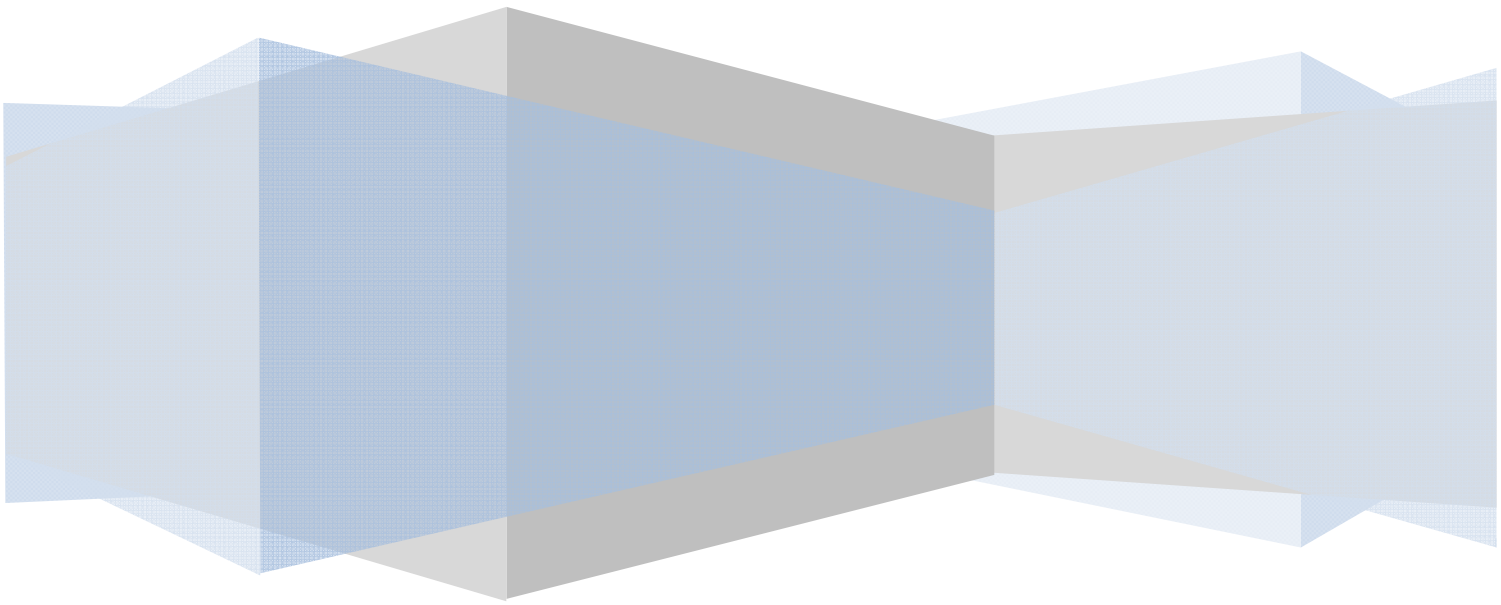
Charging Regime Advisory Group

Tariff Review

March 2016



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EXECUTIVE SUMMARY

1 The Charging Regime Advisory Group (CRAG) was set up in 2011 to design an efficient and equitable system for the charging of water supply to the Kāpiti community. CRAG's first report was presented to the Kāpiti Coast District Council (Council) on 5 April 2012 and its 12 recommendations were accepted. Subsequently, they have been, in large part, implemented and the indications are that the charging regime has achieved a considerable measure of public acceptance.

2 On 10 December 2015, Council decided to proceed with the recommended review of the regime and to reconvene CRAG for this purpose. It proved possible to retain the original membership apart from the need to replace the two Council and the two tangata whenua representatives. The reconstituted CRAG has met four times and reviewed a substantial body of data presented to it by Council staff.

3 CRAG has found that in large measure the proposed regime, reinforced by Council's own conservation measures, has worked in practice and has resulted in a considerable reduction in per capita consumption – mainly as a result of the scheme's ability to identify leaks but also in part from the price signals given by the volumetric component of the new charge.

4 The initial tariff set for a cubic meter, $0.95 did not cover the full cost and this resulted in a deficit in the water account. As a consequence Council has decided to smooth the projected increases in the volumetric cost of water supply over a five year period. This has limited the volumetric price increase that might otherwise have been required. The deficit is now forecast to rise to $1.1M by the end of the financial year 2015/16, with full recovery by 2019/20.

5 It is acknowledged that Council will need to balance this account in the future but to avoid the uncertainty created by potentially big price increases for volumetric supply, the adopted approach of a 'staged or smoothed' price management process to bring the account back into surplus over time is thought to be both effective and a practical solution to the financial reality Council faces.

6 CRAG's deliberations over the second round of meetings were dominated by the need to maintain the original principles of the regime, while dealing with the practical issue of ensuring full cost recovery. It was accepted also that any changes to the regime should avoid major fluctuations in charges from year to year. This will promote transparency in the charging process, as well as consistency in the pricing model.

7 On this basis, CRAG has come to the conclusion, that while some minor adjustments may be necessary from time to time to ensure the regime's continuing viability, the current principles and structure, the 50/50 fixed/volumetric split, should remain in place . There needs to be more evidence of both, consistent water conservation and stability in the pricing structure under the current charging regime, something that can only be achieved over time, before any further review be initiated. Taking into account the valuable and helpful information put together by Council staff, CRAG has made seven recommendations concerning its preferred approach to charging over the next three years, to be followed by a review of the regime. CRAG would prefer confining any adjustments to within a 5% band either side of the 50/50 fixed and volumetric split.

8 The CRAG recommends:

a) The current principles, structure and charging formula of a 50/50 split between fixed charge and volumetric charge, remain;

b) The objective should be to retain as far as possible the 50/50 ratio between fixed and variable and that any adjustments should be within a 5% band above or below;

c) Council continues to take a medium term view of the water account and to retain the current 'price smoothing' approach to alleviate the need for substantial fluctuations in the volumetric price;

d) Further steps should be taken to ensure the community is aware of the assistance available, both with leak detection as well as with high water invoices. It should also undertake a review of the criteria for high water invoices to ensure such assistance is more widely available to those in genuine need;

e) The continuation of the Council's efforts to publicize the importance of water conservation as the best way to manage future costs as well as protect a finite resource, by limiting per capita consumption and postponing the need for further infrastructure development.

f) The water account should remain closed to ensure transparency, and other mechanisms to balance deficits and surpluses be considered;

g) A further review be undertaken towards the end of the 2018/19 financial year, at which time significant data regarding water usage and price sensitivity is likely to be better understood.

PURPOSE OF REPORT

9 This report provides the considerations and recommendations of CRAGs review of pricing and charging for water by the Council to date, progress against the CRAG's recommendations and inform the tariff structure for 2016/2017 water charges.

INTRODUCTION AND BACKGROUND

10 On 23 June 2011, Council approved the original Terms of Reference (ToR) and representation to establish CRAG. The group met nine times between September 2011 and March 2012 and provided a report to Council on their findings and recommendations for the most efficient and equitable system to charge for water by the Council.

11 The original membership was developed to ensure that it provided for key stakeholder interest (given that the formula must apply to all sectors) and to ensure that there was careful consideration of social and other impacts.

12 The original ToR focused on the development of the most efficient and equitable system for the charging of water by the Council. It also contained scope to undertake on-going monitoring of pricing and charging for water within the framework set out for developing the volumetric charges that provides the context for reconvening the CRAG for this review.

13 Other than the background, which has been updated to reflect the events that have occurred subsequently, the ToR (**Appendix 1**) for the review uses the original ToR as a basis with only minor wording adjustments being made in the framework to remove the reference to annual charging adjustments and cashflow requirements.

14 The group provided 12 recommendations in their report including the adoption of a 50% fixed charge and 50% volumetric (50/50) tariff structure subject to a review after two years of operation. In 2012, CRAG considered this tariff structure:

- provided the most balance between the impacts across users;
- provided more incentive to save water than the scenarios with higher fixed charges;
- provided an acceptable level of revenue stability for Council.

15 The installation of district-wide water meters commenced in August 2012 and was substantively complete by January 2014 when trial reading of water meter commenced. Following initial trial water readings from April 2014, volumetric water charges were introduced on 1 July 2014 and have been in place for just over a year and half.

16 On 10 December 2015, Council approved the reconvening of the Charging Regime Advisory Group (CRAG) to review the pricing and charging structure for water by Council.

17 Reconvening the CRAG will allow for a review of pricing and charging for water by the Council to date, progress against the CRAG's recommendations and inform the tariff structure for 2016/2017 water charges.

CRAGS ACTIVITIES AND PROGRESS

CRAG Membership

- Mr Don Hunn , Chairperson
- Jean Chamberlain representing community interests and low income households from the north of the District
- Don Richards representing community interests and low income households from the south of the District
- Ross Leggett representing Chamber of Commerce
- Bernard Parker representing landlords and tenants
- Charles Lloyd representing Grey Power

- Jill Stanfield representing Council of Older Persons
- Councillors Michael Scott and Gavin Welsh representing the Council
- Bill Carter representing Te Āti Awa ki Whakarongotai
- Raewyn Klenner representing Ngāti Toa

Meeting schedule

18 The CRAG met four times.

- 28 January 2016
- 17 February 2016
- 25 February 2016
- 2 March 2016

INFORMATION CONSIDERED BY CRAG

Water Charges for 2014/15

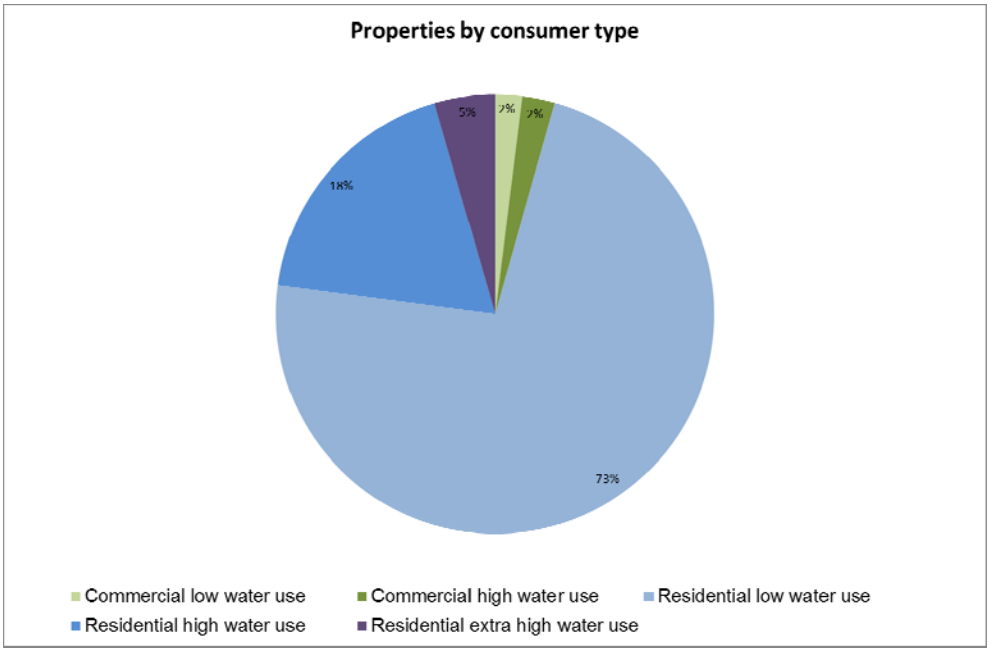
19 On 1 July 2014, volumetric water charges were introduced in Kāpiti using the 50% / 50% tariff structure recommended in the 2012 CRAG report. The charges were set as follows:

20 The equivalent fixed water charge would have been $377 if volumetric water charges had not been introduced in 2014/15.

21 The total water revenue collected in 2014/15 was $7.62 million against a budget of $8.14 million[1] leaving an under recovered deficit of $528,000 in the water account. Of the revenue collected $3.37 million was from volumetric charges and 4.02million from fixed charges.

22 The equivalent fixed charge for 2015/16 to cover costs and recover the entire 2014/15 deficit in one year would have been $429.50.

23 With the completion of the first year of water meter charges, the actual distribution of water rates paid can be analysed. To illustrate the distribution of users they were grouped into five broad types. Low users were classed as those with bills under the equivalent fixed charge of $377 (2014/15) and high being those over $377. Extra high residential water users using 1,000 litres or more per day were further split out.



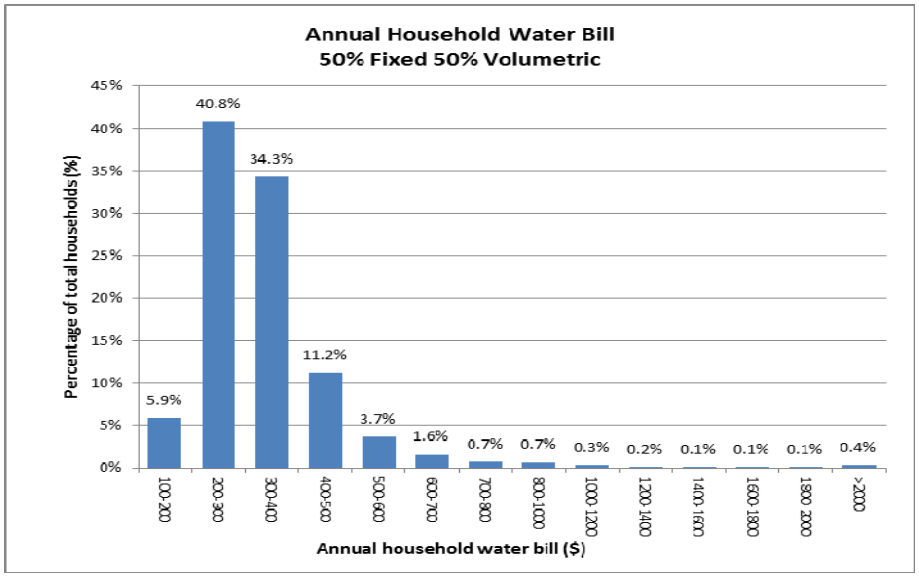
[1] This figure is the total budgeted water rates including those from the Hautere scheme

24 Analysis of the records shows that 75% of properties were “low water users” paying less than $377 (the equivalent fixed charge), 73% being residential and 2% commercial. The average 2014/15 water bill for each of these groups was $292 and $233 respectively.

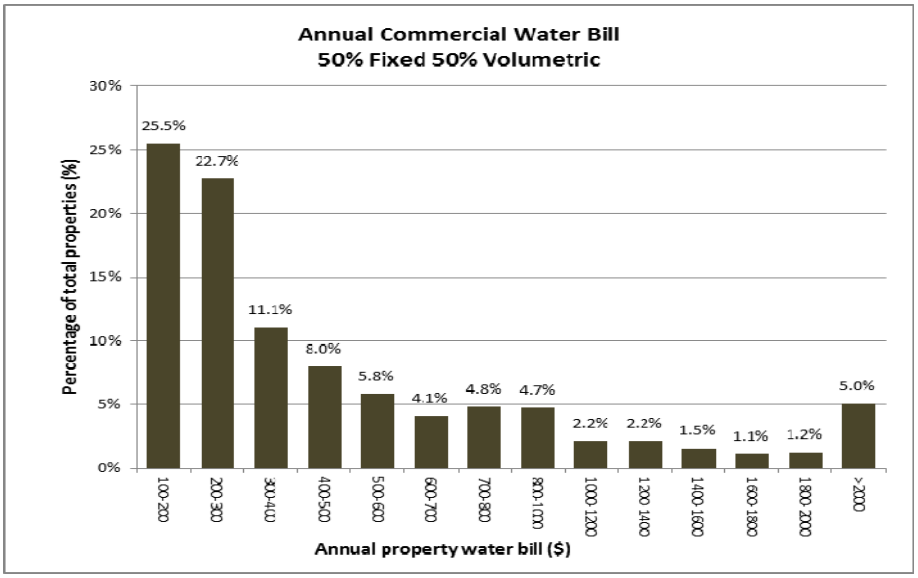
25 Eighteen percent of properties were high residential users with a further 5% classified as extra high and the balance of 2% of properties high commercial users. The average 2014/15 water bill for each of these groups was $444, $2,627 and $2,369 respectively.

26 The distribution of annual water bills for households and commercial properties is shown in the graphs below:

Domestic (household) water bills 2014/15



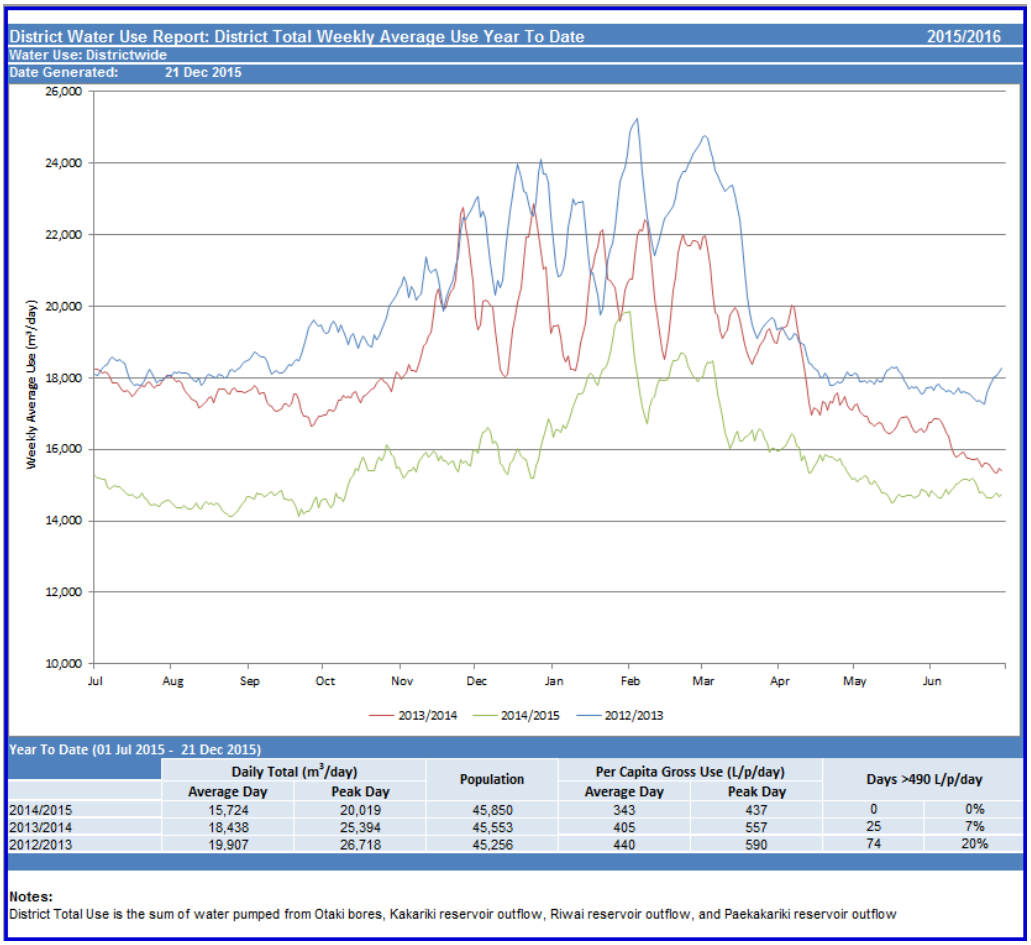
Commercial water bills 2014/15



Changes in water use

27 Since the introduction of volumetric charges for water the District's water use has seen a marked reduction. The figure below shows the Districts' combined water use from 1 July 2012 through to 31 June 2015, the period over which metering was installed, trial readings sent and charges introduced. The figure also includes the average and peak day consumptions (in m^3/day and per capita), population projections and days above the water conservation target of 490 litres / person / day (l/p/d) for each financial year.

28 The graph below uses a rolling weekly average to highlight the trends in water use over time rather than the daily totals. This means that the peaks on the graph (weekly averages) are lower than the peak days recorded in the table.



Year To Date (01 Jul 2015 - 21 Dec 2015)

	Daily Total (m^3/day)		Population	Per Capita Gross Use (L/p/day)		Days >490 L/p/day	
	Average Day	Peak Day		Average Day	Peak Day		
2014/2015	15,724	20,019	45,850	343	437	0	0%
2013/2014	18,438	25,394	45,553	405	557	25	7%
2012/2013	19,907	26,718	45,256	440	590	74	20%

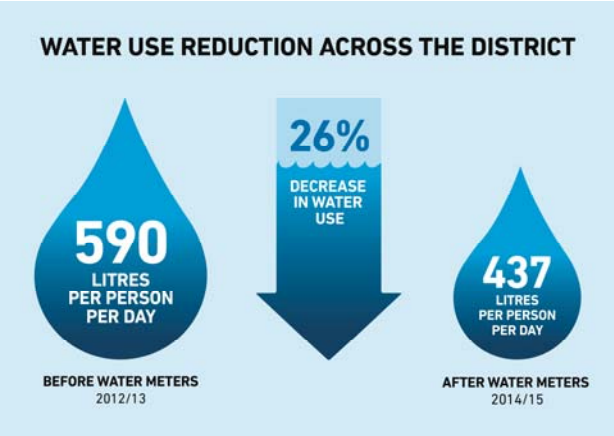
Notes:
District Total Use is the sum of water pumped from Otaki bores, Kakariki reservoir outflow, Riwai reservoir outflow, and Paekakariki reservoir outflow

29 The graph shows a reduction in water use for each subsequent year with a marked reduction in 2014/15 (green line). Reductions in the peak day use can be seen in the summer of 2013/14 (red line) compared to the previous year (2012/13 (blue line), as the meter installation contract came to a conclusion. A noticeable reduction in winter usage can be seen starting from around April 2014, which drops from around the 18,000m^3/day of previous year to just over 15,000m^3/day. This was just prior to the introduction of volumetric charges on 1 July 2014.

30 As marked change in water use occurred through 2013/14 comparisons of pre and post water meters water use has been based on 2012/13 (the year installation began) and 2014/15 (the first year of volumetric charges).

Peak water use

31 The per capita peak day for 2012/13 was 590 l/p/d while in 2014/15 this had reduced to 437 l/p/d.



32 Despite the 2014/15 summer being drier than 2012/13, a 26% reduction in peak use was achieved.

33 The peak day use is what drives the need for capacity upgrades in the water supply system and this reduction has provided surplus capacity for future growth.

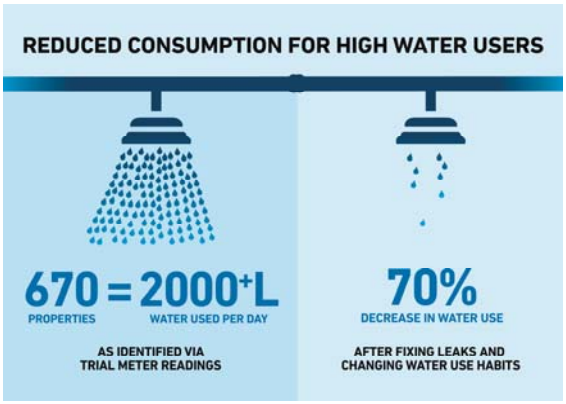
34 The number of days district-wide consumption exceeded the water conservation target has also reduced from 74 days (20%) in 2012/13 to no exceedances in 2014/15.

Average water use

35 The District average daily use (including leaks and use) reduced from 19,907 m^3/day (2012/13) to 15,724 m^3/day (2014/15) or 21%.

Water loss / leakage

36 The installation of water meters has allowed Council to significantly improve the understanding of water use and leakage from the water supply system. Water metering and volumetric charging has been a driver in identification of leakage and incentivising repair on the private side.

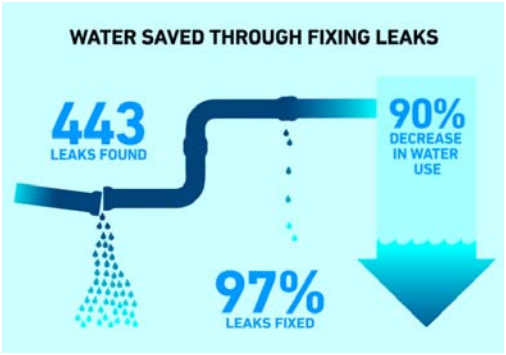


37 Throughout the water metering contract consumers were notified when leakage was identified or suspected following a meter installation. During the installation process 443 leaks were found on private pipes. Consumers fixing these leaks have resulted in their water use reducing by 90% on average.

38 In addition to the leaks notified during the meter installations during the trial water meter reading period, Council staff visited more than 670 property owners whose readings showed they were using more than 2,000 litres of water per day. Water leaks and ways to use water more economically were discussed with the householder. The leaks people have fixed and wiser use of water has reduced their consumption by 70% on average.

39 In 2013/14 Council repaired 776 reported minor water leaks and replaced 600m of aging asbestos cement mains. In 2014/15 this was 774 and 975m respectively.

40 In 2012/13 the total real water losses from consumer side and public network leakage was estimated at 7,480m^3 per day. This has significantly reduced to an estimated 4,240m^3 per day in 2014/15 a reduction of 43% in real water losses.



41 Repairs on the private side have seen an estimated 84% reduction in private daily water loss while repairs undertaken on the public side in 2014/15 have helped reduce the rate of leakage by 6%. A table of estimated water losses is shown below:

Water losses	2012/13 (revised) (m^3/day^1)	2014/15 (m^3/day^1)	Water Loss Reduction (m^3/day^1)	Water Loss Reduction
Current Annual Real Losses	3,900	3,680	220	6%
Customer Side Leakage	3,580	560	3,020	84%
Total Real Water Losses	7,480	4,235	3,245	43%

42 In 2005, the World Bank Institute, with assistance from members of the IWA Water Loss Task Force, developed an internationally applicable Banding System for leakage management in developed countries called the infrastructure leakage index (ILI). This is banded into four groups from A to D. In 2012/13 Kapiti's ILI was band C described as poor leakage management. In 2014/15 ILI was classed as band B, indicating possibilities for further improvement.

Water use management

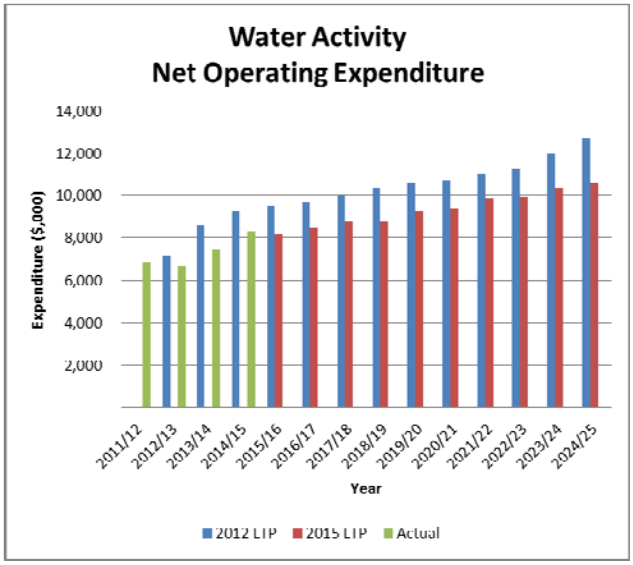
43 Council monitors the distribution of water across its water supply networks using 19 district meter areas (DMA) across the three water supply schemes. Following the installation of consumer water meters the Council audited all the zones and re-established the integrity of the DMAs in February 2014.

44 Council commenced a staged improvement plan in December 2014 following a review of water use management practices in April 2014. Significant progress has been made on improving the water use management processes and practices as part of an on-going plan to increase the effectiveness and efficiency of the service. The benefits include:

- Automated weekly reporting that provides standard DMA performance measures on scheduled reporting. Reduced administrative time to investigate, analyse and establish leak detection priorities, provides readily repeatable and auditable results and greater confidence in the effectiveness of leak detection and repair works.
- Automated district-wide water use reporting for annual and comparative water use reporting by District, scheme and network (community). Reduced administrative time to source, extract and prepare water use reports, provides readily repeatable and auditable results.

Costs

45 A comparison of the forecasted water supply activity costs is shown in the diagram to the right. The diagram shows the budgeted costs in the 2012 LTP, the actual expenditure for years from 2011-15 and the 2015 LTP projected costs.



46 The actual costs to date include the completion of a number of significant projects related to securing the long term water supply for Kāpiti. These include:

- Installation of district-wide water meters – August 2012 – January 2014
- Securing the river recharge consents – issued September 2013
- Commencement of river recharge compliance monitoring – December 2013
- Year one of river recharge consent compliance monitoring – April 2014
- The initiation of trial water meter readings and water meter billing – April 2014
- Construction of stage one of the river recharge infrastructure – Opened May 2014
- Waikanae Treatment Plant stage one renewal and upgrades - Opened May 2014
- The first operation of the river recharge scheme – October 2015

47 The break-down of the water activity costs for each year from 2014/15 to 2019/20 are set out in the table below. Each of the areas are described in greater detail below:

Total Cost of water planned to be recovered by Rates	2014/15 Actual ($000)	2015/16 Forecast ($000)	2016/17 - AP ($000)	2017/18 ($000)	2018/19 ($000)	2019/20 ($000)
	8,143	**8,366**	**8,333**	**8,471**	**8,626**	**8,976**
Broken down by:						
Income	(185)	(39)	(39)	(40)	(41)	(42)
Fees and Charges	(185)	(39)	(39)	(40)	(41)	(42)
Expenditure	8,328	8,405	8,372	8,511	8,667	9,018
Other Operating Expense	4,212	3,610	3,985	4,101	4,219	4,338
Depreciation and Amortisation	2,343	2,654	2,582	2,720	2,814	3,033
Finance Expense	1,773	2,141	1,805	1,691	1,635	1,647

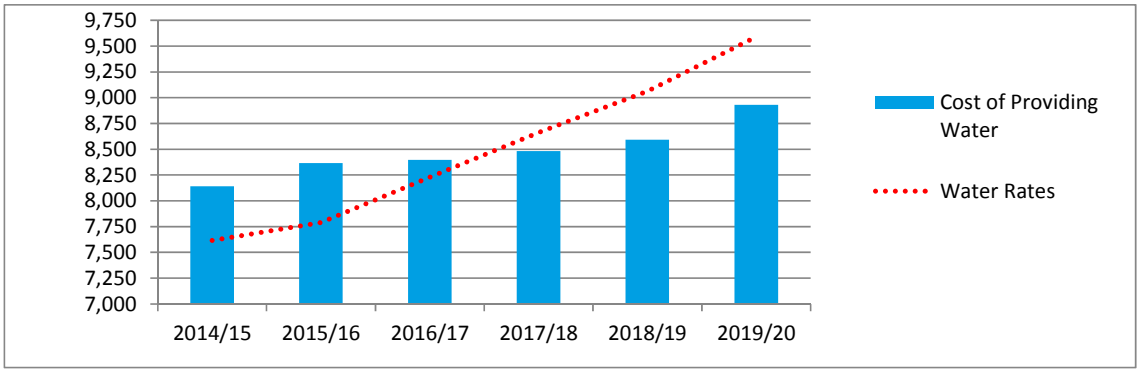
48 It should be noted that interest and debt repayment on capital expenditure contributes significantly to costs. The actual cost of providing the water supply service has been less than that projected in the 2012 LTP and future costs projected in the 2015 LTP also remain lower than the 2012 LTP projections.

Water revenue

49 Changes in water use have been experienced as the community gets used to the value of water with the introduction of water meters in 2014 and this may take a number of years to settle down.

50 Council proposes to gradually increase water rates over the first five years of the long term plan, to a level that makes sure that Council is able to pay the full cost of providing this service across the District.

51 Following the initial under recovery of $528,000 experienced in 2014/15; this is forecast to grow to $1.1 million by the end of 2015/16 and Council has planned to fully recover costs by the end of 2019/20 as shown in the diagram below.



52 The forecasted gradual increase in water rates proposed by Council eases the rate of change for the community while ensuring the recovery of the full cost of providing water services over time.

Closed water account

53 The financial management of the water activity is a closed account. This means that all costs and revenue remain within the account. Any surplus or deficit in a given year remains against the account and is not transferred out or subsidised from other sources. All service and costs also remain within the water account.

54 The group considered a semi-open account option. The semi-open account was proposed as a mechanism that could use general rates surplus' to top-up water account deficits rather than using loans and any surplus would stay in the water account for future years. This would allow some flexibility for Council to top-up the account and allow the management of overs and unders in revenue to be balanced over time and mitigate rising debt.

55 The group reflected on the original purpose of the closed account recommendation as a mechanism to allay the concerns raised that Council would price water to make a profit and use these funds in other areas. On balance, it was agreed that that account should remain closed and other mechanisms to balance deficits or surpluses be considered.

TARIFF OPTIONS

Previous tariff models considered by CRAG

56 The 2012 CRAG initially considered a range of potential tariff models including:

- Volumetric or variable with no fixed charge
- Fixed and volumetric charges
- Fixed and volumetric charges with an initial location
- Stepped charges
- Seasonal rates

57 From these models seven water charging scenarios were developed and evaluated against the critical success factors with four being discounted from further consideration. The three remaining scenarios were all based on the fixed and volumetric charge model.

58 A further subset of six water charging scenarios were developed and evaluated using various proportions of fixed and volumetric ranging from 25% fixed / 75% volumetric to 70% fixed / 30% volumetric. It was agreed that a fixed charge range of 40-60% provided balanced outcome across the criteria. Before a final recommendation of water charging tariff was arrived at the three scenarios with a fixed charge of 40%, 50% and 60% were examined further with particular interest on the impacts on:

- low income families
- older people
- large water users such as schools, retirement villages and supermarkets

59 On consideration of a variety of impacts, the 50% fixed 50% volumetric (50/50) tariff was believed to provide the most fair and equitable outcomes and was recommended.

Alternative options considered in 2016 CRAG review

60 During the 2016 CRAG review, a number of alternative tariff options were discussed in relation to variance from the original 50/50 ratio recommendation to ensure full cost recovery and address the deficit in the water account.

61 The following tariff options have been prepared to illustrate the resulting water rate charges that allow the recovery of the deficit in the water account over a five year period 2015-19. Descriptions of each option and their finance details are included in Appendix 2.

- Option 1 - 50/50 Smoothed
- Option 2 - 50/50 Fixed "surcharge"
- Option 3 - 60/40 Variable @ 99c for 5 years
- Option 4 - 60/40 Variable rate increase at 2% average

Option 1 - 50/50 Smoothed

Item	2014/15 Actual	2015/16	2016/17	2017/18	2018/19	2019/20
Variable Rate	$0.95	$0.99	$1.04	$1.09	$1.15	$1.21
Fixed rate	$189	$190	$199	$205	$210	$220

Option 2 -50/50 Fixed "surcharge"

Item	2014/15 Actual	2015/16	2016/17	2017/18	2018/19	2019/20
Variable Rate	$0.95	$0.99	$1.14	$1.14	$1.14	$1.18
Fixed rate	$189	$190	$189	$189	$190	$195
Fixed rate (surcharge)			$11	$11	$11	$11

Option 3 - 60/40 Variable @ 99c for 5 years

Item	2014/15 Actual	2015/16	2016/17	2017/18	2018/19	2019/20
Variable Rate	$0.95	$0.99	$0.99	$0.99	$0.99	$0.99
Fixed rate	$189	$190	$207	$230	$240	$245

Option 4 - 60/40 Variable rate increase at 2% ave

Item	2014/15 Actual	2015/16	2016/17	2017/18	2018/19	2019/20
Variable Rate	$0.95	$0.99	$1.01	$1.03	$1.05	$1.08
Fixed rate	$189	$190	$203	$216	$229	$238

62 In considering any change to the recommendation, CRAG members were cognisant to the terms of reference of the review. The terms of reference sets out the purpose, scope and framework for the CRAG's review of the pricing and charging for water by Kāpiti Coast District Council. The Framework for Development of Volumetric Charging Formulae from the CRAG 2012 report is included Appendix 1.

Price sensitivity

63 A review of international literature on water price and use elasticity suggests for every 10% change in volumetric price a 3% to 6% change is water use might be expected. One of the more extensive studies of over more than 100 water authorities concluded the average response to be 4.1%. The studies suggest volumetric price changes are an effective mechanism for reducing discretionary water use and the results vary depending on the specific regimes in place prior to any change.

64 It's too early to predict what the specific price sensitivity would be for Kapiti. The community is half way through the second year of water meter charging and while significant savings have been made through leak repairs in the first year, it may take some time for water use behaviours to settle. Where sharp changes in volumetric charge for water are applied a further corresponding decrease or increase in water use might be expected.

Impact on users

65 The following tables set out the annual water bills for each of the five user types to illustrate the impact of the various tariff options. The user types were based on the average

usage for low users being those with bills under the equivalent fixed charge of $377 (2014/15) and high being those over $377. High residential water users were further split out to those using 1,000 litres or more per day considered as extra high.

Residential low water users (73% of properties)

Residential low water users (104m3)	Usage	Ave no fix chgs	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Option 1 - 50/50 Smoothed	104	1	$288	$293	$307	$323	$330	$346
Option 2 -50/50 Fixed "surcharge"					$316	$318	$321	$330
Option 3 - 60/40 Variable @ 99c for 5 years					$310	$343	$338	$341
Option 4 - 60/40 Variable rate increase at 2% ave					$308	$323	$338	$350

Residential high water users (18% of properties)

Residential high water users (255m3)	Usage	Ave no fix chgs	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Option 1 - 50/50 Smoothed	255	1.2	$470	$480	$503	$525	$545	$572
Option 2 -50/50 Fixed "surcharge"					$531	$531	$533	$548
Option 3 - 60/40 Variable @ 99c for 5 years					$501	$528	$540	$546
Option 4 - 60/40 Variable rate increase at 2% ave					$501	$521	$542	$561

Residential extra-high water users (5% of properties)

Residential extra-high water users (958m3)	Usage	Ave no fix chgs	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Option 1 - 50/50 Smoothed	958	2.25	$1,339	$1,375	$1,439	$1,508	$1,574	$1,652
Option 2 -50/50 Fixed "surcharge"					$1,544	$1,542	$1,548	$1,593
Option 3 - 60/40 Variable @ 99c for 5 years					$1,414	$1,466	$1,488	$1,500
Option 4 - 60/40 Variable rate increase at 2% ave					$1,423	$1,471	$1,519	$1,570

Commercial low water users (2% of properties)

Commercial low water users (57m3)	Usage	Ave no fix chgs	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Option 1 - 50/50 Smoothed	57	1	$243	$246	$258	$267	$276	$289
Option 2 -50/50 Fixed "surcharge"					$265	$265	$266	$273
Option 3 - 60/40 Variable @ 99c for 5 years					$263	$286	$296	$301
Option 4 - 60/40 Variable rate increase at 2% ave					$260	$274	$289	$300

Commercial high water users (2% of properties)

Commercial high water users (865m3)	Usage	Ave no fix chgs	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Option 1 - 50/50 Smoothed	865	2.28	$1,255	$1,289	$1,349	$1,412	$1,474	$1,546
Option 2 -50/50 Fixed "surcharge"					$1,444	$1,442	$1,447	$1,489
Option 3 - 60/40 Variable @ 99c for 5 years					$1,328	$1,381	$1,404	$1,415
Option 4 - 60/40 Variable rate increase at 2% ave					$1,335	$1,382	$1,429	$1,477

66 Low water users benefit from a lower fixed tariff of 50% whilst higher water users would be paying more. Conversely with a higher fixed tariff of 60% low water users pay more whilst higher users benefit from lower bills.

OTHER RELATED POLICY MATTERS

67 A review of the policies in place to support those in financial hardship identified that these had only been utilised to a limited extent by large families and for repairs to water leaks. It was unclear if this was due to a lack of awareness, high access thresholds or absence of need.

68 A greater emphasis on advertising the potential assistance available from Council for those in financial hardship as well as a review of the criteria for these funds may well make them more accessible to those in need.

CONCLUSIONS

69 The first year of water metering has achieved two distinct results. Firstly, an average daily use reduction and secondly the reductions in peak water use at high demand times needed to support the water conservation requirements of the 35 year resource consent obtained by Council for its continued water extraction from the Waikanae River. It is the meeting of the water conservation peak day use target that underpinned the future investment planning in water for Council.

70 The 50/50 tariff structure was proposed by CRAG to Council as likely to be the most equitable approach in balancing the interests of high and low users. In practice it has redistributed the recovery of water costs by providing an incentive to low users. As a result there has been a reduction in annual water charges for 75% of rate payers. It is accepted there will be fluctuations and that it will be necessary to make further adjustments over time. However CRAG would not like to see more than a 5% percentage variation above or below the 50/50 split.

71 If the fixed charge was increased to 60%, while providing a greater certainty of revenue stream, there is a potential for a corresponding relaxation in water conservation effectiveness. This would increase the average and peak day water consumption for the District. Not only would it tend to dilute the water conservation message, it would erode the head room in capacity gained from the initial introduction of water metering and necessitate advancing future investment in infrastructure upgrades, such as the second stage of river recharge.

72 Conversely, if the fixed charge was reduced to 40% there is likely to be real pressure put on the revenue stream needed by Council to manage the budget effectively. The price signal would be expected to reduce demand further as it would need to be compensated for in a dramatic increase in the volumetric portion of the charge. Such a substantial fluctuation in the volumetric price could be seen to be inequitable to many water users for whom usages cannot realistically be further curtailed.

73 Policies in place to support those in financial hardship have been utilised to a limited extent by large families and for repairs to water leaks. A greater emphasis on advertising the potential assistance available from Council for those in financial hardship as well as a review of the criteria for these funds may well make them more accessible to those who are burdened by water charges.

74 Internationally, water use is sensitive to volumetric price changes. There is nothing to suggest that will not be the same here. Certainty and transparency in charging are vital to ensure community acceptance of any charging structure. The community is only half way through the second year of water meter charging. While initial savings have been made it may take some time for water use behaviours to settle. Where sharp changes in volumetric charge for water are applied, a further corresponding decrease or increase in water use might be expected.

RECOMMENDATIONS

75 The charging strategy recommended by the CRAG and adopted by Council, has been widely accepted within the community served by water meters. There has not been any widespread clamour for change nor has there been any evidence of widespread hardship caused by the formula that was adopted. Through its deliberations and review of the available data, the group could understand and appreciate that a change in formula might more promptly deal with the current deficit in the closed water account and better manage the need for a more certain funding flow.

76 It was generally agreed that the formula adopted over time was likely to promote the continued conservation of water so vital for the Kāpiti community, as well as deliver a stable income stream from which the costs of the provision of water can be drawn. The group was mindful that the community is effectively only half way through the second year of water metering in Kāpiti.

77 There is no real discernible pattern of use yet available. It was felt it would therefore be a mistake to signal any change to the current formula at this time, despite the attraction of a 60/40 split in terms of revenue stream certainty.

78 The CRAG recommends:

a) The current principles, structure and charging formula of a 50/50 split between fixed charge and volumetric charge, remain;

b) The objective should be to retain as far as possible the 50/50 ratio between fixed and variable and that any adjustments should be within a 5% band above or below;

c) Council continues to take a medium term view of the water account and to retain the current ‘price smoothing’ approach to alleviate the need for substantial fluctuations in the volumetric price;

d) Further steps should be taken to ensure the community is aware of the assistance available, both with leak detection as well as with high water invoices. It should also undertake a review of the criteria for high water invoices to ensure such assistance is more widely available to those in genuine need;

e) The continuation of the Council's efforts to publicize the importance of water conservation as the best way to manage future costs as well as protect a finite resource, by limiting per capita consumption and postponing the need for further infrastructure development.

f) The water account should remain closed to ensure transparency, and other mechanisms to balance deficits and surpluses be considered;

g) A further review be undertaken towards the end of the 2018/19 financial year, at which time significant data regarding water usage and price sensitivity is likely to be better understood.

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2. Dalhuisen, J., Florax, R, Groot, H (2001) Price and Income Elasticities of Residential Water Demand, Tinbergen Institute.

3. Cole, G., O'Halloran, K., Stewart, R. (2011) Efficient 2011, Griffith University, Wide Bay Water Corporation, Australia

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APPENDIX 1 - TERMS OF REFERENCE: CHARGING REGIME ADVISORY GROUP. (CRAG)

Background:

The Kāpiti Coast District Council (the Council) introduced volumetric charging for water from 1 July 2014.

Prior to the introduction of volumetric charging, the Council convened the CRAG to consider the most appropriate formula for volumetric water charges and after careful consideration the CRAG reported back in April 2012 recommending the current tariff structure, being a 50% fixed charge and a 50% volumetric charge.

The CRAG also recommended a review of the tariff structure be undertaken after two years of operation.

Purpose of the Charging Regime Advisory Group:

1. To develop and recommend a draft volumetric water charging formula for introduction in conjunction with residential water meters;
2. To undertake on-going monitoring and review of the pricing and charging for water by Kāpiti Coast District Council.

Scope:

CRAG will have the responsibility to develop a draft volumetric charging formula for water which can be applied to both residential and non-residential properties using the following reticulated water supply.

CRAG will be provided with technical support to gather data, explore, develop and test any charging model or formula, prior to recommendation to Council. This will include the provision of independent external expert advice commissioned for the Group on charging systems, or any other necessary analysis. There will be opportunities for members of the community to provide ideas on charging regimes into the work programme.

Framework for Development of Volumetric Charging Formulae:

In discussing and arriving at any advice on a draft formula will work within the following framework:

- water charges must provide revenue for all existing and new costs of the water service activity (Note: this does not and cannot include any costs associated with wastewater services);
- in finding a balance between fixed (if any) and volumetric charges, there is sufficient incentive available from volumetric changing to effect behaviour change;
- impacts on small and larger households, in terms of fairness (horizontal equity) and social impacts (vertical equity) are considered and explicitly addressed;
- the charging regime must be capable of being applied across all geographic communities on reticulated supply and all sectors (eg. residential and commercial);
- fairness of impacts on reasonable and high users of potable water are to be explicitly addressed;
- that particular characteristics of the Kāpiti coast are provided for in the design of the charging system, in particular: special interest of communities in gardening;
- large older population;
- relatively high number of low income households;
- retirement homes;
- unit titles;
- holiday homes;

- marae;
- be capable of adjustments to charging to address fluctuations in consumption;
- links to the water bylaw in terms of landowner responsibilities and to the rating policy in terms of hardship provisions;
- satisfy Council's cash-flow requirements;
- not impose unreasonable administration costs.

Membership:

- Chair: Mr Don Hunn
- Grey Power: 1 member
- Council of Older Persons: 1 member
- background in financial skills: 1 member
- community interests and low income households: 2 members
- Chamber of Commerce: 1 member
- Landlord interest – 1 member
- Council: 2 Councillors
- Iwi: up to 3 representatives

All members shall be ratepayers or residents of the Kāpiti Coast District.

Processes and Support:

- the CRAG would: meet regularly with meeting times structured to enable the Group to provide timely comment and advice to Council at each stage;
- be provided with all reports and technical data within timeframes that allow robust advice to be provided to Council staff and Council;
- Council would: reimburse members' travel costs arising from participation in the CRAG;
- provide all secretarial support;
- provide a project management support to advance necessary technical work and follow-up between meetings actions;
- commission any independent expert advice on behalf of the Group, including peer review processes. The latter may include seeking input from other Councils with experience in water meters and volumetric charging.

APPENDIX 2 – TARIFF OPTIONS - DETAILS

Below are the details of each of the tariff options prepared to inform the CRAG review.

Option 1 - 50/50 Smoothed

This scenario applies the deficit recovery to the volumetric charge over the period. At the end of the five years the deficit is repaid and the fixed proportion is 52% of the revenue recovered.

Item	2014/15 Actual ($000)	2015/16 Forecast ($000)	2016/17 ($000)	2017/18 ($000)	2018/19 ($000)	2019/20 ($000)
Variable Rate	$0.95	$0.99	$1.04	$1.09	$1.15	$1.21
Fixed rate	$189	$190	$199	$205	$210	$220
Total cost of water proposed	8,143	8,366	8,399	8,483	8,593	8,932
Total water rates received	7,615	7,788	8,230	8,663	9,061	9,590
Annual Surplus/(Deficit)	(528)	(578)	(169)	179	468	658
Balance of Water Borrowings	(528)	(1,105)	(1,275)	(1,095)	(627)	32
Fixed Proportion	54%	54%	54%	53%	52%	52%

Option 2 -50/50 Fixed "surcharge"

This scenario applies a 50-50 a split of in year costs to fixed and volumetric and recovers the deficit as a fixed surcharge to all users over the period. At the end of the five years the deficit is repaid and 50%/50% ratio is maintained.

Item	2014/15 Actual ($000)	2015/16 Forecast ($000)	2016/17 ($000)	2017/18 ($000)	2018/19 ($000)	2019/20 ($000)
Variable Rate	$0.95	$0.99	$1.14	$1.14	$1.14	$1.18
Fixed rate	$189	$190	$189	$189	$190	$195
Fixed rate (surcharge)			$11	$11	$11	$11
Total cost of water proposed	8,143	8,366	8,399	8,483	8,593	8,932
Total water rates received	7,615	7,788	8,671	8,758	8,871	9,212
Annual Surplus/(Deficit)	(528)	(578)	272	275	278	280
Balance of Water Borrowings	(528)	(1,105)	(833)	(559)	(281)	(1)
Fixed Proportion	54%	54%	52%	52%	52%	52%

Option 3 - 60/40 Variable @ 99c for 5 years

This scenario applies the deficit recovery to the fixed charge and holds the volumetric rate fixed at 99c over the next five years. At the end of the five years the deficit is repaid and the fixed proportion is % of the revenue recovered.

Item	2014/15 Actual ($000)	2015/16 Forecast ($000)	2016/17 ($000)	2017/18 ($000)	2018/19 ($000)	2019/20 ($000)
Variable Rate	$0.95	$0.99	$0.99	$0.99	$0.99	$0.99
Fixed rate	$189	$190	$207	$230	$240	$245
Total cost of water proposed	8,143	8,366	8,399	8,483	8,593	8,932
Total water rates received	7,615	7,788	8,243	8,838	9,138	9,345
Annual Surplus/(Deficit)	(528)	(578)	(157)	355	545	414
Balance of Water Borrowings	(528)	(1,105)	(1,262)	(907)	(362)	52
Fixed Proportion	54%	54%	56%	58%	59%	60%

Option 4 - 60/40 Variable rate increase at 2% ave

This scenario applies the deficit recovery to the fixed charge and increases volumetric by the average cost increases over the period. At the end of the five years the deficit is repaid and the fixed proportion is 57% of the revenue recovered.

Item	2014/15 Actual ($000)	2015/16 Forecast ($000)	2016/17 ($000)	2017/18 ($000)	2018/19 ($000)	2019/20 ($000)
Variable Rate (incl GST)	$0.95	$0.99	$1.01	$1.03	$1.05	$1.08
Fixed rate (incl GST)	$189	$190	$203	$216	$229	$238
Total cost of water proposed	8,143	8,366	8,398	8,438	8,593	8,932
Total water rates received	7,615	7,788	8,220	8,667	9,105	9,521
Annual Surplus/(Deficit)	(528)	(578)	(180)	184	512	589
Balance of Water Borrowings	(528)	(1,105)	(1,285)	(1,011)	(589)	-
Fixed Proportion	54%	54%	55%	56%	57%	57%

APPENDIX 3 – 2016 TARIFF REVIEW SUPPORTING INFORMATION REPORT

CHARGING REGIME ADVISORY GROUP

2016 Tariff Review Supporting Information

January 2016

Contents

EXECUTIVE SUMMARY

Overview

1 The Charging Regime Advisory Groups (CRAG) was established in 2011 to provide recommendations for the most efficient and equitable water charging regime. The group reported back to Council in 2012 with 12 recommendations including the adoption of a 50% fixed charge and 50% volumetric (50:50) tariff structure and a review after two years of operation. June 2016 will mark the completion of the second year of water meter charges.

2 On 10 December 2015, Council approved the reconvening of the Charging Regime Advisory Group (CRAG). CRAG will be able to review the pricing and charging for water by the Council to date, progress against the CRAG's recommendations and inform the tariff structure for 2016/17 water charges.

3 In arriving at the recommended tariff structure, CRAG noted social impacts as an important consideration while being very conscious of economic development needs also. It considered the implementation of relevant Council policies as critical with the introduction of water meter charges. Particular consideration was given to:

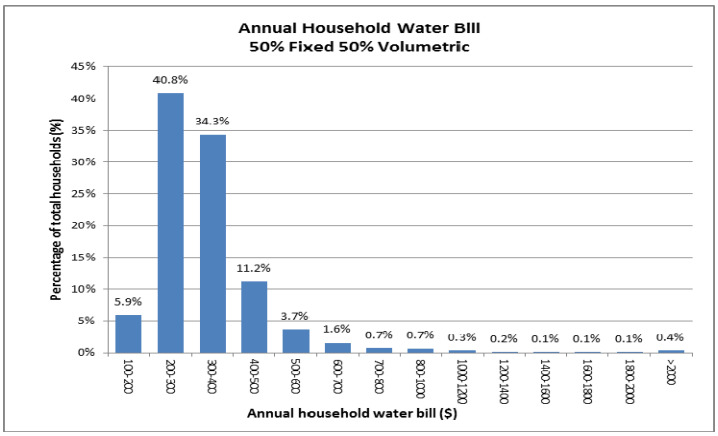
- Low income households and families
- Older people
- Large water users such as schools, retirement villages and supermarkets

4 On 1 July 2014, Council introduced volumetric water charges in Kapiti, using the 50% / 50% tariff structure recommended in the 2012 CRAG report. The respective rates were $188.50 fixed and 95c per cubic metre (1,000 litres). The equivalent fixed charge would have been $377 had volumetric charges not been introduced.

Annual water bills

5 The adjacent graph shows the distribution of annual residential water bills for 2014/15.

6 The amount of outdoor water use can make a significant difference to a consumers water use. So notwithstanding an extraordinary amount of discretionary outdoor water use, a correlation between occupancy and water use can be broadly made.



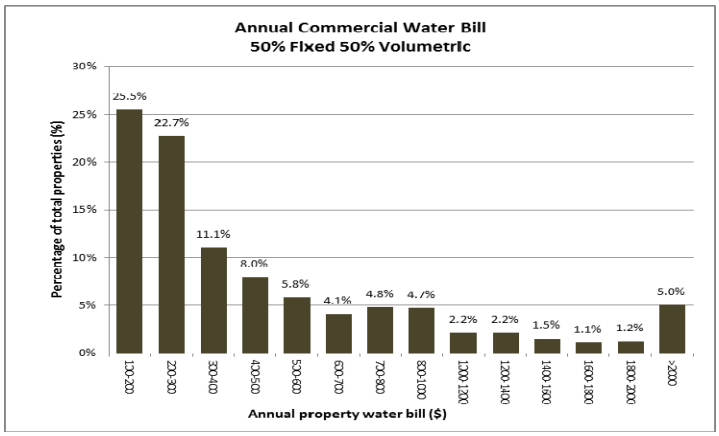
7 Analysis of the records shows that 81% of households paid less than $400 while 76% paid less than $377 (the equivalent fixed charge) for water last year. Around half (47%) paid less than $300.

8 The average water bill for households that paid less than the $377 (the equivalent fixed charge) was $281 corresponding to an average daily water use of 267 litres per household.

9 The 2013 Census shows that 82% of Kapiti households have three people or less. By correlating occupancy and use, these households paid an average water bill of $290 and used 293 litres per day. For one and two person households that make up 68% of properties, they paid an average water bill of $271 and used on average 237 litres per day.

10 A lower fixed charge of 40% would result in lower water users, such as low occupancy households benefiting from lower bills. However, higher water users such as larger families would pay more. Conversely a 60% fixed charge would increase lower water user's bills and reduce those of the higher users.

11 The distribution of annual bills for commercial properties is shown in the adjacent graph. 58% of these users paid less than $400 for water in 2014/15, having an average water bill of $242. Around half (48%) paid less than $300 and had an average bill of $220 per year.



12 Similar to the residential users, low water use commercial customers benefit from a lower fixed charge of 40% but pay more with the 60% fixed charge and the converse for higher water users.

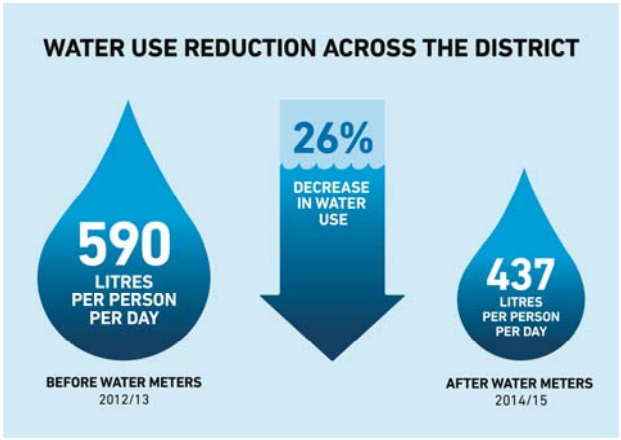
13 It should be noted that many commercial users were already metered and were charged for volumetric water use beyond the 350m^3 initial allocation at a rate of $1.02/m^3. Based on water use in 2014/15 this would have applied to 68% commercial properties in Kapiti.

Water use changes

14 Council's peak day water use target is 490 litres / person / day (l/p/d). Peak day use is what drives the need for capacity upgrades in the water supply system and in 2012/13 the peak day use was 590 l/p/d.

15 With the introduction of water metering peak day use fell below the target to 437 l/p/d despite a drier summer. A 26% reduction compared with the expected 25%.

16 A 21% reduction in average day use was achieved in the first year against expected reductions of 15% for use and 5% for leakage. Private repairs have seen an estimated 84% reduction in private daily water losses. This has significantly contributed to water use reductions and with meters in place, the identification of future leaks will be rapidly evident.



17 The district peak water use target has been achieved in the first year through water loss and use reductions arising from the introduction of water metering.

18 A review of international literature suggests there is a 3% to 6% change in water use for every 10% change in volumetric water price. Where sharp changes in volumetric charge for water are applied, a further corresponding decrease or increase in water use might be expected.

19 If fixed charge was increased to 60% a corresponding relaxation in water conservation effectiveness might be expected. This would erode the head room in capacity gained from the initial introduction of water metering and necessitate advancing future investment in infrastructure upgrades such as the second stage of river recharge accordingly.

20 Conversely if the fixed charge was reduced to 40%, the price signal would be expected to reduce demand further and need to be compensated in increases in the water rate.

Water use management

21 Significant progress has been made on improving the water use management processes and practices as part of an on-going plan to increase the effectiveness and efficiency of the water service.

22 The actual cost of providing the water supply service has been less than that projected in the 2012 LTP and future costs projected in the 2015 LTP also remain lower than the 2012 LTP projections. This has been achieved while still delivering on the key capital projects required to implement district wide water metering and stage one of the river recharge and treatment plant up grades.

23 The revenue received from the first year of water metering under recovered against the costs in that year. Council has forecast a gradual increase in water rates that eases the rate of change for the community while ensuring the recovery of the full cost of providing water services in time.

24 An increase in the fix charge would reduce long term funding risks by providing greater revenue stability while a reduction would mean revenue was more exposed to fluctuations in water use and hence less stable.

Progress on CRAG Recommendations

25 The 2012 Crag report contained a list of 12 recommendations for Council to consider when implementing water metering and the new tariff. Progress has been made on all recommendations and of particular note is assistance to low income households through the Financial Hardship Policy, covering repairs and large family water use. This is in conjunction with on-going monitoring, proactive Council support during implementation and on-going water use reduction advice.

Conclusions

26 The first year of water metering has achieved the reductions in peak water use projected and meets the water conservation peak day use target that under pinned the future investment planning in water for the Council.

27 The use of the 50% : 50% tariff structure has redistributed the recovery of water costs through water metering This has seen a reduction in annual water charges for 76% of rate payers to below what would have been the equivalent annual fixed charge of $377. The average bill for these households was $281 corresponding to an average daily water use of 267 litres per household. Of those that paid more than the $377 (equivalent annual fixed charge) 95% used less than 1,000 litres per day and had an average bill of $486 for 2014/15.

28 Policies in place to support those in financial hardship have been utilised to a limited extent for large families and repairs to water leaks.

29 Trial water metering readings in conjunction with a proactive engagement with high water users contributed significantly to repairs being made on private water pipes in advance of the introduction of water meter charges.

30 Water use is sensitive to volumetric price changes. The community is half way through the second year of water meter charging and following initial savings made it may take some time for water use behaviours to settle. Where sharp changes in volumetric charge for water are applied, a further corresponding decrease or increase in water use might be expected. This could potentially erode the head room in capacity gained from the initial introduction of water metering or create further water use reductions that would necessitate increasing the charges to ensure costs recovery. Changes would also impact the stability of water revenue recovery

PURPOSE OF REPORT

31 This report provides information to support the Charging Regime Advisory Groups (CRAG) review of pricing and charging for water by the Council following the introduction of volumetric water charges on 1 July 2014.

32 The report provides information about the results and progress in three areas relevant to the 2012 CRAG report on Water Charging Formula Recommendation. These are:

- The actual water charges in the first year of the new tariff to allow comparison with the assumptions and expected results for consumers used in the 2012 CRAG report.
- A comparison of effects of the two other preferred tariffs considered in the 2012 CRAG report with the actual 50% fixed / 50% volumetric tariff applied using 2014/15 water consumption records.
- The progress against the twelve recommendations in the 2012 CRAG report.

BACKGROUND

33 On 23 June 2011, Council approved the original Terms of Reference (ToR) and representation to establish CRAG. The group met nine times between September 2011 and March 2012 and provided a report to Council on their findings and recommendations for the most efficient and equitable system to charge for water by the Council.

34 The original membership was developed to ensure that it provided for key stakeholder interest (given that the formula must apply to all sectors) and to ensure that there was careful consideration of social and other impacts.

35 The original ToR focused on the development of the most efficient and equitable system for the charging of water by the Council. It also contained scope to undertake on-going monitoring of pricing and charging for water within the framework set out for developing the volumetric charges that provides the context for reconvening the CRAG for this review.

36 Other than the back ground, which has been updated to reflect the events that have occurred subsequently, the ToR (**Appendix 1**) for the review uses the original ToR as a basis with only minor wording adjustments being made in the framework to remove the reference to annual charging adjustments and cashflow requirements.

37 The group provided 12 recommendations in their report including the adoption of a 50% fixed charge and 50% volumetric (50:50) tariff structure subject to a review after two years of operation. In 2012, CRAG considered this tariff structure:

- provided the most balance between the impacts across users
- provided more incentive to save water than the scenarios with higher fixed charges
- provided an acceptable level of revenue stability for Council.

38 The installation of districtwide water meters commenced in August 2012 and was substantively complete by January 2014 when trial reading of water meter commenced. Following initial trial water readings from April 2014 volumetric water charges were introduced on 1 July 2014 and have been in place for just over a year and half.

39 On 10 December 2015, Council approved the reconvening of the Charging Regime Advisory Group (CRAG) to review the pricing and charging structure for water by Council.

40 Reconvening the CRAG will allow for a review of pricing and charging for water by the Council to date, progress against the CRAG's recommendations and inform the tariff structure for 2016/2017 water charges.

WATER CHARGES FOR 2014/15

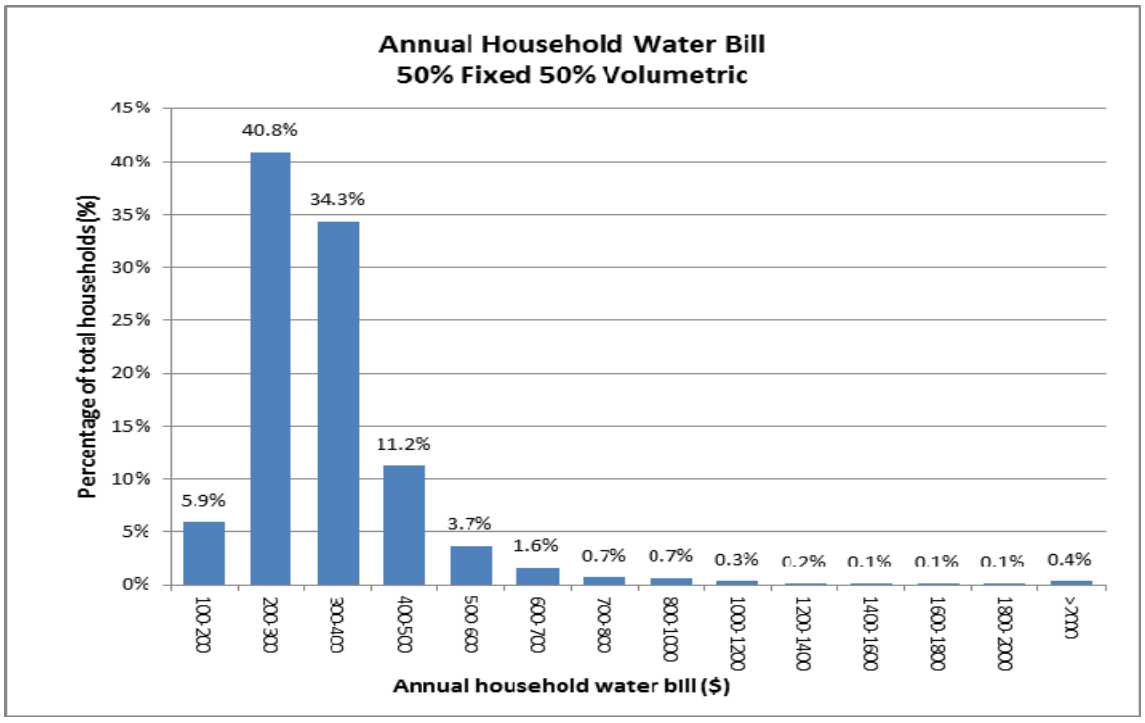
41 On 1 July 2014 volumetric water charges were introduced in Kapiti using the 50% / 50% tariff structure recommended in the 2012 CRAG report. The charges were set as follows.

42 The equivalent fixed water charge would have been $377 if volumetric water charges had not been introduced in 2014/15.

43 The CRAG used a pricing model to evaluate various tariff structures and their impact on various consumer types. These included various water use profiles for households, commercial and efficient and inefficient water users.

Domestic (household) water bills 2014/15

44 With the completion of the first year of water meter charges, the actual distribution of water rates paid can be analysed. The graph below shows the distribution of annual household water bills for residential users in Kapiti.



45 Analysis of the records shows that 81% paid less than $400 while 76% paid less than $377 (the equivalent fixed charge) for water last year. Around half (47%) paid less than $300.

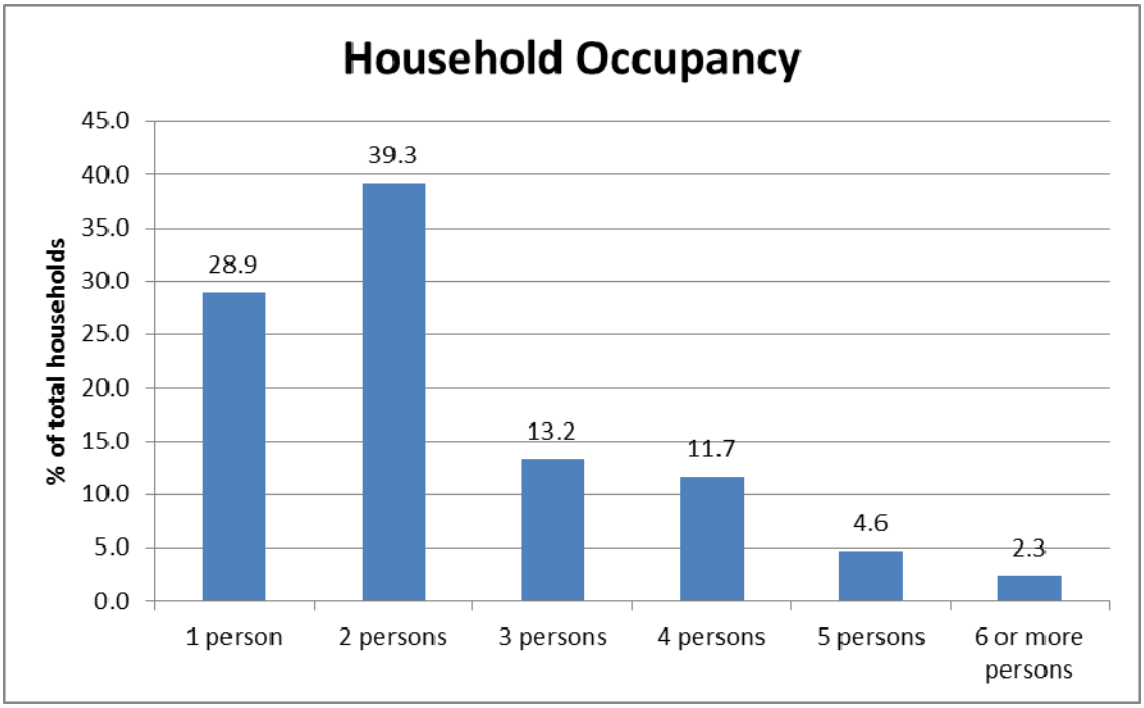
46 The average water bill for households that paid less than the $377 (the equivalent fixed charge) was $281 corresponding to an average daily water use of 267 litres per household.

47 The average water bill for households that paid more than $377 (the equivalent fixed charge) was $622 corresponding to an average daily water use of 1,250 litres per household. Noting that over 95% of these used less than 1,000 litres per day with an average use of 857 litres per day.

48 The CRAG examined the impact of water charges on various types of hypothetical consumer and for varying occupancies when they considering the tariff structure. This detail is not available for specific properties, so a comparison against the 2013 Census occupancy rates for the district is provided to correlate household size with use.

49 The amount of outdoor water use can make a significant difference to a consumer's water bill. So notwithstanding an extraordinary amount of discretionary outdoor water use, a correlation between occupancy and water use can be broadly made.

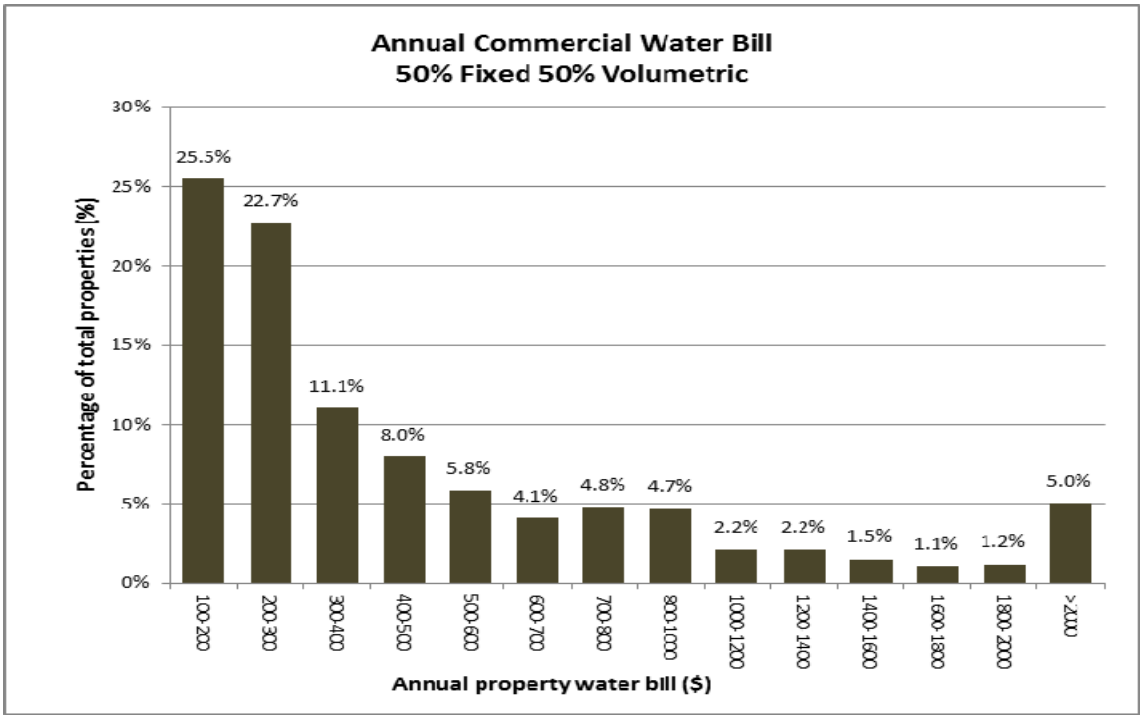
50 The graph below shows the distribution of household's occupancy in Kapiti. 81.4% of Kapiti households are three person or less with up 68.2% of households being one or two person households.



51 On the basis of a correlation between occupancy and use, 82% of Kapiti households being three people or less paid an average water bill of $290 and used 293 litres per day. For one and two person households, they paid an average water bill of $271 and used an average of 237 litres per day.

Commercial water bills 2014/15

52 The profile of annual water bills for commercial consumers is shown below. This shows that 48.2% of commercial consumers paid $300 or less in water charges compared with the equivalent fixed charge of $377. A total of 59.3% paid $400 or less for water per year



ALTERNATIVE TARIFFS CONSIDERED

53 This section provides a comparative analyse of water bills using the two alternative preferred tariff scenarios considered by the CRAG in the 2012 report. While many models and various scenarios were originally examined, these were discounted from further consideration. An overview of this process is set out below for reference.

Potential tariff models

54 The 2012 CRAG initially considered a range of potential tariff models including:

- Volumetric or variable with no fixed charge
- Fixed and volumetric charges
- Fixed and volumetric charges with an initial location
- Stepped charges
- Seasonal rates

55 From these models seven water charging scenarios was developed and evaluated against the critical success factors with four being discounted from further consideration. The three remaining scenarios were all based on the fixed and volumetric charge model.

56 A further set of six water charging scenarios were developed and evaluated using various proportions of fixed and volumetric ranging from 25% fixed / 75% volumetric to 70% fixed / 30% volumetric. It was agreed that a fixed charge range of 40-60% provided balanced outcome across the criteria. Before a final recommendation of water charging tariff was

arrived at the three scenarios with a fixed charge of 40%, 50% and 60% were examined further with particular interest on the impacts on:

- low income families
- older people
- large water users such as schools, retirement villages and supermarkets.

Preferred tariff scenarios

57 In the 2012 report, CRAG considered the 40% fixed charge 60% volumetric charge tariff:

- provided sufficient balance in the impacts across users
- provided more incentive to save water than the scenarios with higher fixed charges
- provided an acceptable level of revenue stability for Council
- favoured landlords more than tenants.

58 In the 2012 report, CRAG considered the 60% fixed charge 40% volumetric tariff:

- provided sufficient balance in the impacts across users
- provided less incentive to save water than the scenarios with lower fixed charges but should still deliver a satisfactory level of savings
- provided an acceptable level of revenue stability for Council
- would favour tenants more than landlords.

59 On consideration of a variety of impacts the 50% fixed 50% volumetric (50:50) tariff believed to provide the most fair and equitable outcomes was recommended.

60 The fixed and volumetric rates for the alternative scenarios are shown in the table below based on the figures used for the 2014/15 water rates calculations. These have been applied to the actual water use records for 2014/15 to give the bill comparisons included in this section.

Tariff scenario	50% fixed 50% volumetric	40% fixed 60% volumetric	60% fixed 40% volumetric
Fixed charge	$ 188.50	$ 150.80	$ 226.20
Volumetric charge	$ 0.95	$ 1.14	$ 0.76

61 A review of international literature on water price and use elasticity suggests for every 10% change in volumetric price a 3% to 6% change ns water use might be expected. One of the more extensive studies of over more than 100 water authorities concluded the average response to be 4.1%.

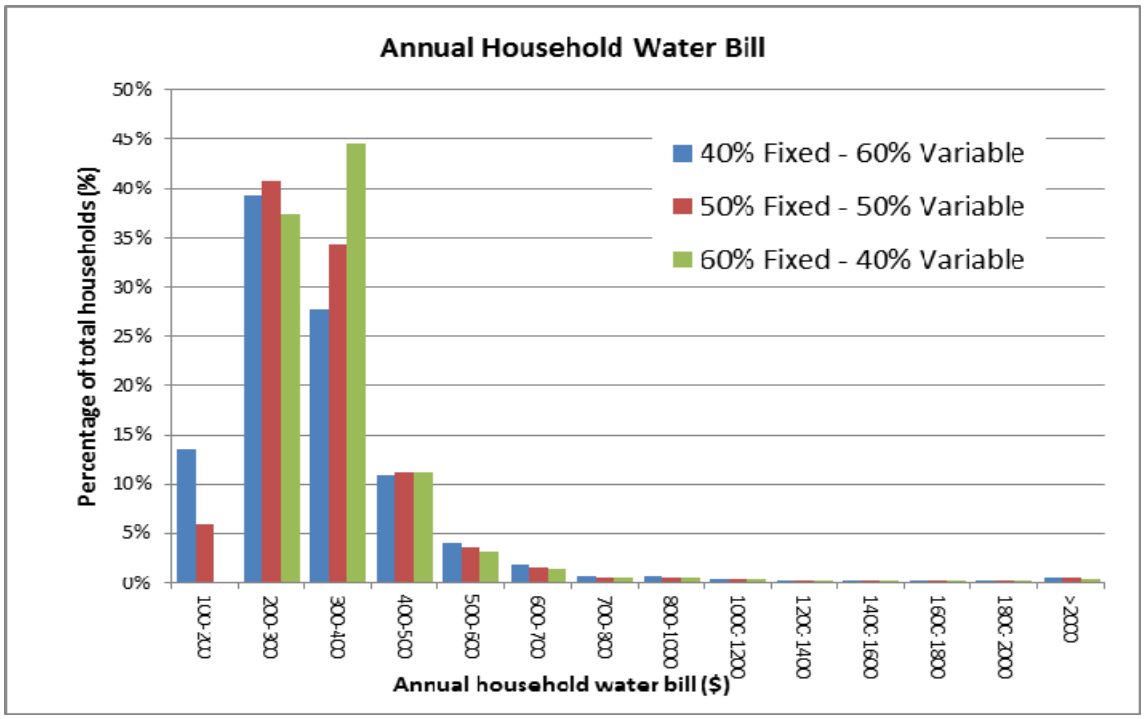
62 The community is half way through the second year of water meter charging and while significant savings have been made through leak repairs in the first year, it may take some time for water use behaviours to settle. Where sharp changes in volumetric charge for water are applied a further corresponding decrease or increase in water use might be expected.

63 If fixed charge was increased to 60% a corresponding relaxation in water conservation effectiveness might be expected. This would increase the average and peak day water consumption for the District. This would erode the head room in capacity gained from the initial introduction of water metering and necessitate advancing future investment in infrastructure upgrades, such as the second stage of river recharge accordingly.

64 Conversely, if the fixed charge was reduced to 40% the price signal would be expected to reduce demand further and need to be compensated for in the rates recovered either in fixed or volumetric portion.

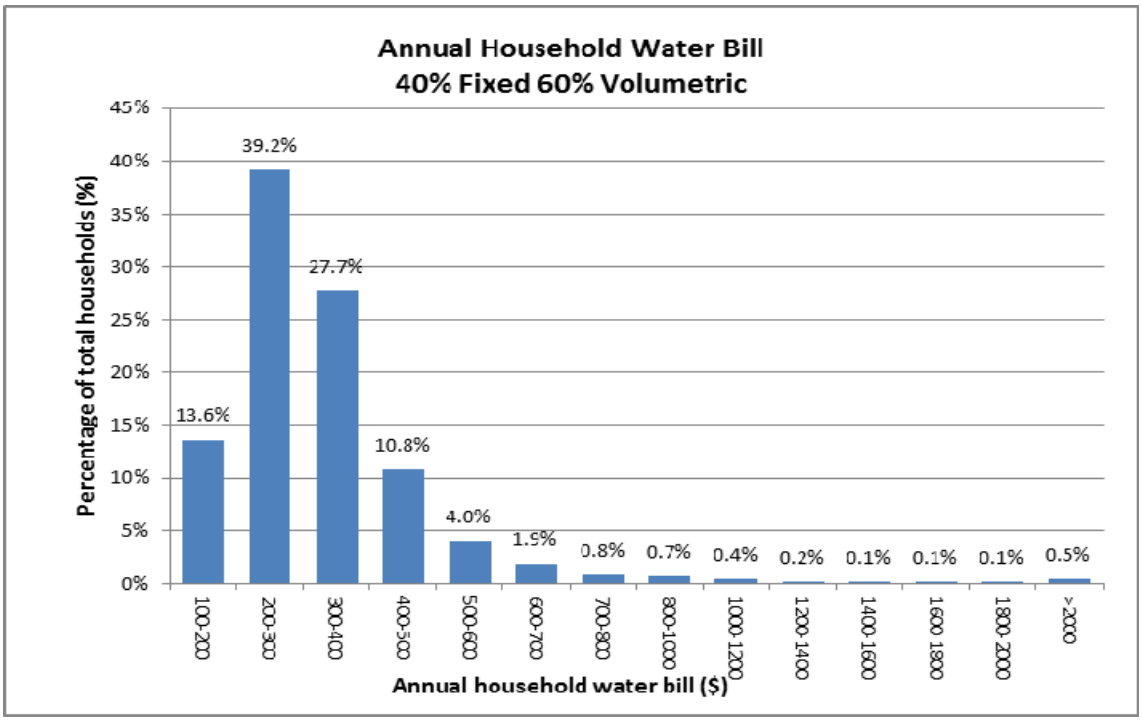
Domestic (household) water bills

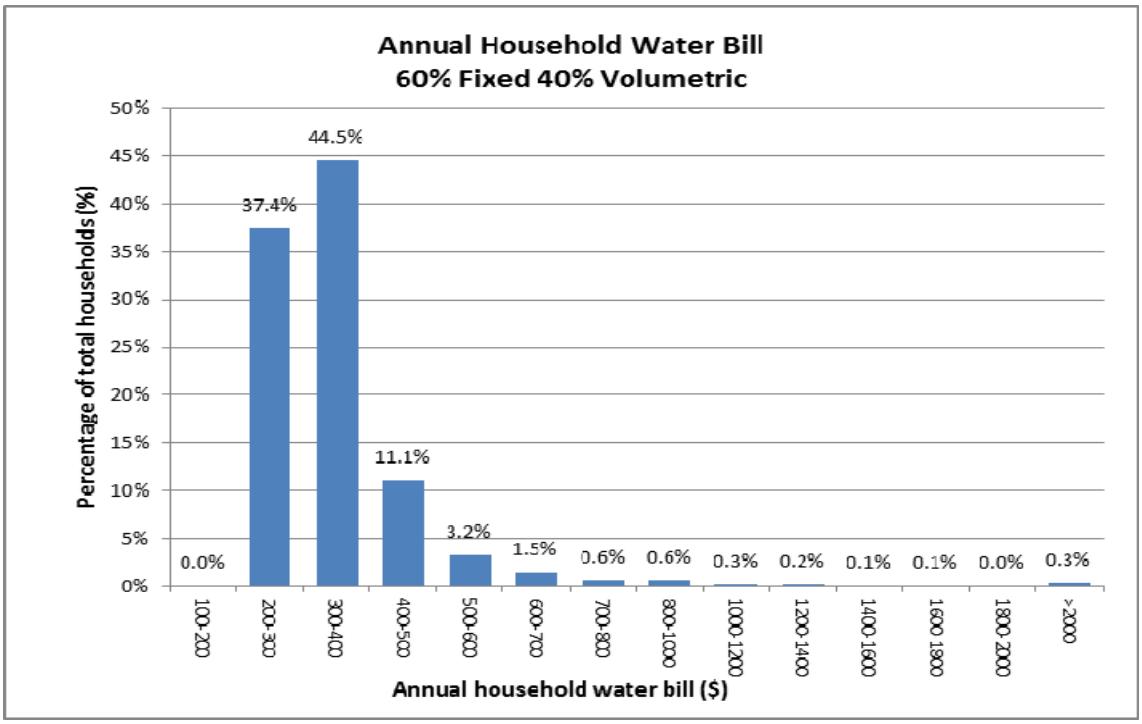
65 The graph below shows the distribution of annual household water bills for residential users in Kapiti for the 60% fixed : 40% volumetric (60:40) and 40% fixed : 60% volumetric (40:60) compared with the 50 : 50 scenario using actual water use for 2014/15.



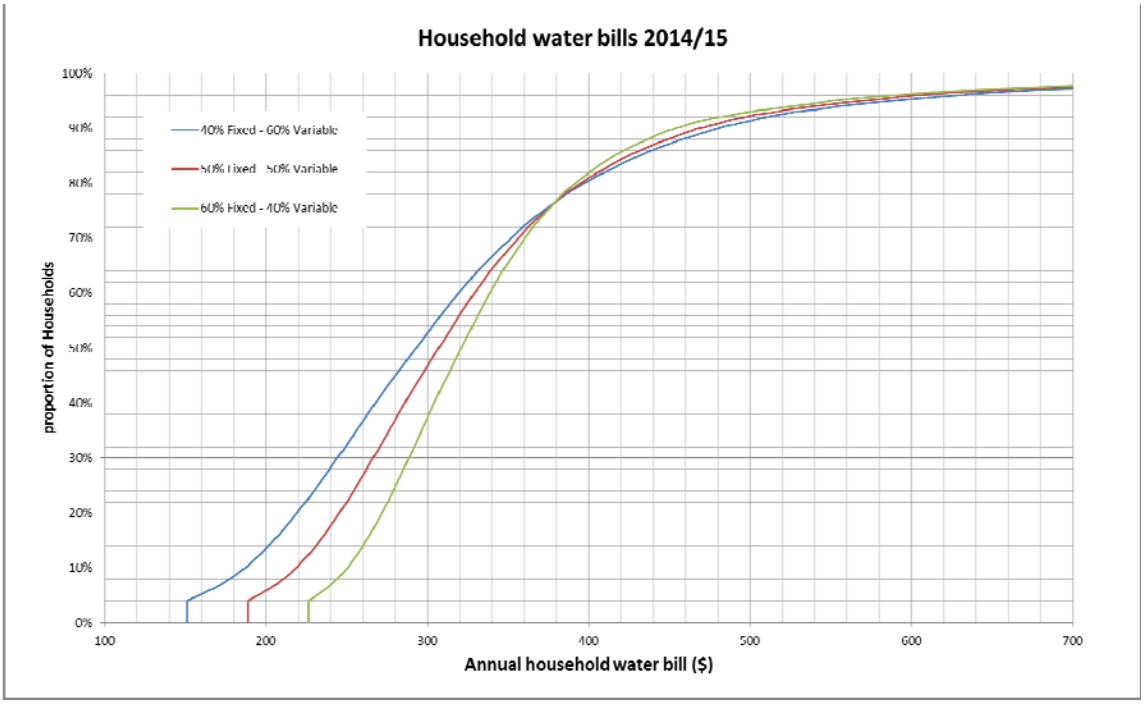
66 With a lower fixed charge of 40% (blue bar) lower use households benefit from lower bills whilst higher use households would be paying more compared to the 50% fixed tariff distribution (red bar). Conversely with a higher fixed charge of 60% (green bar) low use households pay more whilst higher use households benefit from lower bills compared to the 50% fixed tariff distribution (red bar).

67 The detailed distribution of household bills for the two alternative scenarios is shown in the following graphs for completeness.


Annual Household Water Bill
40% Fixed 60% Volumetric
Percentage of total households (%)
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
13.6%
39.2%
27.7%
10.8%
4.0%
1.9%
0.8%
0.7%
0.4%
0.2%
0.1%
0.1%
0.1%
0.5%
100-200
200-300
300-400
400-500
500-600
600-700
700-800
800-1000
1000-1200
1200-1400
1400-1600
1600-1800
1800-2000
>2000
Annual household water bill ($)

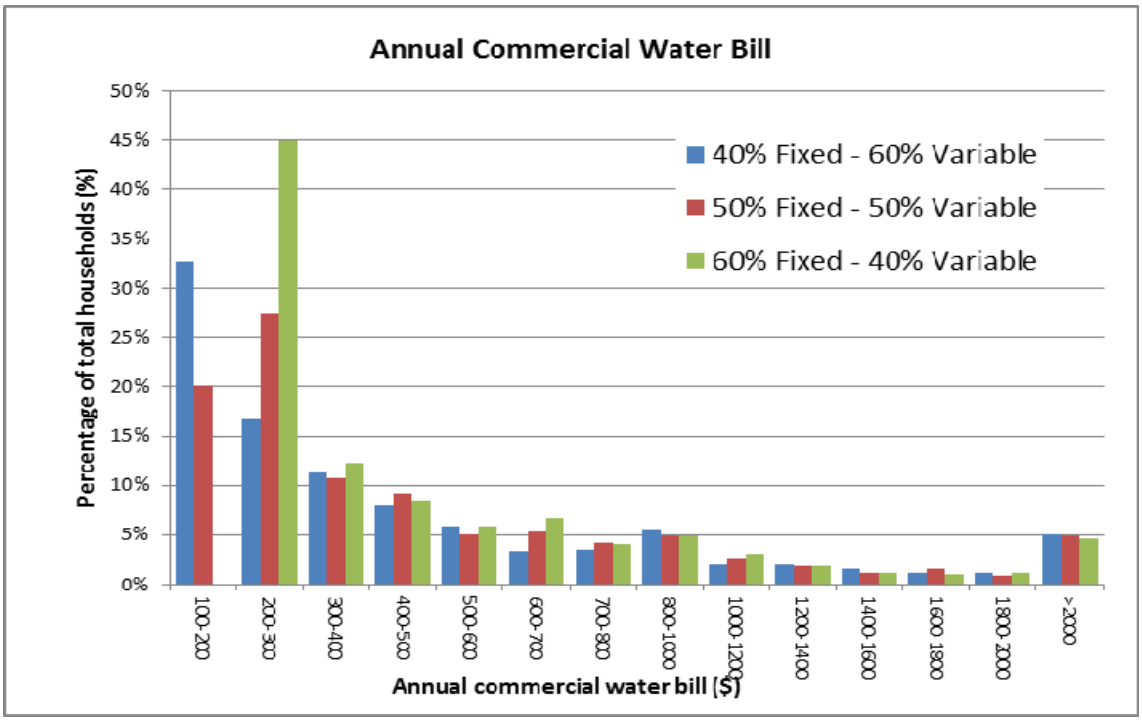

Annual Household Water Bill
60% Fixed 40% Volumetric
Percentage of total households (%)
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
0.0%
37.4%
44.5%
11.1%
3.2%
1.5%
0.6%
0.6%
0.3%
0.2%
0.1%
0.1%
0.0%
0.3%
100-200
200-300
300-400
400-500
500-600
600-700
700-800
800-1000
1000-1200
1200-1400
1400-1600
1600-1800
1800-2000
>2000
Annual household water bill ($)

68 The graph below shows the proportion of household water charges for each of the tariff structures.



Non Domestic (Commercial) water bills

69 The graph below shows the distribution of annual water bills for commercial users in Kapiti for the 60% fixed : 40% volumetric (60:40) and 40% fixed : 60% volumetric (40:60) compared with the 50 : 50 scenario using actual water use for 2014/15.

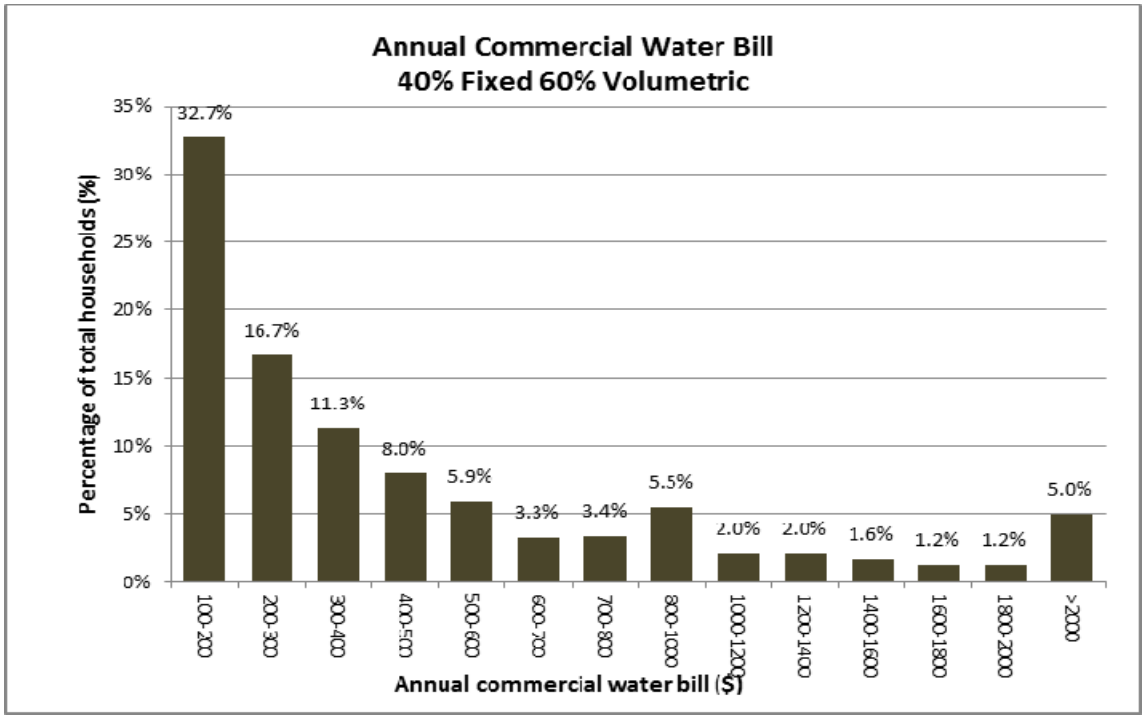


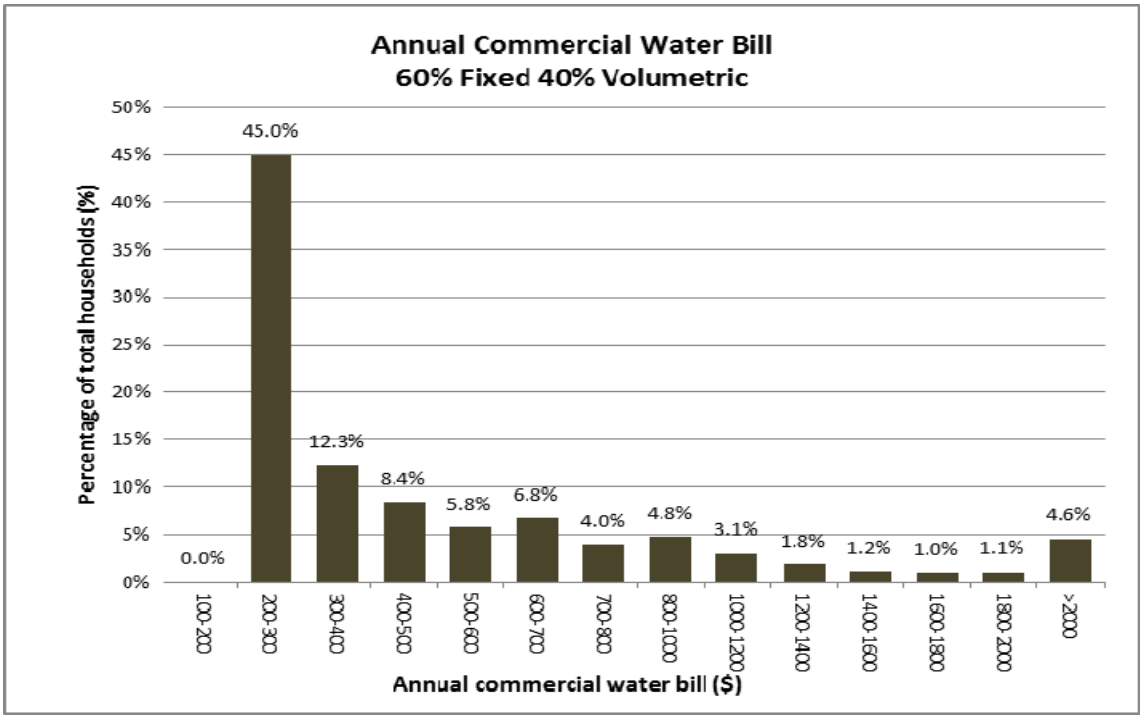
70 The distribution of annual bills for commercial properties for the three preferred tariffs is shown in the adjacent graph. Around half (48%) paid less than $300 and 58% paid less than $400 for water in 2014/15.

71 It can be seen from the graph that similar to the residential users that low water use commercial customers benefit from a lower fixed charge of 40% but pay more with the 60% fixed charge and the converse for higher water users.

72 It should be noted that many commercial users were already metered and here charged for volumetric water use beyond the 350 m^3 initial allocation at a rate of $1.02/$m^3$.

73 The detailed distribution of commercial bills for the two alternative scenarios is shown in the following graphs for completeness.





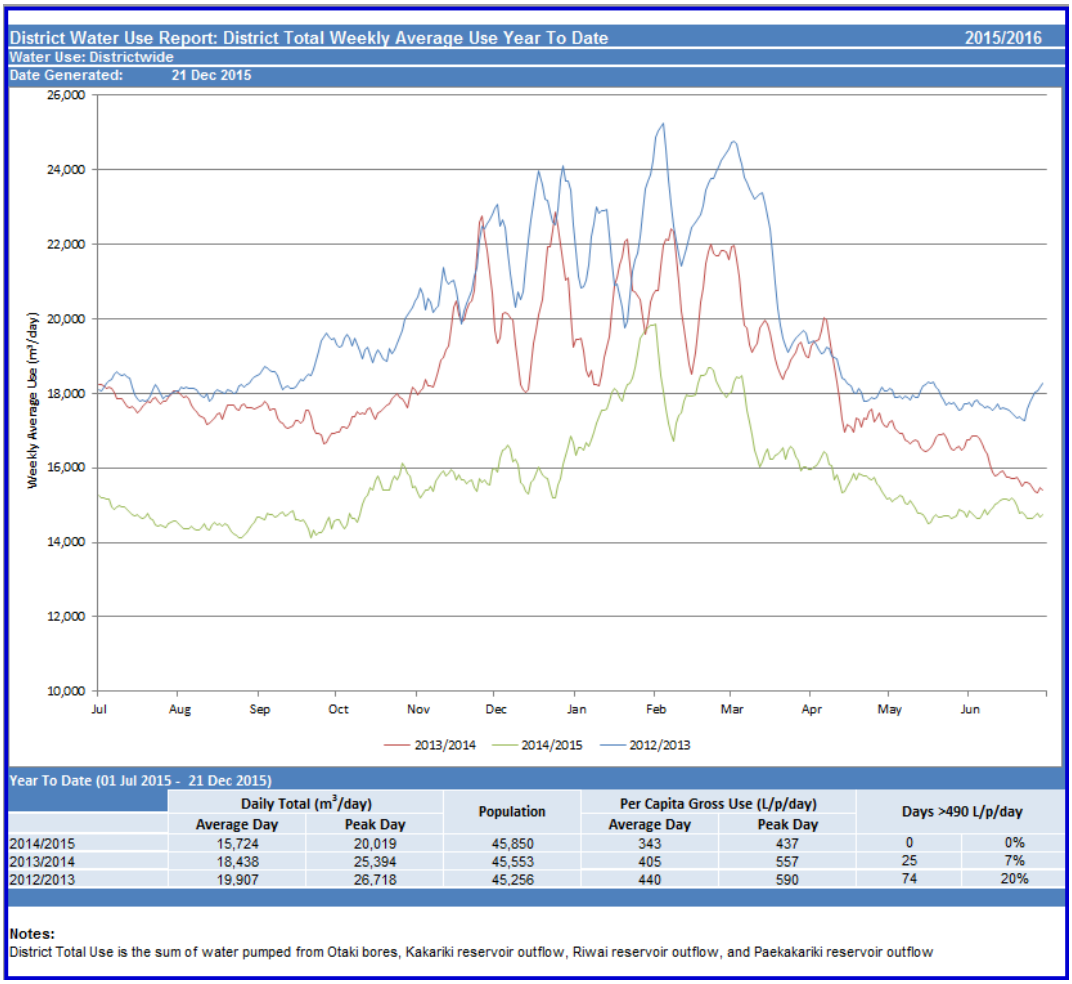
CHANGES IN WATER USE

74 The CRAG considered the relationship between charging and conservation performance noting the Council's target of 490 litres / person / day. It noted Council expected a reduction of peak day use of 25%, average day usage by 15% and leakage by 5% would be achieved with the introduction of water metering.

Water use

75 Since the introduction of volumetric charges for water the district's water use has seen a marked reduction. The figure on the top of page 15 shows the Districts' combined water use from 1 July 2012 through to 31 June 2015, the period over which metering was installed, trial readings sent and charges introduced. The figure also includes the average and peak day consumptions (in m^3/day and per capita), population projections and days above the water conservation target of 490 litres / person / day (l/p/d) for each financial year.

76 The graph uses a rolling weekly average to highlight the trends in water use over time rather than the daily totals. This means that while the peaks on the graph (weekly averages) are lower than the peak days recorded in the table.



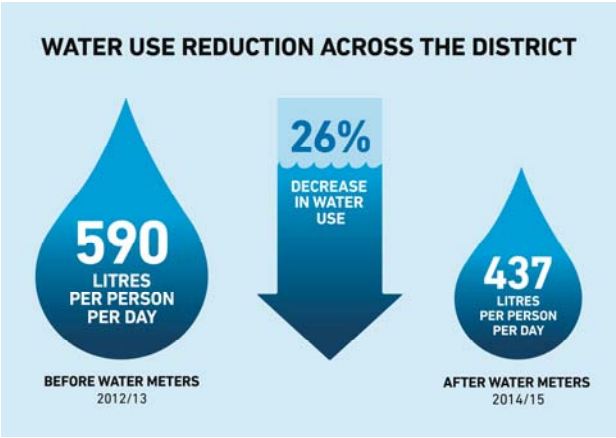
Year To Date (01 Jul 2015 - 21 Dec 2015)

	Daily Total (m^3/day)		Population	Per Capita Gross Use (L/p/day)		Days >490 L/p/day	
	Average Day	Peak Day		Average Day	Peak Day		
2014/2015	15,724	20,019	45,850	343	437	0	0%
2013/2014	18,438	25,394	45,553	405	557	25	7%
2012/2013	19,907	26,718	45,256	440	590	74	20%

Notes:
District Total Use is the sum of water pumped from Otaki bores, Kakariki reservoir outflow, Riwai reservoir outflow, and Paekakariki reservoir outflow

77 The graph shows a reduction in water use for each subsequent year with a marked reduction in 2014/15 (green line). Reductions in the peak day use can be seen in the summer of 2013/14 (red line) compared to the previous year (2012/13 (blue line), as the meter installation contract came to a conclusion. A noticeable reduction in winter usage can be seen starting from around April 2014, which drops from around the 18,000m^3/day of previous year to just over 15,000m^3/day. This was just prior to the introduction of volumetric charges on 1 July 2014.

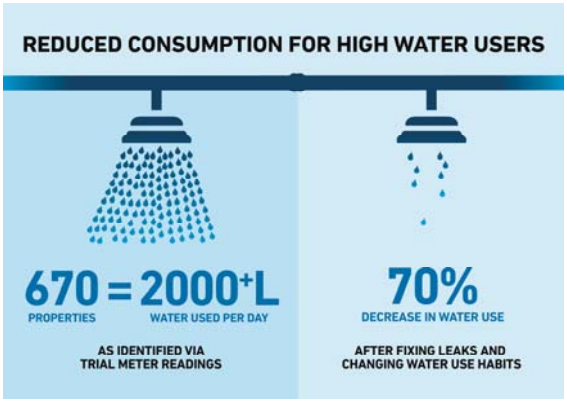
78 As marked change in water use occurred through 2013/14 comparisons of pre and post water meters water use has been based on 2012/13 (the year installation began) and 2014/15 (the first year of volumetric charges).



Peak water use

79 The per capita peak day for 2012/13 was 590 l/p/d while in 2014/15 this

had reduced to 437 l/p/d.

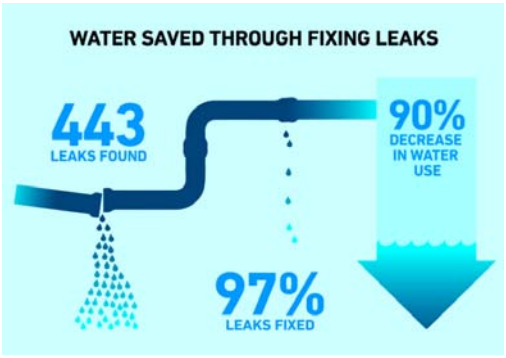


80 Despite the 2014/15 summer being drier than 2012/13, a 26% reduction in peak use was achieved.

81 The peak day use is what drives the need for capacity upgrades in the water supply system and this reduction has provided surplus capacity for future growth.

82 The number of days district wide consumption exceeded the water conservation target has also reduced from 74 days (20%) in 2012/13 to no exceedances in 2014/15.

Average water use



83 The District average daily use (including leaks and use) reduced from 19,907 m^3/day (2012/13) to 15,724 m^3/day (2014/15) or 21%.

Water loss / leakage

84 The installation of water meters has allowed Council to significantly improve the understanding of water use and leakage from the water supply system. Water metering and volumetric charging has been a driver in identification of leakage and incentivising repair on the private side.

85 Throughout the water metering contract consumers were notified when leakage was identified or suspected following a meter installation. During the installation process 443 leaks were found on private pipes. Consumers fixing these leaks have resulted in their water use reducing by 90% on average.

86 In addition to the leaks notified during the meter installations during the trial water meter reading period, Council staff visited more than 670 property owners whose readings showed they were using more than 2,000 litres of water per day. Water leaks and ways to use water more economically were discussed with the householder. The leaks people have fixed and wiser use of water has reduced their consumption by 70% on average.

87 In 2013/14 Council repaired 776 reported minor water leaks and 600m replaced of aging asbestos cement mains and in 2014/15 this was 774 and 975m respectively.

88 In 2012/13 the total real water losses from consumer side and public network leakage was estimated at 7,480m3 per day. This has significantly reduced to an estimated 4,240 m3 per day in 2014/15 a reduction of 43% in real water losses.

89 Repairs on the private side have seen an estimated 84% reduction in private daily water loss while repairs undertaken on the public side in 2014/15 have helped reduce the rate of leakage by 6%. A table of estimated water losses is shown below.

Water losses	2012/13 (revised) (m^3/day^1)	2014/15 (m^3/day^1)	Water Loss Reduction (m^3/day^1)	Water Loss Reduction
Current Annual Real Losses	3,900	3,680	220	6%
Customer Side Leakage	3,580	560	3,020	84%
Total Real Water Losses	7,480	4,235	3,245	43%

WATER USE MANAGEMENT

Water use management processes and practices

90 Council monitors the distribution of water across its water supply networks using 19 district meter areas (DMA) across the three water supply schemes. Following the installation of consumer water meters the Council audited all the zones and completed the re-established the integrity of the DMAs in February 2014.

91 A high level review of the water use management practices was undertaken in April 2014 that identified the activities being undertaken and areas for improvement. A staged improvement plan was develop and implementation commenced in December 2014. To date the improvements have included;

- Automated water use reporting for annual and comparative water use reporting by district, scheme and network (community)
- Pilot automated leak monitoring and reporting procedures in one DMA.
- Roll out of automated leak monitoring procedures to all 19 DMAs
- Actively monitor, manage and analyse minimum night time flows (MNF) in each District
- Automation of DMA leak prioritisation analysis and reporting.

92 The implementation plan includes future improvements including:

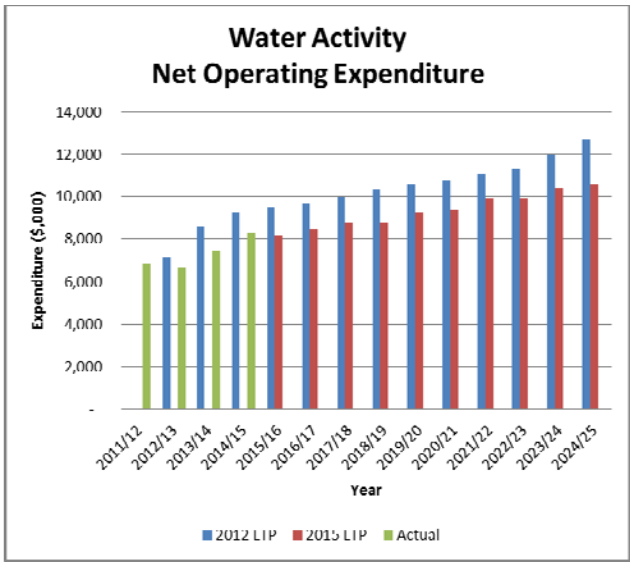
- Pilot zone automated water use and water balance reporting using consumer meter data
- Roll out of automated water use and water balance reporting to all supplies.
- Implementing a prioritised water loss reduction programme

93 Significant progress has been made on improving the water use management processes and practices as part of an on-going plan to increase the effectiveness and efficiency of the service.

Water Activity

94 The financial management of the water activity is a closed account. This means that all costs and revenue remain within the account. Any surplus or deficit in a given year remains against the account and is not transferred out or subsidised from other sources.

95 A comparison of the forecasted water supply activity costs is shown in the diagram to the right. The diagram shows the budgeted costs in the 2012 LTP, the actual expenditure for years from 2011-15 and the 2015 LTP projected costs.



96 The actual costs to date include the completion of a number of significant projects related to securing the long term water supply for Kāpiti. These include:

- Installation of district wide water meters – August 2012 – January 2014
- Securing the river recharge consents – issued September 2013
- Commencement of river recharge compliance monitoring – December 2013
- Year one of river recharge consent compliance monitoring – April 2014
- The initiation of trial water meter readings and water meter billing – April 2014
- Construction of stage one of the river recharge infrastructure – Opened May 2014
- Waikanae treatment plant stage one renewal and upgrades - Opened May 2014.

97 It should be noted that interest and debt repayment on capital expenditure is a big driver of increased costs. The actual cost of providing the water supply service has been less than that projected in the 2012 LTP and future costs projected in the 2015 LTP also remain lower than the 2012 LTP projections. This has been achieved while still delivering on the key capital projects required to implement district wide water metering and stage one of the river recharge and treatment plant up grades.

Water revenue

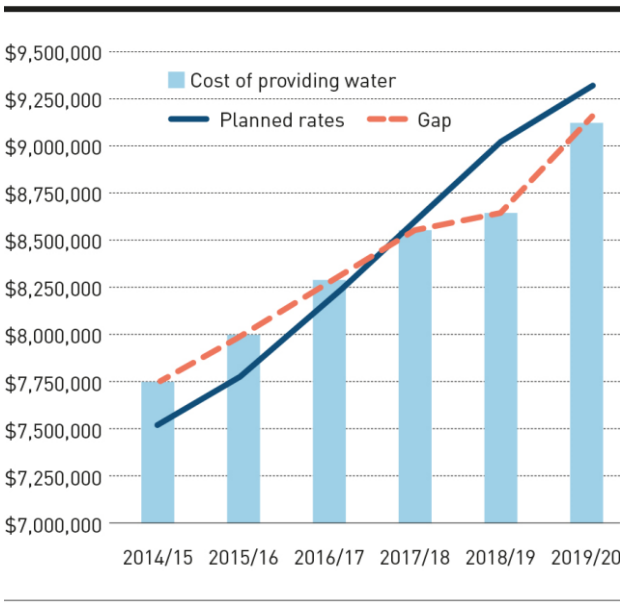
98 As we all get used to the value of water with the introduction of water meters in 2014, water use may take a number of years to settle down. Therefore, we need to carefully monitor trends to determine what to charge to cover costs of providing a treated water supply.

99 Council proposes to gradually increase our water rates over the first five years of the long term plan, to a level that makes sure that we are able to pay the full cost of providing this service across the district.

100 While Council expects to under-recover in the next 2-3 years but we are planning to fully recover our costs by the end of 2019/20. This is shown in the adjacent diagram.

101 While initial under recovery was experienced, the forecasted gradual increase in water rates eases the rate of change for the community while ensuring the recovery of the full cost of providing water services in time.

102 The next five years forecasted water rates to achieve cost recovery are set out in the table bellow.



	2015/16	2016/17	2017/18	2018/19	2019/20
Variable water rate	$0.99	$1.04	$1.04	$1.04	$1.04
Fixed water rate	$190	$196	$202	$208	$210

103 An increase in the proportion of fix charge would reduce long term funding risks by providing greater revenue stability while a reduction would mean revenue was more exposed to fluctuations in water use and hence less stable.

PROGRESS AGAINST CRAG RECOMMENDATIONS

104 The 2012 Crag report contained a list of 12 recommendations for Council to consider when implementing water metering and the new tariff. The table following outlines Councils actions against these recommendations.

105 **Council performance against the 12 CRAG recommendations**

CRAG Recommendation	Actions
1 For a transition period, of 6 months or two billing periods, in which ratepayers can fix leaks and gain experience in measuring water use before they have to pay metered water bills;	Over **90% of properties** received two trial bills before 1 July 2014. The remaining 10% weren't charged variable costs until they had received two trial readings. Over **670** properties using more than 2,000 litres/day visited by Council. Council officers provided advice to reduce high use. 70% average reduction in recorded water use in 2014/15. **443** leaks found as meters installed. 97% of these were fixed before charging began.
2 Assistance to ratepayers who are unable to afford to fix leaks, for example, allowing the interest free water loans scheme to be used for this purpose.	Rates rebate of up to $300 offered under the Financial Hardship Policy to repair leaks. ($25,000 One Off Costs budget). Council rebated $6,000 to **37** households in need over 2014/15
3 Provides assistance through its Rates Remission – Financial Hardship Policy for low income residents who qualify under that Policy;	Council offered up to $120 for large families on low incomes to reduce large water bills. ($50,000 Family assistance budget) Council rebated $585 to 10 large family households over 2014/15.
4 Provides targeted advice to schools and other public institutions to help them find ways of saving water and reducing costs;	Education contractor in place providing curriculum resources for schools. Over 1,600 children took home "the water detective agency" challenge to raise water use awareness. Pilot water audit process developed for implementation by schools and offered through water education officer.
5 Provides targeted advice for businesses to help them find ways of saving water and reducing costs;	Council facilitated a forum for the local garden industry to support water wise gardening in the community. Provides advice to other business through the water conservation advisor.

6 Provides targeted advice for landlords and tenants on rebates that might be available and to tenants to help them find ways of saving water and reducing costs;	Free visits offered by water conservation advisor. Developed and sent out landlord/tenant brochure (over 10,000 letters send out) Council offers a credit for water lost from a leak "Credit Due to Water Loss" (CDWL) for repairs made in a timely manner. Visited 670 high water use properties Rate rebates offered to those in hardship for repairs.
7 Provides assistance to ratepayers to deal with leaks on an on-going basis by: • Providing advice to ratepayers on identifying and fixing leaks; and • Allowing a period of 1 month in which a ratepayer can fix a leak before they have to pay a water bill in situations where a ratepayer has received a high water bill caused by a leak.	Free visits offered by water conservation advisor. Leak repair brochure and directory with advise and contacts to find and repair leaks Council investigates any property using more as meter readings of greater than 2000 litres/day are identified in the billing cycle. Contact any property owner who has a leak asap Allows 21 working days to organise repair without financial penalties added for late payment. Council offers a credit for water lost from a leak for repairs made in a timely manner. As at 18 December 2015 • 413 applications received. • 368 properties received credits • $144,224.67 credited against accounts • 24 applications yet to be processed.
8 Monitors the effects on tenants and low income households on an on-going basis;	Impacts of tenants and low income households part of the long term plan process
9 Keeps under review the effects of the water charging system on economic development within the Kāpiti District;	Considered in the long term plan process
10 Continues with its ground breaking water conservation initiatives, for example, interest free water loans and requiring all new households in reticulated water supply catchments to include on-site systems for non-potable water for toilet flushing and outdoor use (Plan Change 75);	In place and on going
11 Continues to account for water costs separately and provides regular information to the community on a fully transparent basis;	In place and on going

12 Adopts an active communications policy including regular consultation with tangata whenua and appropriate community groups such as Grey Power and the Chamber of Commerce.	Intense communications on water undertaken during meter installation and in the first year of water charges. On-going communications as required with the development of a long term communications strategy underway.

Conclusions

106 The first year of water metering has achieved the reductions in peak water use projected and meets the water conservation peak day use target that under pinned the future investment planning in water for the Council.

107 The use of the 50% : 50% tariff structure has redistributed the recovery of water costs through water metering This has seen a reduction in annual water charges for 76% of rate payers to below what would have been the equivalent annual fixed charge of $377. The average bill for these households was $281 corresponding to an average daily water use of 267 litres per household. Of those that paid more than the $377 (equivalent annual fixed charge) 95% used less than 1,000 litres per day and had an average bill of $486 for 2014/15.

108 Policies in place to support those in financial hardship have been utilised to a limited extent large families and for repairs to water leaks.

109 The issuing of trial water metering readings in conjunction with a proactive engagement with high water users, contributed significantly to repairs being made on private water pipes in advance of the introduction of water meter charges.

110 Water use is sensitive to volumetric price changes. The community is half way through the second year of water meter charging and following initial savings made it may take some time for water use behaviours to settle. Where sharp changes in volumetric charge for water are applied, a further corresponding decrease or increase in water use might be expected. This could potentially erode the head room in capacity gained from the initial introduction of water metering or create further water use reductions that would necessitate increasing the charges to ensure costs recovery. Changes would also impact the stability of water revenue recovery

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2. Dalhuisen, J., Florax, R, Groot, H (2001) Price and Income Elasticities of Residential Water Demand, Tinbergen Institute.

3. Cole, G., O'Halloran, K., Stewart, R. (2011) Efficient 2011, Griffith University, Wide Bay Water Corporation, Australia

4. Olmstead, S., Stavins, R. (2008) Comparing price and Non-price Approaches to Urban Water Conservation, Harvard University, USA

APPENDIX ONE TERMS OF REFERENCE: CHARGING REGIME ADVISORY GROUP. (CRAG)

Background:

The Kāpiti Coast District Council (the Council) introduced volumetric charging for water from 1 July 2014.

Prior to the introduction of volumetric charging the Council convened the CRAG to consider the most appropriate formula for volumetric water charges and after careful consideration the CRAG reported back in April 2012 recommending the current tariff structure, being a 50% fixed charge and a 50% volumetric charge.

The CRAG also recommended a review of the tariff structure be undertaken after two years of operation.

Purpose of the Charging Regime Advisory Group:

1. To develop and recommend a draft volumetric water charging formula for introduction in conjunction with residential water meters;

2. To undertake on-going monitoring and review of the pricing and charging for water by Kāpiti Coast District Council.

Scope:

CRAG will have the responsibility to develop a draft volumetric charging formula for water which can be applied to both residential and non-residential properties using the following reticulated water supply.

CRAG will be provided with technical support to gather data, explore, develop and test any charging model or formula, prior to recommendation to Council. This will include the provision of independent external expert advice commissioned for the Group on charging systems, or any other necessary analysis. There will be opportunities for members of the community to provide ideas on charging regimes into the work programme.

Framework for Development of Volumetric Charging Formulae:

In discussing and arriving at any advice on a draft formula will work within the following framework:

- water charges must provide revenue for all existing and new costs of the water service activity (Note: this does not and cannot include any costs associated with wastewater services);
- in finding a balance between fixed (if any) and volumetric charges, there is sufficient incentive available from volumetric changing to effect behaviour change;
- impacts on small and larger households, in terms of fairness (horizontal equity) and social impacts (vertical equity) are considered and explicitly addressed;
- the charging regime must be capable of being applied across all geographic communities on reticulated supply and all sectors (e.g. residential and commercial);
- fairness of impacts on reasonable and high users of potable water are to be explicitly addressed;
- that particular characteristics of the Kāpiti Coast are provided for in the design of the charging system, in particular: special interest of communities in gardening;
- large older population;
- relatively high number of low income households;
- retirement homes;
- unit titles;
- holiday homes;

- marae.
- be capable of adjustments to charging to address fluctuations in consumption;
- links to the water by-law in terms of landowner responsibilities and to the rating policy in terms of hardship provisions;
- satisfy Council's cash-flow requirements;
- not impose unreasonable administration costs.

Membership:

- Chair: Mr Don Hunn
- Grey Power: 1 member
- Council of Older Persons: 1 member
- background in financial skills: 1 member
- community interests and low income households: 2 members
- Chamber of Commerce: 1 member
- Landlord interest – 1 member
- Council: 2 Councillors
- Iwi: up to 3 representatives

All members shall be ratepayers or residents of the Kāpiti Coast District.

Processes and Support:

- the CRAG would: meet regularly with meeting times structured to enable the Group to provide timely comment and advice to Council at each stage;
- be provided with all reports and technical data within timeframes that allow robust advice to be provided to Council staff and Council;
- Council would: reimburse members' travel costs arising from participation in the CRAG;
- provide all secretarial support;
- provide a project management support to advance necessary technical work and follow-up between meetings actions;
- commission any independent expert advice on behalf of the Group, including peer review processes. The latter may include seeking input from other Councils with experience in water meters and volumetric charging.