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# **Water Supply**

## **September/October 2000**

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Operations Group  
September/October 2000

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## Operations Group Review of Operations for the Period Ended 31 October 2000

### 1. Items of Note

- The optimiser continues to produce accurate demand predictions for Waterloo and Wainuiomata Water Treatment Plants, enabling a more efficient and cost effective operation.

### 2. Water Quality

A total of 458 samples from trunk mains were tested for coliform organisms. None of these samples tested positive.

A total of 181 samples of treated water from treatment plants were tested for faecal coliforms. None of these samples tested positive.

Secchi disc water clarity in the Te Marua north lake varied between 1.5 m and 4.5 m, and in the south lake between 3.5 m and 5.9 m. These are considered satisfactory.

The dominant phytoplankton were as follows:

- North Lake: *Oscillatoria*, *Synedra*, *Peridium*
- South Lake: *Staurastrum*, *Cosmarium* and *Peridium*.

*Oscillatoria* is a filter clogging algae when present in high concentrations.

*Synedra* produces a musty smell and slick tongue sensation when abundant

*Staurastrum* produces a grassy smell when abundant.

Dissolved oxygen (10.0 mg/L - 12.7 mg/L) are satisfactory. pH values are generally satisfactory but there was one uncharacteristically high result of pH 8.7.

*Giardia* and *Cryptosporidium* results were as follows:

#### Te Marua

- |        |   |                            |
|--------|---|----------------------------|
| Lakes  | ) | No <i>Giardia</i>          |
|        | ) | No <i>Cryptosporidium</i>  |
| Intake | ) | Low <i>Giardia</i>         |
|        | ) | Low <i>Cryptosporidium</i> |

Treated Water ) No *Giardia*  
) No *Cryptosporidium*

#### Wainuiomata

Treated Water ) No *Giardia*  
) No *Cryptosporidium*

Lower George Creek and ) Low *Giardia*  
George Creek south arm ) Low *Cryptosporidium*  
combined )

Orongorongo and Big Huia ) Low *Giardia*  
Intake combined ) Low *Cryptosporidium*

Wainuiomata intake ) Low *Giardia*  
) Low *Cryptosporidium*

#### Guidelines Criteria

0-10 oocysts = low  
10-50 oocysts = medium  
>50 oocysts = high

### 3. Supply Situation

The two monthly seasonal forecast for September and October, and November and December 2000 issued by the Meteorological Service is as follows.

For Wellington:

Situation as at September 10

**Rain:** Below normal  
**Wind:** Less than normal  
**Temperature:** About normal  
**Sunshine:** Above average  
**Specials:** Thundery squalls  
**Confidence:** Moderate

Indications are that you may well get lighter than normal west and northwest winds on average this spring, and maybe more variety than normal. There could still be a few northwest gales, but there may also be some extended periods of light winds. Since the main provider of rain at this time of the year is the showers that blow in from the Tasman Sea, you can expect below normal rainfall – a continuation of the August pattern. Since the sea surface temperatures in the

Tasman are slightly warmer than normal, some of the showery bursts are likely to be squally and thundery.

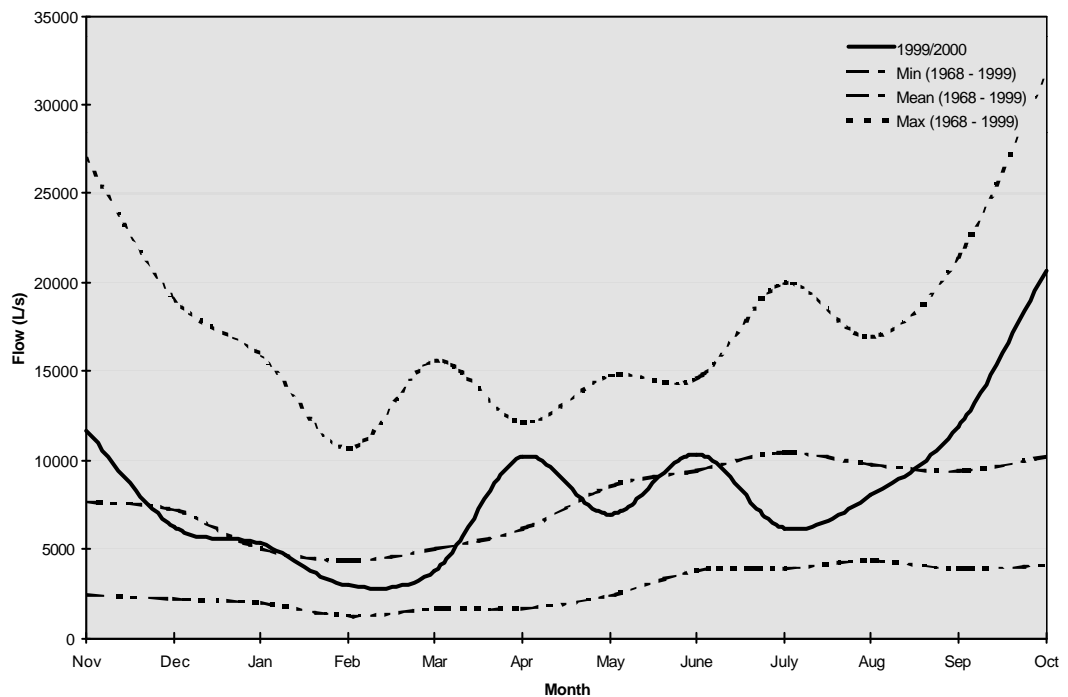
Situation as at November 10

<b>Rain:</b>	About normal
<b>Wind:</b>	Less than normal
<b>Temperature:</b>	About normal, but large day to day variations
<b>Sunshine:</b>	Above average
<b>Confidence:</b>	Moderate

Although the normal patterns, such as cold fronts and passing high and low pressure systems, are “on the menu”, the combined result of them on central New Zealand is looking rather mediocre. There will be some large day to day variations, and a few days may well stand out as wetter than others, but we expect the months to average out to be near normal.

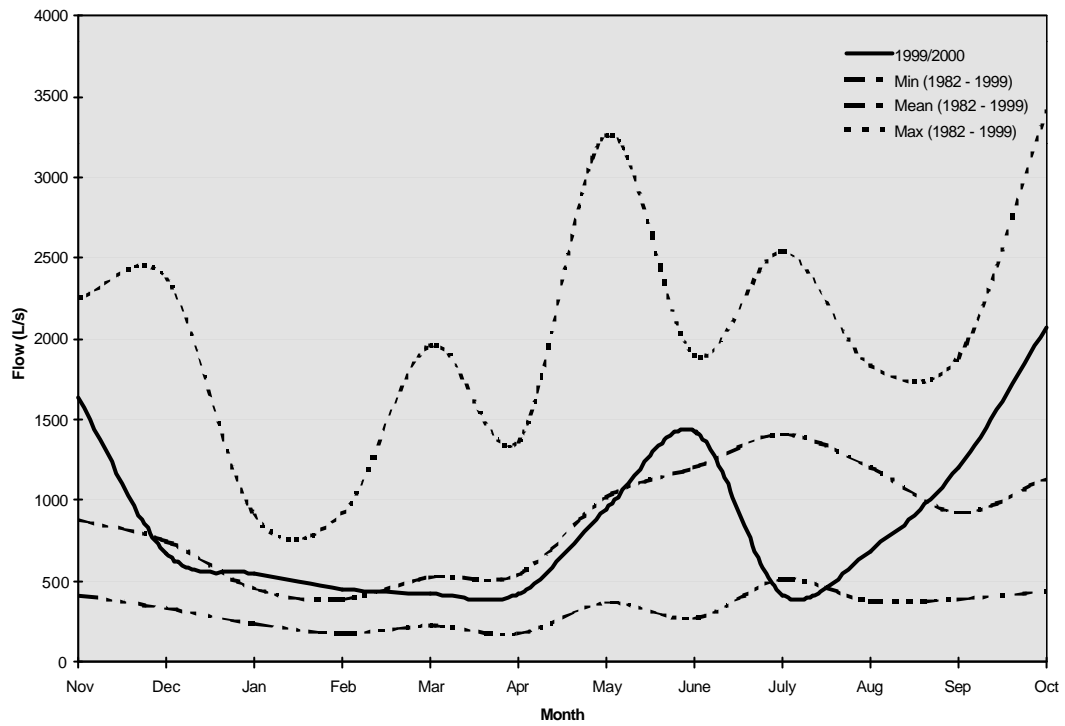
### Hutt River Flows

The mean monthly river flow during September and October was above average.



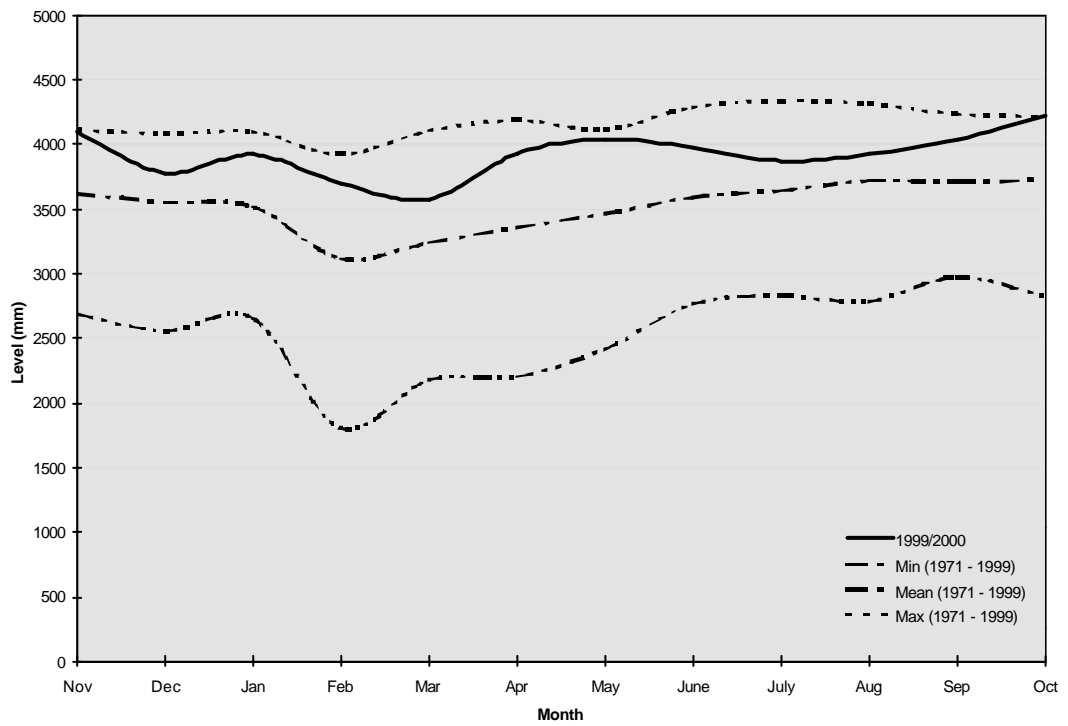
### Wainuiomata River Flows

Flow in the Wainuiomata River was above average during September and well above average during October.



### Aquifer Levels

The water aquifer level in the Waiwhetu aquifer was above average during September and October.



## 4. Production

### 4.1 Wainuiomata

#### 4.1.1 Quality

There are no quality issues to report

#### 4.1.2 Safety

➤ There are no accidents or incidents to report.

#### 4.1.3 Operations

September: There have been several periods of heavy rainfall during these two months, some of which the plant ran through without any call outs. Other events were that large the plant was turned off.

One particular rain event caused the Orongorongo River level to rise 1.3 m in three minutes. This brought a lot of debris down the river and changed the course of the river away from the intake.

4 September: New aluminium, alkalinity and particle counting instruments were commissioned.

7 September: A lightning strike destroyed the treated water reservoir level transmitter, the plant burglar alarm, Orongorongo flow transmitter, George Creek turbidity meter, Morton Dam flow transmitter and Morton Dam sump pump. Following the advice of a consultant additional lightning protection is being installed.

10 October: BOC Gases installed new carbon dioxide dosing equipment that will enable smoother plant operation at low flows. The plant was off for three days while the equipment was being installed and commissioned. This downtime was used to drain, clean and inspect the treated water reservoir, sludge thickener, outlet grit chambers and the reaction tank.

13 October: A PAC spill occurred. A hose was blown off a dose pump as the plant was being shut down. This was not picked up until the plant was restarted the next day. The flexible hoses are to be replaced with hard pipework when the new dose pump heads are replaced in a few weeks. The spill was contained within the chemical sump.

#### 4.1.4 Projects

➤ Capital Works

- ◆ A new generator has been installed at Big Huia. Little Huia will be refurbished once the Big Huia hydro unit has been commissioned.

➤ Operational Projects

- ◆ New CO<sub>2</sub> dosing equipment has been commissioned. Minor flow meter problems have to be resolved by BOC Gases.
- ◆ The software checking is nearing completion.
- ◆ Investigation work for lime dry feeders is underway.
- ◆ Refurbishment of the Orongorongo access track is nearing completion.

#### 4.1.5 Plant Tours

24 September: Stage 5 NZCE water students from Massey University (12)

27 October: Boulcott School students (54)

#### 4.1.6 General

- Wainuiomata and Waterloo were both externally audited for the annual ISO 9002 and ISO 14001 accreditation.
- With the increase in demand, the optimiser is using Wainuiomata River more, reaching near maximum flows at least once a day.

### 4.2 Waterloo Water Treatment Plant

#### 4.2.1 Quality

There are no quality issues to report.

#### 4.2.2 Safety

There are no accidents or incidents to report.

#### 4.2.3 Operations

21 September: There was a leak in the Mahoe well discharge pipework. Distribution Section staff carried out repairs.



22 October: Refurbishing of the Bloomfield well pump is now complete.

#### 4.2.4 Plant Tours

There were no tours during this two month period.

#### 4.2.5 Projects

##### ➤ Capital Works

- ◆ The aquifer pump test has been postponed.
- ◆ Plans have been drawn up and equipment ordered for the fluoride dosing modifications to supply Petone with unfluoridated water.

##### ➤ Operational Projects

- ◆ The Penrose fixed speed and Bloomfield well pump control cabinets have been refurbished. There are three cabinets still to be completed.

#### 4.2.5 General

- The plant standby generator has been repaired.
- Lime from an alternative supplier is being trialled. No improvements to plant turbidity caused by lime insolubles have been observed.

### 4.3 Gear Island

#### 4.3.1 Quality

There are no quality issues to report.

#### 4.3.2 Safety

A potentially serious incident occurred during the removal of pipework and equipment. The gantry crane fell off the travelling rails during a lifting operation. The incident was investigated and reported to Occupational Safety and Health. No further action was deemed necessary.

#### 4.3.3 Operations

21 October: A gasket on a non-return valve failed on the chlorine boost pump line, causing a flood in the pump basement.

#### 4.3.4 Plant Tours

There were no tours during this two month period.

#### 4.3.5 Projects

##### ➤ Capital Works

- ◆ Dead legs have been removed from the main pump suction pipework.
- ◆ The old pumps have been removed for the new fluoride dosing equipment room.

##### ➤ Operational Projects

- ◆ The gas chlorine plant layout and equipment selection is nearing completion.

#### 4.3.6 General

- The plant needs to be run once a fortnight to stop high water discoloration and turbidity coming from the well pump casings. These fortnightly runs have been the only time Gear Island has been operating.

### 4.4 Te Marua

#### 4.4.1 Quality

- Because of an equipment fault, no fluoride was dosed between 1815 hours on 21 September and 0845 hours on 22 September 2000.

#### 4.4.2 Safety

There are no accidents or incidents to report.

#### 4.4.3 Operations

Software modifications have been added to reduce plant disruption caused by the operation of lightning protection equipment. Effectiveness will be monitored and some fine tuning may be required.

5 October: Washwater pump failure caused by water damage to delivery valve control circuit.

8 October: False fire alarm caused by faulty alarm circuit.

10 October: Filter inlet penstock failed to open. At this stage further investigations have not been able to identify the cause of this intermittent fault.

14 October: Pumping station pH high alarm caused by sudden flow changes. Tuning modifications are under way.

#### 4.4.4 Plant Tours

7 September: Wellington Regional Council induction tour (20)

13 September: Lower Hutt Probus Club (35)

15 September: Massey University (12)

20 September: Stokes Valley Probus Club (20)

24 October: Central Institute of Technology (6)

#### 4.4.5 General

##### ➤ Energy Management

The third stage of Te Marua's automated energy management has been completed. Operations at the treatment plant and pumping station have been modified to reduce kVA maximum demand. After the first month of operation indications are that savings of between \$3,000 and \$6,000 per month can be expected at the pumping station and \$360 and \$400 per month at the treatment plant. Work on the fourth stage, which involves reducing kWh costs, will begin in late November.

##### ➤ Lightning Protection

More lightning protection equipment is about to be installed. This follows evaluation of recent incidents and potential risks to critical equipment.

##### ➤ Te Marua Lakes

Great emphasis is being placed on refilling the lakes following winter use. This is to ensure that there is sufficient water stored to meet peak summer demand requirements. At present refilling is proceeding according to plan.

### 5. Distribution

#### 5.1 Health and Safety

An employee suffered a minor sprain to the left hand.

## 5.2 Pipeline Section

### 5.2.1 Maintenance

- Maintenance of the 1050 mm pipeline from Ngauranga valve chamber to Thorndon Pumping Station and the associated branch lines was completed.
- The Hutt main and Porirua branch lines were shut at the Judgeford intersection for valve maintenance.
- Welding repairs were carried out to the Mahoe Street bore line.
- A broken main to the Haywards Substation B branch line was repaired.
- Repairs were carried out on a double air valve on the Wellington City Council's low level trunk main at Jervois Quay/Wakefield Streets.
- The scour valve on the 375 mm/525 mm pipeline from Waterloo to Gracefield was renewed.
- A new branch valve was installed into Haywards Substation Reservoir.

### 5.2.2 Haywards Optimisation

- A new electromagnetic flow meter and pipework on the outlet main from No. 2 Reservoir was installed.
- The whole area was cleaned up, kerb and channelling installed and the access road resealed.

### 5.2.3 Wainuiomata 750 mm Cast Iron Main

- A 16 m section of steel main was installed in the Council yard in Moores Valley Road to allow the new stormwater pipe to pass underneath.
- Repairs were carried out to the blown 750 mm cast iron main in Moores Valley Road.

### 5.2.4 Gear Island Decommissioning

- Stages 1 and 2, involving removal of redundant pipework and blanking ex-bore lines, were completed.

## 5.3 Electrical Section

### 5.3.1 Haywards Reservoir

- The three new motorised valves at Haywards Reservoir have been commissioned and can be controlled remotely.

### 5.3.2 Cruickshank Reservoir

- The control valve on No. 2 Reservoir at Cruickshank had new controls fitted.

## 6. Health and Safety : Total Injury/Illness/Incident Record

- Production

There are no accidents or injuries to report.

- Distribution

An employee suffered a minor sprain to the left hand.

- Network

There are no accidents or incidents to report.

The following table summaries the Operations Group health and safety data for 2000.

# Operations Group Health and Safety Data 2000: Total Injuries

## Production

2000	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Hours worked	2,005	2,364	2,662	1,835	2,612	2,438	2,251	2,564	2,128				Jan = Bee Sting Mar = Wasp Sting Aug = Cut thumb while stripping cable. Stumbled and strained lower back.
Employee numbers	12	14	14	11	14	14	14	14	14				
Injuries	1	0	1	0	0	0	0	2	0				
Days lost	0	0	0	0	0	0	0	5	0				
Incidence rate (number of injuries per 100 workers)	8	0	7	0	0	0	0	14	0				
Frequency rate (injuries per 1,000,000 hours exposure)	499	0	376	0	0	0	0	780	0				
Severity rate (days lost to injury per 1,000,000 hours worked)	0	0	0	0	0	0	0	1,950	0				

## Distribution

2000	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Hours worked	1,387	1,873	1,896	1,458	2,089	1,817	1,834	2,056	1,782				Jan = cutting wheel kicked back and cut into inner thigh Mar = Hit on head by acroprop. Lump on head and bloodshot left eye Aug = Twisted right knee (torn ligaments) Sep = Minor sprain to left hand
Employee numbers	9	11	11	9	12	11	11	11	11				
Injuries	1	0	1	0	0	0	0	1	1				
Days lost	5	0	0	0	0	0	0	2	0				
Incidence rate (number of injuries per 100 workers)	11	0	9	0	0	0	0	9	9				
Frequency rate (injuries per 1,000,000 hours exposure)	721	0	527	0	0	0	0	486	561				
Severity rate (days lost to injury per 1,000,000 hours worked)	3,605	0	0	0	0	0	0	973	0				

## Network

2000	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Hours worked	4,239	4,940	5,437	4,236	5,193	4,418	4,376	4,391	4,307				Mar = Back sprain while walking Jun = Tripped over, sprained hand
Employee numbers	22	25	26	23	25	25	25	24	25				
Injuries	0	0	1	0	0	1	0	0	0				
Days lost	0	0	0	0	0	0	0	0	0				
Incidence rate (number of injuries per 100 workers)	0	0	4	0	0	4	0	0	0				
Frequency rate (injuries per 1,000,000 hours exposure)	0	0	184	0	0	226	0	0	0				
Severity rate (days lost to injury per 1,000,000 hours worked)	0	0	0	0	0	0	0	0	0				

Definition of an Injury/Incident = anything that is work related and entered into the OSH Accident Register (blue book).

## Operations Network Review of Operations for the Period Ended 31 October 2000

### 1. Items of Note

- There were five burst mains reported during September and five burst mains during October. All were repaired within the allotted time frame.
- The operation of the Water Services Agreement with Wellington City Council continues to produce satisfactory results.

### 2. Water Quality

#### 2.1 Routine Testing (A1)

Water quality was monitored and the appropriate Laboratory tests were completed for September and October. There were 162 samples from the reticulation system tested for bacteriological compliance in September and 156 in October. Compliance for September was 99.4 percent and for October 100 percent. Compliance for the year to date is 99.8 percent.

#### 2.2 Water Tests Initiated by Customers (A2)

	September	October	Year to Date	Compliance Year to Date (%)
Number received	7	3	26	-
Within ability of Operations Network to control	4	-	13	-
Formal response within five days	7	3	26	100%

### 3. Customer Services

#### 3.1 Counter and Other Office Services (E)

Information has been provided to customers requesting information by letter, telephone and over the public counter. A breakdown of enquiries received during the reporting period is as follows:

	September	October
Counter enquiries	93 + 15 encroachments	90 + 16 encroachments
Proposals from other utilities	12	7
Plan records : New services recorded	18	32
Response time requirement compliance	100%	100%

3.2 Performance Standards (G)

September				
	Expected Compliance	Number of Activities	Completed to Standard	Compliance Achieved
<b>Miscellaneous</b>				
A Quality complaints (samples)	85-95%	8	8	100%
A System Flushing (M1.4)	85-95%	163	163	100%
B Pressure and flow	85-95%	14	14	100%
B Loss of Supply (M1.5)	85-95%	13	13	100%
C Planned Shutdowns	95%	6	6	100%
C Unplanned Shutdowns	95%	41	41	100%
D Mark-outs	90-95%	34	34	100%
G Workmanship (joint audit results for July 2000)	90-95%	65	62	95.4%
O Meter Reading	100%	Achieved	Achieved	Achieved
<b>Significant Leaks (M1.2 or o/e)</b>				
H Burst Mains (includes 2 O&E)	85-95%	5	5	100%
H Other	85-95%	-	-	-
<b>Non-significant Leaks</b>				
H Mains (M1.2) : includes 6 O&E	85-95%	22	22	100%
H Valves (M1.3)	85-95%	26	25	96%
H Hydrants (M1.4)	85-95%	73	73	100%
H Domestic Services (M1.5) : includes 1 O&E	85-95%	102	101	99%
H Stopcocks (M1.6)	85-95%	298	297	99%
H Water Meters (M2.1)	85-95%	19	19	100%
L Damages (Variation)	85-95%	30	29	96%

October				
	Expected Compliance	Number of Activities	Completed to Standard	Compliance Achieved
<b>Miscellaneous</b>				
A Quality complaints (samples)	85-95%	3	3	100%
A System Flushing (M1.4)	85-95%	204	204	100%
B Pressure and flow	85-95%	13	13	100%
B Loss of Supply (M1.5)	85-95%	9	9	100%
C Planned Shutdowns	95%	20	19	95%
C Unplanned Shutdowns	95%	22	21	95%
D Mark-outs	90-95%	32	32	100%
G Workmanship (joint audit results for July 2000)	90-95%	65	61	94%
O Meter Reading	100%	Achieved	Achieved	Achieved
<b>Significant Leaks (M1.2 or o/e)</b>				
H Burst Mains (includes 2	85-95%	5	5	100%



October				
	Expected Compliance	Number of Activities	Completed to Standard	Compliance Achieved
O&E)				
H Other	85-95%	-	-	-
<b>Non-significant Leaks</b>				
H Mains (M1.2) : includes 6 O&E	85-95%	14	14	100%
H Valves (M1.3)	85-95%	44	44	100%
H Hydrants (M1.4)	85-95%	36	36	100%
H Domestic Services (M1.5) : includes 1 O&E	85-95%	109	108	99%
H Stopcocks (M1.6)	85-95%	275	274	99%
H Water Meters (M2.1)	85-95%	17	17	100%
L Damages (Variation)	85-95%	20	19	95%

Locates and Investigations (WRC Internal Target of Three Working Days)

	September 2000		October 2000	
Locate stopcocks	70/70	100%	77/78	98%
Leak locations	80/82	97%	92/95	95%
Flow tests	8/8	100%	1/1	100%
Seepage/investigations	0	-	2/2	100%
Miscellaneous supply jobs	0	-		

Failures

	Jobs Failed by 1-24 Hours		Jobs Failed by 1-5 Working Days		Jobs Failed >5 Working Days	
	September	October	September	October	September	October
Burst mains						
Stopcocks	1	1			1	
Hydrants						
Valves					1	
Mains						
Domestic services			1	1		
Water meters						
Damages	1	1				
Quality complaints						
System flushing						
Pressure and flow						
Loss of supply						
Mark-outs						
Workmanship						

Additional Work Carried Out

	September	October
New services	17	23

Variations (exclusive of burst mains)	1	1
Service renewals	1	1

## Burst Mains

There was a total of five burst mains during September and five burst mains during October. These were as follows:

Cnr Sutherland and Tavistock Roads	3 September 2000
The Esplanade, Island Bay	5 September 2000
272 The Esplanade, Island Bay	12 September 2000
48 Ruskin Road, Newlands	17 September 2000
Cnr Sutherland and Tavistock Roads	19 September 2000
Dr Taylor Terrace and Frankmoore Avenue	19 October 2000
23 Tanera Crescent, Brooklyn	21 October 2000
31 Apuka Street, Brooklyn	21 October 2000
69 Nottingham Street, Karori	30 October 2000
Cnr Flers Street and Karori Road, Karori	30 October 2000

All burst mains were attended to within 30 minutes and repaired within eight hours.

## Overs and Extras

108 Hutt Road (Cnr Hutt/School Roads)	Major repair, leak on service
16 Anthony Street, Tawa	Major repair, leak on main
87 Ruskin Road, Newlands	Burst main
191 Wilton Road, Wilton	Major repair, split on main
272 The Esplanade	Burst main
54 Allen Terrace, Tawa	Major repair, two services blown off main
Cnr Sutherland/Tavistock Roads	Burst main
Cnr Sutherland/Tavistock Roads	Bur main (different to above)
316 The Esplanade	Burst main
Dr Taylor Terrace and Frankmoore Avenue	Burst main
23 Tanera Crescent, Brooklyn	Burst main
31 Apuka Street, Brooklyn	Burst main
69 Nottingham Street, Karori	Burst main
26A Hampton Hill Road, Tawa	Two services blown off main

## 4. Health and Safety

There were no accidents or incidents to report during the two month period.

## 5. Meters

A total of 1,516 suburb and high use meters were read and entered into the system by 23 September 2000. A total of 2,436 city, voluntary and high use meters were read, and entered into the system by 23 October 2000.

## 6. Pumping Stations, Reservoirs and System Control

### 6.1 General

Normal routine maintenance has resulted in the Wellington City system operating satisfactorily.

### 6.2 Control System

The control system continues to operate satisfactorily, although there were a few communications failures because of the recent storm cycles and resulting thunder and lightning. A faulty RTU at Grenada North Pumping Station was replaced.

### 6.3 Thorndon Pumping Station

One of the two pressure reducing valves at Thorndon Pumping Station has been overhauled and has now been returned to service. The overhaul of the second pressure reducing valves has been held up, as we are awaiting parts to be delivered from Canada. Automatic remote pressure controls have been added and are controlling the pressure into the Low Level Zone.

### 6.4 Epuni Street Pumping Station

The No. 3 pump at Epuni Street Pumping Station has been removed and delivered to a contractor for overhaul. The first stage impeller has been severely damaged. A new impeller is being cast. A pressure transmitter has been installed to monitor the suction pressure at this stage, as the pump performances are marginal.

### 6.5 Pump Maintenance

Pump gland packings have been renewed on the Messines Road and Kelburn pumps at Karori Pumping Station and Wadestown No. 1 pump at Warwick Street.

The No. 1 pump at Greyfriars Pumping Station has been removed for overhaul.

### 6.6 Valve Maintenance

The pressure reducing valves at Vasanta Avenue and Rangoon Street were serviced and adjusted.

### 6.5 Maintenance Checks

Maintenance was carried out in September and October as follows:

September	
Round C	Round D

Allington Road Messines Road Pumping Station Karori Park Montgomery Avenue Makara Road Verviers Street The Zoo Russell Terrace Lyndhurst/Chester Roads Mills Road Woodridge CV	Karepa Street Highbury Landfill Reservoir Landfill CV Rhine Street Beacon/Signal Hill Townsend Road Miramar North Dargle Way Grenada CV Rangoon Heights Ngaio CV
<b>October 2000</b>	
<b>Round E</b>	<b>Round F</b>
Johnsonville Pumping Station Ngauranga Reservoir/Pumping Station Kaiwharawhara Pumping Station Thorndon Pumping Station Karori Reservoir/Pumping Station Macalister Park Reservoir Churton Park CV Maldiva Reg./Abb. CV Tawa Linden	Randwick Pumping Station Tunnel Grove Chamber Rocky Point Chamber Korokoro Valve Chamber Wainuiomata Pumping Station Moores Valley Pumping Station Mabey Road Generator Naenae Reservoir Gracefield Reservoir Rahui Reservoir

## 7. Development

### 7.1 Development Statistics (F2)

<b>Subdivisions</b>	<b>September</b>	<b>October</b>	<b>Year to Date</b>
Construction plans approved (lots/units)	6	24	72
Scheme plans approved	40	40	149
Subdivisions cleared (lots/units)	87	90	299

### 7.2 Development Projects

#### 7.2.1 Churton North Reservoir

Approval of “commissioning” will follow receipt of as-built plans, a list of outstanding items and final inspection. The reservoir is operating satisfactorily. Completion of minor items and receipt of as-built plans has still not yet been finalised. The issue of repayment has not yet been resolved.

The subdivider completed some minor maintenance on the pressure reducing valves.

#### 7.2.2 Westchester Drive Pumping Station and Rising Main

The pumping station has been put into service and is operating satisfactorily. Some minor maintenance items are outstanding.

#### 7.2.3 Conditions of Subdivisions Review

Nothing has been heard from Wellington City Council this month. However, the

process of imposing development levies has changed. Levies will now be charged at subdivision stage or building consent stage, whichever occurs first.

## 7.2.4 Construction and As-built Plans

### 7.2.4.1 Construction Plans

Construction plans were considered for approval of the following subdivisions:

- 252 Ohiro Road (6 lots). Approved 14 September.
- Parkvale Road, Karori (8 lots). These plans have not yet been finally approved, as amendments to drawings have been requested.
- Rossaveel Heights, stage 3, Takapu (17 lots). These plans have not yet been finally approved, as amendments to drawings have been requested.
- Bellevue stage 4, Newlands (23 lots). Approved 4 October 2000.
- Avoka Trust subdivision, Rangiora Avenue (12 lots). These plans were received on 24 October 2000 and are currently under consideration. A dual supply has been required. This dual supply includes a 150 mm connection from the 525 mm cast iron main in the Hutt Road and a metallic main encased in concrete through the bush. We have required this pipe to be located as far as possible from the gully to avoid scouring of the bedding. We will require payment of \$1,300 plus GST from the subdivider before we give a cost estimate for the connection to the 525 mm main. This connection will be very complex and investigations into methods of dewatering and refilling of the main and temporary water supply for affected properties will need to be carried out before an estimate can be given.
- 119 South Karori Road (1 lot). Approved 25 October.
- Linden Reservoir outlet main connection, Greenvue Subdivision. Approved 17 October. This work involved the cut-in of a secondary outlet main that will generally improve the supply to the southern extension of Woodman Drive beyond the Linden Reservoir. Through the subdivision process, Wellington Regional Council earlier requested that the subdivider construct a new access to the reservoir, as the previous access had become very unsuitable because of housing development. The secondary outlet main is within the new access. The supply from Linden Reservoir had to be shut down, so all affected parties, including the New Zealand Fire Service and residents, were notified using appropriate methods. The work was carried out at night under the direction of Operations Network staff.
- 128-130 Weld Street, Wadestown. Although this was not strictly a construction plan, plans for a private water supply proposal were submitted for approval. The proposal attempted to comply with the scheme plan conditions. The Environmental Business Control Unit was

advised on 25 October that Wellington Regional Council had not approved the proposal. This area has always had problems with low pressure and we are waiting for a more satisfactory water supply proposal.

#### 7.2.4.2 As-built Plans

As-built plans were considered for approval of the following subdivisions:

- 17 Sim Street, Raroa (8 lots). Approved 1 September.
- 5 Hawtrey Terrace, Johnsonville (6 lots). Cleared 27 September.
- 14A Glenmore Street, Kelburn (5 units). Cleared 19 September.
- Caughley Grove (5 lots). Cleared 19 September.
- Black Rock Road, Newlands (17 lots). Cleared 27 October.
- de Bes Subdivision, Beacon Hill. As-built plans were approved on 27 October but the subdivision has not yet been cleared.
- Woodridge, Stage 7, Newlands (12 lots). Cleared 19 October.

#### 7.2.5 Fire Services Recently Connected

There were no fire services installed during September. The following fire services were installed during October:

- Everton Hall Apartments, Everton Terrace (50 mm)
- 259 Wakefield Street (100 mm)
- 192-194 Willis Street (100 mm)

#### 7.2.6 New Commercial Metered Services

The following new metered services were connected during September and October:

- 5 Kaiwharawhara Road, Kaiwharawhara : 20 mm (12 September).
- Caltex, 360-370 Broadway, Strathmore : 40 mm (20 September).
- 6 Vallance Street, Kilbirnie : 50 mm (28 September).
- 1-11 Henry Street, Kilbirnie : 40 mm (28 September).
- 128-130 Cuba Street (50 mm)
- 66, 70, 72 Riddiford Street, Newtown (50 mm)
- 114 Cuba Street (50 mm)

#### 7.3 Building Development Appraisals (F1)

	September	October
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	Commercial	Domestic	Commercial	Domestic
Building consents	3	51	7	43
PIMS applications	3	63	9	42
Compliance with response time requirement	100%	100%	100%	100%

#### 7.4 Land Information Memorandum (F1)

	September	October
Applications processed	34	30
Compliance with response time requirement	100%	100%

### 8. Capital Works

#### 8.1 Main Laying

##### 8.1.1 Contracts in Maintenance Period

The following pipelaying contracts are in the maintenance period:

- Manners Street
- Cuba Street
- Rider Main Renewals
- Fox Street
- Bell Road Zone Improvements
- Karori South and Allington Road Zones Amalgamation

The maintenance period for the Makara Road Rising Main, Owhiro Bay Parade and Helston Road Contracts have expired. The Contractors have been instructed to rectify some road surface defects before the maintenance retentions are released.

##### 8.1.2 Taranaki Street

The Contract for the replacement of the 150 mm cast iron and 150 mm asbestos cement mains in Taranaki Street has been awarded to Pipeline Techniques Ltd. Work is expected to start on-site on 12 November 2000.

##### 8.1.3 Percival Street

Tenders have been received for the replacement of the 100 mm and 75 mm cast iron mains, and 40 mm galvanised main in Upper Dixon Street, Percival Street and Allenby Terrace. Tenders are being evaluated and a report is being prepared recommending awarding the Contract.

##### 8.1.4 Oriental Terrace

A design report is being prepared for the replacement of the existing 200 mm asbestos cement pipe in Oriental Terrace.

#### 8.1.5 Tirangi Road and Lyall Parade

A design report is being prepared for the replacement of the existing 200 mm and 150 mm asbestos cement pipes in Tirangi Road and Lyall Parade.

### 8.2 Reservoirs

#### 8.2.1 Wadestown Reservoir Replacement

Tenders have been received for the construction of the new Wadestown Reservoir and removal of the existing reservoir. A report recommending awarding the Contract has been prepared. Construction is expected to start in November 2000. Design of the scour/overflow pipeline for the reservoir is proceeding.

#### 8.2.2 Grenada North High Level Reservoir

Tenders have been received and evaluated for the construction of the Grenada North High Level Reservoir. The proposed Contractor's health and safety plan is being reviewed prior to awarding the Contract.

#### 8.2.3 Eastern Suburbs Reservoir

Initial discussions have been held with Wellington City Council on the preliminary assessment of the potential reservoir sites.



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Strategy and Asset Group  
September/October 2000

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# Strategy and Asset Group Review of Operations for the Period Ended 31 October 2000

## 1. Items of Note

- A considerable amount of time has been spent during the period on the water integration proposal.
- A separate report outlines the performance of the first stage of the system optimiser that controls the Wainuiomata/Waterloo Water Treatment Plants part of the system. A second report outlines the summer water conversation campaign.
- The benchmarking process has been completed for the year. A report is expected in time to make a presentation to the February Committee meeting.

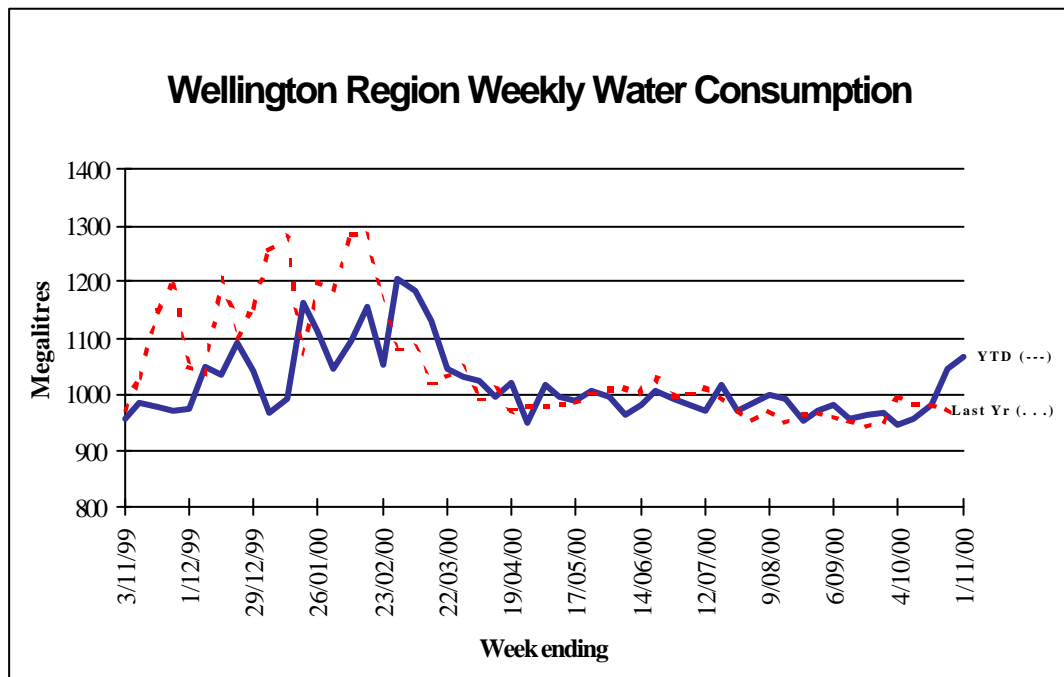
## 2. Sales Volume

### Water Sold Over the Last 12 Months

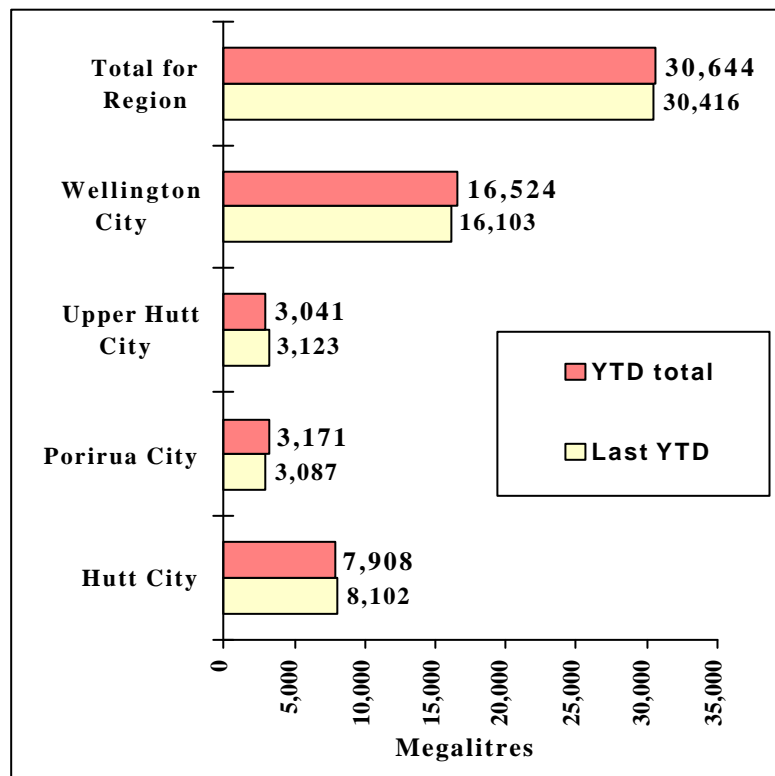
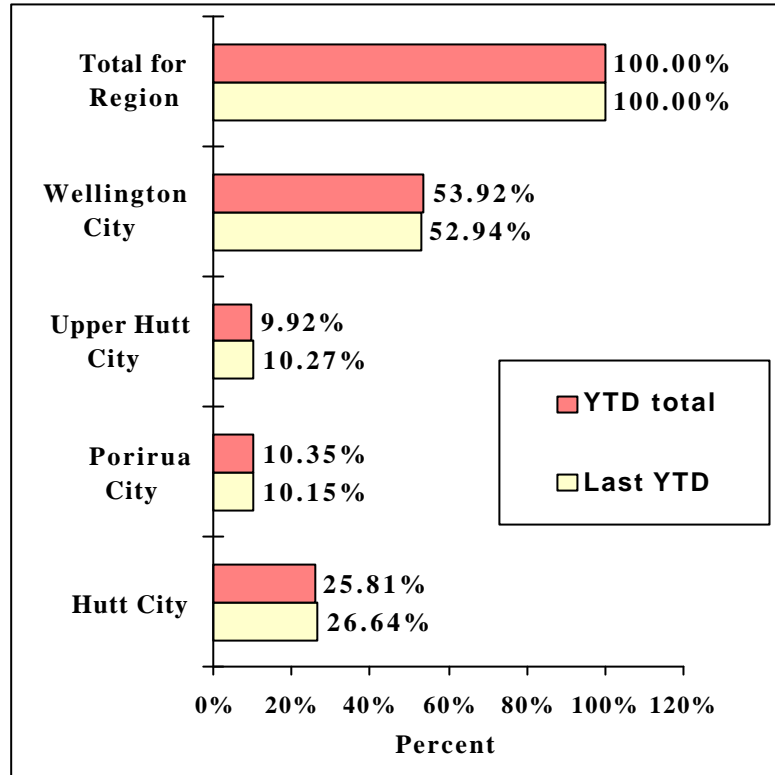
Charts outlining sales volumes are shown on pages 26 and 27.

Volumes have risen at the end of October/early November as a result of only minor rainfall compared with the previous year.

### Water Sold Over the Last 12 Months



Water Sold from 1 April to 26 August 2000



### 3. Asset Management

- All infrastructure asset values are now held in the Hansen Asset Information System. Detailed reports are being developed by the Melbourne based Hansen support company to report monthly financial information on assets for the Finance Department.
- A review of the June 1998 Asset Management Plan has been commenced but no significant changes will be made until 2001.
- Work is underway on the 2000/1 capital works programme. Funding for the year is \$4.047 million. Major projects include refurbishment of the Orongorongo/Karori main between Thorndon and Karori, construction of a new branch main to the Plateau Reservoir and construction of new fluoridation equipment to enable unfluoridated water to be supplied to Petone. Projects to collect and archive large quantities of compliance and operational data, and to build a computer model of the distribution network will also be progressed.
- Survey work and the preparation of a subdivision plan for Karori Reservoir land is progressing.
- A resource consent application for a new well tapping the Moera aquifer at Gear Island has been lodged and advertised for public submissions by the Environment Division.
- Discussions are taking place with objectors to Wellington Regional Council applications for renewal of existing consents to take water from surface sources. A three-way agreement involving Fish and Game New Zealand, the Resource Investigations Department and Utility Services Division is close to being finalised. This agreement commits the signatories to investigate the reduction in the quality of the trout fisheries in both the Hutt and Wainuiomata Rivers.
- An agreement to restrict abstraction on winter weekends to improve rafting opportunities is close to being finalised with Top Adventures, a commercial adventure tourism company.
- Detailed planning for a large-scale pump test at Waterloo has shown that it will be a very costly exercise. Negotiations with the Environment Division to reduce the scale and length of the test are underway. The pump test is a condition of the consent to take water from the Waiwhetu aquifer and will provide valuable information about the potential yield of the aquifer. A favourable outcome will mean that the average daily take can be increased from the current 80.5 MLD to 85 MLD.
- A meeting has been held with Landcare Division staff to familiarise new staff with the water supply requirements for the catchments and to discuss arrangements for their future management.

## 4. Quality Assurance

- Statistical analyses of turbidity readings to demonstrate compliance with the Drinking-Water Standards for New Zealand rule that requires turbidity to be less than 0.5 NTU for 95 percent of the time have been carried out. The results for September and October are set out below. The percentage of the time turbidity is less than 0.1 NTU has also been calculated.

Percentage Compliance	Turbidity < 0.5 NTU		Turbidity < 0.1 NTU	
	September	October	September	October
Te Marua	100%	100%	99.95%	99.9%
Wainuiomata	99.99%	100%	94.9%	98.6%

The >0.2 NTU change within 10 minutes rule has been tested for both plants. This rule identifies “spikes” in the turbidity results, which have the potential to carry protozoa into the treated water. The results are as follows:

No. of Exceedances	September	October
Te Marua	0	0
Wainuiomata	1	0

These rules are intended to reduce the risk of *Giardia* and *Cryptosporidium* passing through the plant. The plants incorporate “slam shut” valves so that any water that does not comply with the Drinking-Water Standards for New Zealand is not normally delivered to the customers.

The Ministry of Health has published a new Drinking Water Standard. The new standard contains a number of significant changes and comes into effect on 1 January 2001. Further more demanding changes come into effect on 1 January 2005. The full implications of the new Standard are being studied.

## 5. Marketing

### 5.1 Public Relations

- Work continued on The Water Group’s annual *Report of Business Activity*. All content, including text, graphs and data tables, has now been compiled, checked and incorporated into design proofs. Original photography has been finalised and shots taken. The report will be sent to the printers in mid-November and is on target to be delivered to Wellington Regional Council on 28 November.
- Work commenced to arrange for the Wellington Regional Council’s summer water conservation television advertisement, featuring Maggie

Barry, to be screened during January and February 2001. An article about the water conservation campaign has been written, with input from Maggie Barry, and will feature on the front page of the December issue of *Elements*.

## 5.2 Other Activities

- A media release, *Western suburbs to get improved water supply* was written and supplied to Communications for distribution.
- A review of external signage at main Wellington Regional Council water treatment plants and pumping stations was completed and an initial report written and presented to the Strategy and Asset Manager.
- Ongoing involvement with the Environment division to ensure that Environment's *Learnwell* programme, being developed for water conservation, will address Utility Services' objectives for educational material as well as Environments.
- Maintenance and monthly reporting of water abstraction and treatment data.

## 6. Projects Undertaken by Engineering Consultancy for the Strategy and Asset Group

### ➤ Waiwhetu Aquifer Pump Test

The plan for the 2001 Waterloo wellfield pump test has been prepared. The extent of the test is being reviewed in an attempt to reduce the cost of the test.

### ➤ Leaf Screens for Wainuiomata and Orongorongo Intakes

A report has been prepared assessing the performance of the existing leaf screens. A few minor issues arising from this report are being investigated.

### ➤ *Te Marua Lakes Surveillance Manual*

The revised *Te Marua Lakes Surveillance Manual* and *Te Marua Lakes Emergency Action Plan* documents are operable. Some minor issues are being investigated.

### ➤ Te Marua Waste Water Recovery Plant Drains

A new drain has been installed at the Te Marua Waste Water Recovery Plant to direct spillages to the sludge lagoon.

➤ Orongorongo Catchment Access

Upgrading of the walking track from the end of the Orongorongo road to the Big Huia Pipe Bridge has been completed. Safety barriers are about to be installed.

➤ Wainuiomata Water Treatment Plant Road Reseal

A programme for resealing the Wainuiomata Water Treatment Plant roads has been prepared.

➤ Wainuiomata Water Treatment Plant Slam-shut Scour

A preliminary report has been prepared proposing the installation of an automated scour immediately upstream of the slam-shut valve.

➤ Waterloo and Gear Island Fluoride Dosing

Equipment is being ordered for the installation of new fluoride dosing systems at Waterloo and Gear Island. Hexafluorosilicic acid (a liquid) will be dosed at Gear Island and sodium silicofluoride (a powder) will be dosed at Waterloo. The old pumps and pipework have been removed from the room at Gear Island. External pipework to these old pumps has been disconnected. Arrangements are being made to build plinths for the tanks and pumps at Gear Island.

➤ Silverstream Scour on Kaitoke Main

The Distribution Section will install the new scour on the Stokes Valley branch line and a new branch on the Kaitoke main in December 2000.

➤ Refurbishment of the OK Main, Thorndon/Karori

The Contract for cement mortar lining of the OK main was awarded to C M Contracting Ltd. Work is programmed to start on-site on 13 November 2000.

➤ OK Main Crossing of Korokoro Stream

The drawings and design report of the new crossing of the Korokoro Stream of the OK main were completed.

➤ Plateau Reservoir Inlet Main

Contract Documents have been prepared for installation of a new inlet main to Upper Hutt City Council's Plateau Reservoir at Te Marua. Tenders will close on 24 November 2000.

➤ Pumping Station Noise Survey

The report on the pumping station noise survey has been received from Bel Acoustic Consulting. The noise emission from the majority of our pumping stations is acceptable. There may be some benefit in reducing the noise emissions from two pumping stations.

➤ Haywards Reservoir Utilisation

Installation and reinstatement of the new pipework for the Haywards Reservoir has been completed.

➤ Kaitoke Pipeline Either Side of Strainer Building

Preparation of Contract Documents for refurbishing the concrete pipeline between the Kaitoke Flume Bridge and the No. 2 Tunnel entrance has begun.

➤ Kaitoke Pipeline on Haywards Hill

Investigations are under way to determine appropriate mitigation measures to reduce the risk of failure of the Kaitoke pipeline caused by an earthquake.

➤ Hutt Estuary Bridge Pipelines

The flexible couplings for the Hutt Estuary Bridge pipelines have been delivered. Installation is proposed for November/December 2000.

➤ Te Marua Towers Valve Shut-off

Design of pneumatic cylinder actuators for the lake inlet and outlet valves is proceeding.

➤ Flow Meters

A review of what flow meters are to be installed this financial year is being undertaken.



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Engineering Consultancy Group  
September/October 2000

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## Engineering Consultancy Group Review of Operations for the Period Ended 31 October 2000

### 1. Work Carried Out for the Strategy and Asset Group

The main capital projects for which the Engineering Consultancy Group has responsibility are itemised in the Strategy and Asset Group report. Support is also provided for other projects being undertaken by this group.

### 2. Work carried Out for the Operations Group

The Engineering Consultancy Group has continued to provide support for smaller projects arising from the operation and maintenance of the wholesale water supply system.

### 3. Work carried Out for Wellington City Council

#### 3.1 General

Current projects underway are detailed in the following sections.

#### 3.2 Taranaki Street Pipeline

A Contract has been awarded for the laying of a replacement main in Taranaki Street from Courtenay Place to Webb Street. This will be difficult because of the extensive underground services, as well as the constraints arising from the route being on a State Highway. The road controlling authority has agreed to a proposal to extend the allowable working hours, however much of the work will need to be carried out at night.

#### 3.3 Percival Street Pipeline

Tenders were received and assessed for a Contract for replacement of the 100 mm cast iron main and 40 mm galvanised iron main in Percival Street, Upper Dixon Street and Allenby Terrace. This latter pipeline has had a continuing history of failures.

#### 3.4 Grenada North High Level Reservoir

This permanent reservoir, 160 m<sup>3</sup> capacity, will replace the Grenada North temporary tanks. The site is at a higher level to the east of Nassau Avenue on land that has recently been transferred from TransPower to Wellington City Council. The intention of this reservoir and associated pipework is the second stage in the upgrade of the Grenada North water supply following the contamination incident in early 1998.

Tenders have been received and assessed, and a recommendation made. The Contract includes the construction of a long access road from Caribbean Avenue and pipelines to Nassau Avenue.

### 3.5 Wadestown Reservoir

Montgomery Watson Ltd was engaged for the design of a replacement reservoir, capacity 1,800 m<sup>3</sup>, along with the obtaining of resource consents necessary for the completion of the reservoir on the Town Belt, as well as for access across the Town Belt.

Tenders have been received and assessed, and a recommendation made. Arrangements have been made for the removal of trees on the site. Access to the site for construction will present some challenges.

The assessment of the old rising main that will be used as an overflow revealed that its condition is worse than expected and will require some rehabilitation work. Design of this is now under way.

### 3.6 Eastern Suburbs Storage

There is a storage deficit in the Low Level Zone of 10 ML. This was identified and reported on at the time of approval of the Macalister Park 20 ML Reservoir. Of this storage, approximately 7 ML is required in the Eastern Suburbs (Miramar) and 3 ML in the Southern Suburbs (Island Bay).

A preliminary analysis of the three potential sites has been made, which has indicated that one site has significant advantages. A report has been prepared and submitted to Wellington City Council. A response is still awaited.

### 3.7 Other Wellington City Council Capex Projects

Commissions have been awarded for the design of replacement mains in Tirangi Road, Lyall Parade, Oriental Parade and Oriental Terrace.

### 3.8 Water Services Agreement

Under the new agreement, which came into effect on 1 July, the group is carrying out similar functions as were required under the Facilities Management Contract. These are as follows:

- Building consents
- Subdivisions
- System records
- Counter service
- New services and fire services

The scope of work relating to the maintenance of the system records may alter

during the year, as Wellington City Council moves away from paper based record keeping.

The new agreement also contains a performance related bonus and penalty system related to response times.

A customer survey was carried out relating to the provision of information from plan records. High scores were received for speed of response and attitude of provider but lower scores for accuracy. This relates particularly for the information transferred from Tawa Borough Council.

#### 4. Other Projects

##### 4.1 Rallywood Bridge

The bridge is complete, with only minor tidying up items remaining. The Rallywood residents are delighted with their significantly improved access.

##### 4.2 Karori Wildlife Sanctuary

The replacement of the scour valve on the Upper Dam has been delayed because of an extended manufacturing time. The valve is expected before the end of the year. Wellington City Council is funding this project.

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Laboratory Services  
September/October 2000

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## Laboratory Services Department Review of Operations for the Period Ended 31 October 2000

### 1. Items of Note

- Following the annual assessment of the Laboratory by IANZ our Scope of Accreditation has been extended through to August 2001. Our accreditation to conformance standard ISO 9002/ISO Guide 25 is comprehensive and now includes the latest version of the *Giardia* and *Cryptosporidium* test (EPA Method 1623). This achievement stands us in good stead regarding future prospects and ensures compliance with the new Ministry of Health *Drinking-Water Standards for New Zealand 2000*.

We remain listed in the latest Ministry of Health Register of Approved Water Testing Laboratories for Drinking Water Supplies. Our entry for the next issue in six months time will need appropriate updating to conform to the requirement of the new Standard.

- A new service level agreement has been negotiated between the Laboratory and the Resource Investigations Department for the remainder of the year. Rationalisation of their coastal water quality monitoring programme has considerably reduced the work offered to the Laboratory. We are assured savings in this area will be dispensed to cover Laboratory analyses in other fields of investigation. We await this development.
- The current service level agreement with the Consents Management Department remains intact and largely unchanged from the previous year. Their stormwater testing programme has outlived its usefulness and has now been terminated. This does not come as a surprise but will impact on Laboratory revenue.
- Despite the trend of various sections and departments to rationalise (downsize) their monitoring programmes, several one-off projects have eventuated. For the Operations Group the Laboratory has provided results toward a comparison of the various techniques for monitoring chlorine levels in the potable supply. Another involved monitoring the disinfection by-product levels in various reservoirs in the Wellington reticulation system. THM levels were well below the maximum acceptable values in the Drinking-Water Standards for New Zealand.
- Staff training included a Review and Reward workshop specifically for Laboratory Services' staff. The objectives were to standardise the approach to setting workplace objectives, performances assessment and rewarding achievement. The workshop was worthwhile and went some way to achieving a better understanding and establishment of these objectives.

- The Laboratory was represented at the NZWWA 42<sup>nd</sup> Annual Conference in Rotorua. Peter Nugent found the event interesting and beneficial.
- The balance of “free” training with the Laboratory sample manager LIMs system has been arranged for early November. The emphasis will be toward better utilisation and more comprehensive application of the system.
- The Laboratory is now listed in the latest Telecom Yellow Pages. Hopefully this will attract the attention of the local business sector, as well as the general public of our area.

## 2. Business Summary

### 2.1 Quality

There were no requests for retesting samples and test reports are timely.

### 2.2 Health and Safety

There were two minor injuries during the period, both involving the same worker. One incident involved a hot water burn to the hand and the other a scratch to the finger caused by a protruding nail. Both injuries are now healed and remedial action taken.

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Plantation Forestry  
September/October 2000

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## Plantation Forestry Department Review of Operations for the Period Ended 31 October 2000

### 1. Log Harvest Contract

We have been unable to significantly increase the rate of harvest because of our inability to engage additional crews and the need to remove windblown trees following the regular gales that came through the area. Consequently, September production was only 3,702.59 tonnes for a royalty of \$95,921.83. Final October figures are not available as yet, as Rayonier payment periods overlap the month end. However, they are estimated at 3,750 tonnes and \$100,000.

The grade outputs for the September were:

Grade		Tonnes	%
Pruned Domestic		0	0
Pruned Export		0	0
Partial Pruned		0	0
S Grade		325.88	8.8
A Grade		550.68	14.9
L Grade		139.60	3.8
Roundwood		40.84	1.1
R Grade	(Renalls)	620.12	16.8
K Sawlog		239.78	6.5
K Rough		199.57	5.39
Pulp		941.23	25.4
O/S Pulp		29.86	0.8
Other (Corsican)		615.05	16.6
		3,702.6	

The ground based crew has now commenced work but this has been offset to some extent by the loss of the Mitchpine crew upon completion of the corsican harvest. It had been hoped to utilise this crew to fell a roundwood block but they could not be released.

We now expect an additional hauler crew on-site before Christmas and for them to commence work as soon as production commences in the New Year. This hauler will concentrate on the longer pull harvesting off Centre Ridge Road.

We have now agreed to pay a diesel allowance of 8.36 percent to the carriers and 50 cents per tonne to the harvest crews in recognition of the unprecedented escalation of diesel prices. This allowance will be removed if/when diesel prices return to traditional levels.

Renalls continues to accept increasing volumes of logs that would previously have been exported as K grade. With the effect of fuel prices on shipping costs and a "soft" Korean market, this has been a very satisfactory arrangement.

Mitchpine has completed the harvest of the merchantable corsican stands.

## 2. Silviculture Contracts

Of the 515.8 hectares put out to contract for the current financial year, 23 hectares has been completed to the end of October.

## 3. Plantation Forestry Operations

Planting continued into mid-September, the first time this has been possible at least as far as the present forestry staff can recall. Consequently, Council has gained a “growing year” for the additional area planted.

Following the Council decision on the use of the walkway the emphasis is now to prepare as much of the new roading as possible without impinging on the walkway, so that operations may commence after Waitangi Day. At this time it is hoped to a minimum of three crews engaged in harvesting the area across the river and those areas that abut the walkway. If this cannot be completed before the weather breaks, it may be necessary to return next summer and this would carry significant cost penalties.

Both the sale of land for the Kaitoke road realignment and the reservoir at Maymorn appear to be confirmed and O’Brien Property Consultants are leading the negotiations for compensation.

## 4. Forest Access

There has been more work on the abutments of the Rallywoods Bridge and at this stage only some hydroseeding is still to be done.

Planning is underway for the specifications for the completion of the road upgrade within Puketiro and the upgrade of the road from the Rallywoods Bridge to Valley View Road. This work should preferably be in hand prior to the tenders for the five year harvest programme being released.

## 5. Market Trends

There has been no marked change in market conditions, with the fuel price influencing shipping rates and the soft Korean market preventing any gains from a depressed dollar.