advice is that residents who have symptoms that suggest that they may have contracted Giardia should contact their doctor and request tests be undertaken to confirm or otherwise their symptoms.

Water treatment options

There are a number of possible disinfection techniques or processes that can be employed in water supplies. These are summarised below. The DCWRG is currently reviewing all these options with a view to determining which are the most effective for the Douglas water supplies. This is intended to include consultation with the broader Douglas community in due course. This is likely not to occur for some months.

Chlorination:

By far the most common method used is chlorination which has been used since the early 20th century. Using this method, low doses of chlorine are added to the water supply so that a residual chlorine level of 0.5 mg/l (parts per million) is achieved after 30 minutes contact time with the water. Chlorine provides a residual disinfection once the water leaves the treatment plant which reduces significantly the potential for contamination throughout the pipe network and reservoirs.

Chloramination and chlorine dioxide:

There are other variants of chlorination that can be used such as chloramination (chlorine plus ammonia) and chlorine dioxide which have slightly different advantages and disadvantages depending on the characteristics of the water and supply network.

Summary of main disinfection processes used in water treatment

Disinfectant	Description	Advantages	Disadvantages
Chlorination	Addition of chlorine to produce 0.5 mg/l after 30 minutes contact time	Excellent biocidal properties. Provides a residual disinfection	Can generate disinfection by-products if organic matter is present
Chloramination	Addition of chlorine and ammonia to water	Produces lower levels of by-products than chlorine. Provides a residual disinfection.	Requires a longer contact time and higher dosage than chlorine. Affective against bacteria but not overly against viruses
Chlorine dioxide	Addition of chlorine dioxide gas to achieve 0.3mg/l	Excellent biocidal activity. Provides a residual disinfection.	Complex technology and controls. Can generate harmful by-products
Ultra-violet irradiation	Irradiation of water using ultraviolet light	Chemical free	No residual disinfection
Ozonation	Strong biocide and oxidising agent	Reliable equipment, chemical free	Can generate disinfection by-products No residual disinfection

Ultraviolet irradiation:

UV irradiation disinfection is currently used in the Division 10 supplies and entails passing water under UV lamps. This system affects organisms by disrupting the chemical bond of molecules. The largest disadvantage of UV disinfection is that there is no residual disinfection capacity once the water leaves the treatment plant.

Ozone:

Ozone is another disinfectant method that is essentially an oxidising agent that affects biological organisms. It can be an effective disinfectant but it can lead to the generation of by-products such as brominated trihalomethanes, formaldehyde and acetaldehyde. Ozone does not provide a residual disinfection once the water leaves the treatment plant.

Others:

There are a number of other methods that do not have widespread use in water supplies such as bromide, silver, iodine, and potassium permanganate.

What are the risks with using chlorine as a disinfectant?

Chlorination of water supplies is a method used world-wide and is highly recommended by WHO and Health agencies across Australia. There are some potential for minor side effects from the reaction of chlorine with organic matter in some particular water supplies as detailed below. Health guidelines require regular monitoring to ensure that any potential reactions are detected and managed so that they do not reach harmful levels.

Chlorine can react with organic material in the water to produce chlorinated by-products such as trihalomethanes (THM). However, the generation of by-products requires the presence of reasonable quantities of organic matter in the first place. In the case of the Division 10 supplies, the natural level of organic matter in the raw water is very low. This water is then filtered through ultrafiltration membranes which will eliminate almost all organics that might be present. Disinfection by-products are required to be tested for and there are Health standards for these to ensure that levels do not reach harmful levels.

The World Health Organisation guidelines state:

“The estimated risks to health from disinfectants and their by-products are extremely small in comparison to the real risks associated with inadequate disinfection, and it is important that disinfection should not be compromised in attempting to control such by-products. The destruction of microbial pathogens through the use of disinfectants is essential for the protection of public health.”

To put the levels of chlorine added to a water supply into some context, the taste threshold for chlorine for the majority of people is at 0.4 mg/l. The concentrations typically found in a chlorinated water supply network are below 0.4 mg/l.

While there is no suggestion that people would drink swimming pool water, the concentration of chlorine in swimming pools is typically between 4 and 8 mg/l – and order of magnitude higher than levels in drinking water.

As the Port Douglas supply has not been subjected to chlorine disinfection, there is a high likelihood that there are biofilm growths at various locations in the pipe network. Biofilms are structural communities of micro-organisms that attach to the inside of water pipes. Biofilms contain a large percentage of any bacteria that may be present in a water supply.

In the event that these biofilms come in contact with chlorine for the first time, there is some potential for these organisms to die and release taste and odour compounds that may lead to customer complaints. This is expected to only be a short-term issue if at all.

To manage any impact of biofilms on the supply is to flush the entire network prior to addition of chlorine to remove as much of the biofilms as possible. Customers will be

advised by letter that there may be some taste issues in the early stages of the addition of chlorine.

CONSIDERATIONS:

Corporate and Operational Plans:

Former Cairns City Council's Key Goal 5 – Our Water Supply: that the community needs a secure, high quality water supply that provides a more consistent all year round supply for the growing City.

Former Douglas Shire Council:

Strategy 2.6 – Seek to ensure that a high quality lifestyle is available to Shire residents.

Strategy 4.5 – Maintain and enhance the water supply network in accordance with the triple bottom line concept with a focus on customer service, cost effectiveness and the environment.

Strategy 4.7 – Develop and implement a range of services that meet the health, safety and lifestyle needs of the community and conform to legislative requirements.

Statutory:

Section 18ACc of the Public Health Regulation (through reference to schedule 3A) states that E Coli must not be detected in a drinking water supply. Under the provisions of the Health Act (2005) it is an offence to supply unsafe water:

S57 C When drinking water is unsafe

*Drinking water is **unsafe** at a particular time if it would be likely to cause physical harm to a person who might later consume it, assuming nothing happened to it after that particular time and before being consumed by the person that would prevent it being used for its intended use.*

S57E Supply of unsafe drinking water

*A drinking water service provider **must not supply drinking** water that the provider knows, or **reasonably ought to know**, is unsafe.*

Maximum penalty - 3000 penalty units or 2 years imprisonment

Policy:

Council adopted a Drinking Water Quality Policy in July 2007. The relevant extracts from this policy are as follows:

Council will:

- Consider the needs and expectations of our customers, stakeholders, regulators and employees and integrate appropriate solutions into our planning to provide and maintain safe water supplies;

- Undertake regular monitoring of drinking water quality and maintain effective reporting mechanisms to provide relevant and timely information and promote confidence in the management of the water supply systems.

Financial and Risk:

The significant risks relate to the provision of safe drinking water to customers in Division 10. It is apparent, that despite best efforts of staff, there continues to be difficulty in meeting the drinking water regulatory standards in Port Douglas. There is therefore a potential public health risk and also the potential for Council to be fined or prosecuted by Queensland Health for knowingly supplying unsafe drinking water.

The estimated cost of installing equipment for temporary chlorination of the Craiglee and Flagstaff Hill 2 reservoirs is approximately \$55,000. The estimated cost of installing equipment for permanent chlorination of the Craiglee and Flagstaff Hill 2 reservoirs is approximately \$110,000. The ongoing operational costs are approximately \$10,000 for chemicals and power.

Sustainability:

If public confidence in the safety of the water supplies in Division 10 is eroded, there are potential impacts on the tourism industry which is the backbone of the economy in Division 10.

CONSULTATION:

Consultation has occurred with the following with regard to this report and the recommendations provided:

- Mayor
- CEO
- Chair of Water & Waste Committee
- Divisional Councillor
- Queensland Health
- Office of the Drinking Water Regulator
- Water & Waste staff.

In addition, Councillors attended a workshop on the issue on Wednesday 13 May and were advised of the intended recommendation.

With regard to advising the Port Douglas community of the intention to chlorinate the water supply, a letter drop will occur after the 20 May meeting, subject to the meeting outcome, advising customers that the supply will be chlorinated. Chlorination itself will not occur until Monday 25 May. This will allow those that choose not to drink chlorinated water time to make alternate arrangements.

OPTIONS:

Council has limited options available to ensure that the water supply is safe and meets the regulatory standards.

Option 1: Maintain the chemical free supply and operationally manage water quality failures then they occur.

This option does not ensure that the water supplied will meet the regulatory standards and is safe. The water testing results are received approximately 2 days after the water sample was collected. Hence the test result indicates after the fact that the water did not meet the guidelines.

This option is also not likely to meet the requirements of Queensland Health and the Office of the Drinking Water Regulator although it will meet the approval of some residents.

Option 2: Temporarily continuously chlorinate Flagstaff 2 and Craiglee reservoirs in Port Douglas to maintain an effective residual disinfection level to ensure the water meets the regulatory standards, and continue consultation with the community via the Douglas Community Water Reference Group until a community choice is made on future management of the supply.

Given the history of failures in the water supply in Port Douglas, the acknowledgement by the Douglas Shire Council that chlorination was likely in the future, the directive from Queensland Health, and the commitment from council to work through the issues with the community reference group, this option is the preferred option for managing the water supply in Port Douglas in the short term.

A detailed communication strategy will need to be developed to advise the community of what is being implemented and the reasons this has been implemented. In addition, the Port Douglas supply network will need to have a one-off 'super-chlorination' to remove biological growth from the pipe network that may cause taste and odour complaints. This will require careful planning and communication to all customers.

For those customers that do not wish to drink water that has been chlorinated, options are available for removal of chlorine within the home. These include various filtration systems. Council cannot guarantee the effectiveness of these proprietary products.

Option 3: Permanently chlorinate the Port Douglas water supply.

This option will ensure that the water supply in Port Douglas meets regulatory standards but is likely to raise the concern of some sectors of the community that object to having chlorine added to the water supply. Should this option be chosen by Council, a detailed communication strategy will need to be developed to advise the community of the reasons why the option has been chosen.

If this option is chosen by Council, the Port Douglas supply network will need to have a one-off 'super-chlorination' to remove biological growth from the pipe network that may cause taste and odour complaints. This will require careful planning and communication to all customers.

CONCLUSION:

The recommended option for Council to consider is Option 2:

1. Temporarily chlorinate Flagstaff 2 and Craiglee reservoirs in Port Douglas to maintain an effective residual disinfection level to ensure the water meets the regulatory standards
2. Continue consultation with the community via the Douglas Community Water Reference Group until a choice is made on the long-term management of the Port Douglas supply.
3. Advise Queensland Health and the Office of the Drinking Water Regulator of the proposed actions.

ATTACHMENTS:

Letter from Queensland Health #2039748
Douglas Shire Water Treatment Options 1997 #2051999

Bruce Gardiner
General Manager Water & Waste
Cairns Regional Council



Queensland Health



Enquiries to: Ian Florence
 Telephone: 4050 3621
 Facsimile: 4031 1440
 Our Ref: Cwt230409

Mr Noel Briggs
 Chief Executive Officer
 Cairns Regional Council
 PO Box 359
 CAIRNS QLD 4870

**Cairns Regional Council Water Supply
 Public Health Act 2005**

Dear Mr Briggs,

I write with reference to the drinking water supplies in the region previously forming the Douglas Shire and their ongoing failure to comply with the requirements of the *Public Health Act 2005* (the Act).

In January this year a number of legal requirements were placed on drinking water providers, such as Cairns Regional Council, with regard to the provision of safe drinking water. The relevant provisions of the Act define when drinking water is unsafe, and offences about providing unsafe drinking water. These provisions are:

S57 C When drinking water is unsafe

Drinking water is unsafe at a particular time if it would be likely to cause physical harm to a person who might later consume it, assuming nothing happened to it after that particular time and before being consumed by the person that would prevent it being used for its intended use.

S57E Supply of unsafe drinking water

A drinking water service provider must not supply drinking water that the provider knows, or reasonably ought to know, is unsafe.

Maximum penalty - 3000 penalty units or 2 years imprisonment

To support the monitoring of this obligation, water service providers are now required under section 18AC of the *Public Health Regulation 2005* to test drinking water supplies weekly for the presence of E. coli and report non-compliances to the Department of Environment and Resource Management - Office of the Water Supply Regulator.

Office
 Tropical Population Health Services
 19 Aplin Street
 CAIRNS QLD 4870

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 PO Box 1103
 CAIRNS QLD 4870

Phone
 (07) 4050 3600

Fax
 (07) 4031 1440

In the period leading up to January 2009 and since this requirement commenced, several samples of drinking water supplied in the northern district of the Cairns Regional Council Area have returned non-compliant results, due to E. coli being detected via laboratory examination. During this time, officers of this Service have worked closely with management and staff at Cairns Water and recognise their ongoing efforts to address these problems as they occur.

The continuing microbiological quality failures identified within the last month at Rocky Point, Cooya Beach and Port Douglas indicates to this Service that the immediate disinfection/flushing and physical checks/upgrades of those water supply systems is not adequate to guarantee the ongoing safety of the drinking water reticulated to consumers.

It is accepted that the Cairns Regional Council and the Douglas Community Water Reference Group are working towards a long term strategy to ensure the safety of these drinking water supplies. Until these solutions are formulated, implemented and shown to be effective, interim measures should be in place for the supplies in question to prevent further non-compliance with the Act and to safeguard public health.

The implementation of a method of water treatment that provides an enduring level of protection throughout the water supply system, such as continuous chlorination or other chemical disinfection is considered necessary and is recommended to your Council. Chlorination has proven to be a most efficient, effective and safe way of ensuring that drinking water supplies are kept safe from initial treatment to the end user, due to its residual disinfectant action.

In order to comply with statutory requirements Cairns Regional Council must now take steps to ensure that the treatment and reticulation of the affected supplies ensures the provision of drinking water that is consistently safe. I remind you that Queensland Health is obligated to enforce the aforementioned legislation and whilst we would rather resolve this issue in partnership with Councils, we may have no alternative but to proceed to enforce the *Public Health Act 2005*, if these supplies continue to fail the prescribed microbiological standard.

If you would like to discuss this matter further please do not hesitate to contact the Director of Environmental Health Services, Mr Paul Endres on 4050 3600.

Yours faithfully



Brad McCulloch
Senior Director
Tropical Population Health Services - Cairns
29/04/2009



WATER TREATMENT OPTIONS PROGRESS REPORT - FEBRUARY 1997

As you may be aware, our current water quality is poor as evidenced by extensive testing. It contains unacceptable levels of undesirable micro-organisms. This contamination is likely to result from the presence of warm blooded animals such as feral pigs, marsupials etc., but may also result from the presence of people within the source catchment. The water, however is clear and low in colour. The above characteristics are similar in all existing sources of water including Rex Creek (Mossman, Port Douglas, Newell, Cooya, North Mossman, Cassowary and Mowbray), Little Falls Creek (Wonga, Rocky Point and Miallo) and Martin Creek (Daintree Village).

This report aims to identify the best water treatment option for the long term future of the Shire. It outlines seven options on which residents are invited to express their views by posting in their preferences or providing detailed feedback at a public meeting. With the assistance of community feedback, the Council can then shortlist a number of options and decide on the method that will best benefit this area. Detailed information is provided in the enclosed chart.

This will allow the community to express their wishes in the decision making process.

The Council has already surveyed all local Doctors and Pharmacists and the overwhelming response from their perceptions detailed in the options schedule was to support microfiltration as the best method.

It should also be noted that Option 5 "Conventional Treatment" and Option 6 "Microfiltration", whilst they remove and are effective against Giardia and Cryptosporidium, may not provide the required levels of disinfection and Council may ultimately notwithstanding the selection of any particular option, still have to consider some form of disinfection e.g. chlorination to bring water quality up to standards accepted by the World Health Organisation (WHO).

In examining the options, residents should pay particular attention to the far right hand column on the information chart which details expected annual increases in water rates above the current water charge of \$189.00 per annum, which would occur as a result of any installation of the new method.

With the given information, please take time to consider the future of the Douglas Shire and complete the loose sheet feedback form enclosed.