

CAN ONE SIZE FIT ALL IN DELIVERY OF WATER SERVICES? – A VIEW FROM RURAL NEW ZEALAND

Neil Cook – CPEng, MIPENZ, BE (Hons)
Engineering Manager – Wairoa District Council
President – INGENIUM

ABSTRACT

“*Can One Size Fit All?*” refers to the proposition put forward in the 2011 publication from Water New Zealand entitled *Future Face of Urban Water Services in New Zealand? A Discussion Document* that urban water services should be aggregated into “...around two to four businesses in the South Island and four to eight in the North Island.”

Governance and management of water services is a key issue of our time however most of the discussion is focussed on large urban centres. Did you know there are people in New Zealand who cart their water for kilometres? Did you know there are people in New Zealand who still have long-drops as their primary method of sewage disposal? This paper is presented in the context of case studies related to 3 townships in the Wairoa District, which is unique in New Zealand for the predominant Māori population (60% of the 8500 residents).

The small population combined with strong Māori cultural influence is evident in the way the whole community thinks about water. Drawing on the author’s observations over the past decade this paper presents some alternative views on equitable allocation of costs and explores some of the risks and challenges faced by one of New Zealand’s smallest local authorities providing water services to one of the most socio-economically deprived populations in the Country.

KEYWORDS

Equity, Inter-generational equity, Cost allocation, governance, management,

1 INTRODUCTION

In 2011 Water New Zealand issued a publication entitled *Future Face of Water Services in New Zealand? A Discussion Document*. This paper contributes to the debate around specific aspects of the discussion document.

For the purposes of this paper *Can One Size Fit All?* refers to the propositions put forward in the Water NZ discussion document that urban water services should be aggregated into “...around two to four businesses in the South Island and four to eight in the North Island.” (Water NZ, 2011, pg 17)

So – can one size fit all in the delivery of water service? The simple answer is of course yes – it would be absurd to contend otherwise. There is any number of examples internationally where centralisation of delivery has been shown to operate quite effectively in situations that are similar enough to New Zealand to be transferable. However what is not quite so clear is what the opportunity cost has been in those jurisdictions and perhaps what could have been achieved with a less dramatic change. It is also often unexplored whether the overall starting position of the comparator is sufficiently similar to New Zealand to warrant a straightforward comparison.

What this paper will explore then is perhaps not so much **can** one size fit all, but rather, **should** one size fit all – and what might be the impact of applying a one size fits all model to New Zealand.

In engineering we often quote the 80:20 principle and certainly when doing first cut analyses or initial scoping it is right and proper to concern ourselves primarily with what seems to work out well for the vast majority – the

course of action that gets us 80% of the way towards an optimal solution. However if we simplistically apply a model of what will work fine for the 80% to the remaining 20% we can create perverse outcomes – when with a bit more care and effort we can perhaps ‘tweak’ the generic to suit the outliers a bit better.

My purpose in writing this paper is not to defend the status quo, rather to highlight how I see some of the proposed changes impacting on some of our smaller and most vulnerable communities now and into the future. My hope is that by including these issues for discussion any changes to current delivery models will take into account how those changes can best be managed to ensure the best possible outcomes for all – not just for that majority of the population that live in the cities.

The issues are complex and multi-faceted and I do not intend to explore all aspects of the proposed reform agenda. Using three communities in the Wairoa District as case studies for context I will explore the discussion as I understand it on three foundation principles of the reform agenda;

1. Urban water services – public good or private good?
2. Cost allocation – what does equity look like?
3. User pays – what does it mean and where does volumetric charging sit on the spectrum?

I will also discuss the need to consider any proposed changes to the delivery model for water services within a broader analysis of services provided by Local Government generally – as opposed to focussing on the single issue of water services.

2 URBAN WATER SERVICES – PUBLIC GOOD OR PRIVATE GOOD?

“There is confusion round whether water services are a public or private good, which clouds debate on where the ownership of these assets should sit, and can inhibit those responsible for governance from making rational decisions.” (Water NZ, 2011, pg 8.)

2.1 DEFINING PUBLIC VERSUS PRIVATE GOOD

The test for public goods is that they are;

1. Non-rivalrous; and,
2. Non-excludable

Non-rivalrous means that one person’s use of the good does not preclude another person’s use. Typical examples are lighthouses, free to air television, streetlighting. In each case the use that one consumer obtains from the good does not impact on the ability of the good to satisfy any other consumer.

Non-excludable means that it is not possible (or at least not economically feasible) to prevent a non-payer from making use of the good. Again, streetlighting is a classic example we live with every day.

A private good then could simply be defined as one that is unable to satisfy the test for public good. That is, if it’s not public it must be private. This may well be adequate in a pure economic sense but it is a somewhat simplistic approach for goods and services where other factors come into play. And in the case of urban water services it is clear that whilst not entirely meeting the public good test; neither does the market adequately address demand as might be expected to be the case for a true private good.

If we explore the concept of excludability as it relates to urban water services a simplistic treatment would conclude that of course a consumer can easily be excluded from the service. A water supply can be disconnected at the toby valve and a wastewater connection can be capped off. But in each of these examples the service provider is prevented from excluding consumers by legislation or regulation. In the case of water supply the Health Act places obligations on the supplier to maintain service.

Health Act 1956

Section 69.S (4) (b) A networked supplier or bulk supplier — must, despite any non-payment or failure referred to in paragraph (a), continue to provide an adequate supply of drinking water

In the case of wastewater, capping off the connection would render the building insanitary – a state that is prohibited under the Building Act and would require the local authority to take action to remedy the situation. It is questionable whether it would be legal for a service provider to take action that would render a building, particularly a dwelling house, insanitary.

It is far from clear cut then whether urban water services are a public good or a private good and this has implications in the future if corporatized models of service provision are adopted. Arguments can obviously be made about the extent to which the service tends towards public or private and the next section explores this in the context of the small community of Raupunga.

2.2 CASE STUDY – RAUPUNGA

2.2.1 BACKGROUND

Raupunga is a settlement some 35km southwest of Wairoa in Northern Hawke’s Bay. The 50 houses were historically provided with a reticulated supply of untreated water that was originally installed by NZ Railways sometime in the mid-20th century.

Over time this supply was abandoned by the owners/operators of the railway and gradually fell into disrepair. For a time the system was repaired by local people but eventually the problems became too big to be solved with further ‘band-aid’ solutions, and the community could not come up with the funds to maintain the system.

A number of residences were able to fund storage tanks, pumps etc. to install an individual supply but with this being one of the most socio-economically deprived locations in the country (see Table 1) many could not afford the upfront investment required and have since survived by carting water in tanks. In a community survey I undertook in 2011 a young mother explained the difficulty she was having because whilst carting water was bad enough, her car was on the way out so she couldn’t even manage that.

Table 1: Socio-economic Deprivation Index Scores for Communities in Wairoa District

Community	SDI Score*
Tuai	10
Frasertown	7
Ruakituri-Morere	6
Maungataniwha	8
Raupunga	9
Whakaki	8
Nuhaka	9
Mahia	10
Wairoa	10

** SDI Score refers to the Socio-economic deprivation index (SDI). The index of deprivation is constructed from information collected during each five-yearly census. It provides a summary deprivation score from 1 to 10 for small areas (mesh blocks) and suburbs (area units). A score of 1 is allocated to the least deprived 10 percent of areas, and 10 is allocated to the most deprived 10 percent of areas.*

Not surprisingly in this context water is seen as a precious resource not just because that is a cultural imperative for this predominantly Māori community, but because the effort to obtain that water is so great as to make any wastage abhorrent.

With water such a prized commodity it is not surprising that most residents are reluctant to flush it down the toilet! So whilst most properties are serviced by a septic tank they are not used because the residents prefer to use a long drop in order to save water. Some are not even so fortunate. The young mother mentioned above explained she does not even have the 'luxury' of a long drop and so must cross a busy state highway to use the public toilets when the need arises.

This is a community where 2/3 of properties indicated long drop as their primary toilet facility and the most reliable water supply is the bore that serves the public amenities! The future looks brighter however as the community has recently obtained a Ministry of Health (MoH) subsidy for a reticulated drinking water supply.

The proposed treatment and reticulation scheme will cost in the order of \$530,000, or \$10,600/property. Even if loan funded over 20 years this could amount to over \$1000/property/year which would prove prohibitive to most property owners in this settlement.

Early on in the process there was concern from some quarters that the community was ill-equipped to manage the supply even if it were funded through subsidy. Those fears have been allayed somewhat with the establishment and involvement of the Ngati Pahauwera Development Trust, the administrative entity for the Iwi. Raupunga is the home base for Ngati Pahauwera Iwi which has recently settled historic treaty claims with the crown and the improved economic and administrative structure provides hope for the future with respect to sustainable management of the new supply. I would note that potential Council ownership has not thus far received a favourable response.

2.3 PROPOSED DEFINITION OF PUBLIC VERSUS PRIVATE GOOD

What can the Raupunga experience tell us about public good versus private good? The community will be funding the on-going maintenance and operation of the scheme and in this regard they have demonstrated to the satisfaction of the MoH that the scheme is sustainable in the long term. However they choose to allocate costs, as a community they are acknowledging that the supply of water from the new system is a private good.

However what is equally clear is that this community had no chance of funding the capital cost of the scheme without significant assistance from the wider public; in this case via the MoH's Drinking Water Subsidy Scheme. The market (private sector) has not provided – there is no business case that would make it economically feasible for any entity to invest in wholesome water for this community. The individual householders are unable to fund it. Clearly the only way this community could obtain a wholesome supply of drinking water was for the provision of capital funding to be seen as a public good.

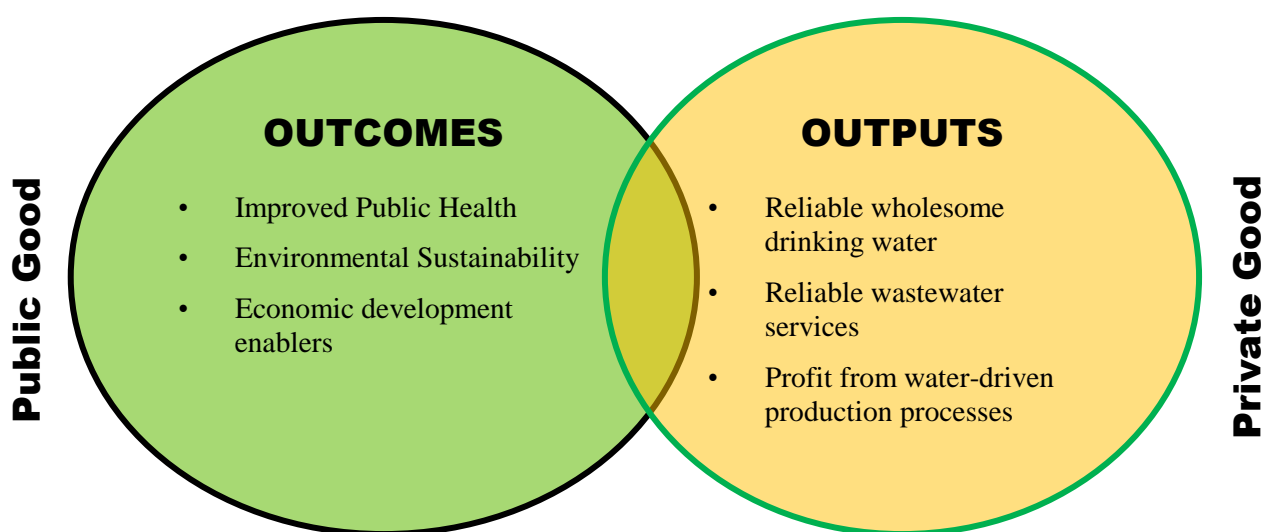
Referring to Figure 1, we can draw a conclusion from this example that helps us define those aspects of urban water services that exhibit primarily public good characteristics and those that primarily present as private good characteristics.

The capital funding to implement the scheme is provided from the public purse on the basis that quality drinking water improves public health outcomes, will enhance the community as a whole and ultimately benefit New Zealand through lower risk of illness. The outcome of improved public health is a benefit that accrues to everyone. It is non-excludable and non-rivalrous because it is manifesting not just in the local community but across the nation and therefore can be considered to satisfy the definition of a public good.

The funding of operations and maintenance is focussed on reliably and consistently delivering a certain quantity of water, at a certain pressure. This output from the supply is what is used by individuals at a rate of 150L/person/day. It is theoretically excludable and certainly there is rivalry for consumption, hence this aspect can be considered to primarily satisfy the definition of private good.

A parallel can be drawn with wastewater services. The outcome of improved public health through better sanitation and improved environmental performance through collective treatment systems accrues benefits to the wider community and the nation as a whole. The localised output of having a system in place is one of convenience to the individual consumer.

Figure 1: Defining Public versus Private Good



This conclusion that capital investment could be seen to provide the public good outcomes for water services is similar to the decision making of the government about the ultra-fast broadband (UFB) roll-out. In the absence of a compelling business case the private sector was not investing in nationwide broadband. The government justified the investment not on the basis of generating income through the output of UFB services, rather the investment was justified on the basis of wider public good arising from economic development facilitated by the availability of UFB.

2.4 IMPLICATIONS FOR SMALL COMMUNITIES IN A CORPORATIZED MODEL

As mentioned above defining the public/private split has implications in the future if corporatized models of service provision are adopted. The major implications are not so much for existing supplies where a new management regime with a new cost allocation structure may require some adaptation by customers. Rather, the major implications are for small communities that do not currently have a supply but at some point in the future may want one. If there is no similar public funding as we have seen in Raupunga, and if the responsible entity is primarily economically driven, then small communities will not be able to improve their standards in the same way.

We see a parallel in the Mahia area of Wairoa District where electricity supply is now constrained to the point that no new connections are available. The lines company is commercially driven and will not invest the necessary capital to enable growth and development in this area that could be a thriving tourist location for the district.

2.5 FURTHER QUESTIONS

A number of questions arise as we consider the Raupunga journey of the past few years towards installing a new potable drinking water supply. Firstly, how will community-owned and operated supplies such as this fare under the model proposed by Water New Zealand in the 2011 discussion document? Are we to see effectively nationalisation of what are to all intents and purposes private assets? Would this extend to other suppliers who service 'x' number of people for 'y' days per year under some arbitrary threshold in a national standard?

Alternatively, if this type of private or community-owned scheme were to be exempted in some way from a new world order for Council-owned services, would we risk a perverse outcome of similar small schemes pushing for transfer from Council ownership under S135 of the Local Government Act in order to avoid what they might see as big brother riding roughshod over local communities.

These are questions that I don't propose to answer in this paper – however they need to be included in any consideration of new models of service delivery. The devil, as they say, is in the detail.

2.6 CONCLUSION TO SECTION

- Water services are clearly both a public good and a private good. The Raupunga example provides an opportunity to define the Public Good vs. Private Good split as it relates to urban water services. The Outcomes delivered by providing access to water services exhibit primarily public good characteristics while the Outputs or benefits to the customer of actually being connected exhibit primarily private good characteristics.
- There are potentially adverse impacts on small communities from moving to a corporatized delivery model if the public good elements of water services are not addressed in the structure of any new model.
- While proposing a model that may be adequate for 80% of the population it is necessary to seriously consider the implications on the remaining 20% which are often made up of our most vulnerable and socio-economically deprived citizens.
- Careful consideration is needed to determine the criteria if water services were to be effectively nationalised under proposed changes to delivery models. This is particularly important for smaller, private or community-owned schemes.

3 EQUITABLE COST ALLOCATION – LEVEL OF SERVICE PRICING

Because of the high fixed cost of water services, the burden of meeting accepted service levels is higher per customer in smaller communities. This often results in substandard services. (Water NZ, 2011, pg 2.)

This section will discuss in the context of Wairoa Township and Tuai Village wastewater services the Wairoa District Council's approach to creating equity across communities where similar levels of service are received by customers.

Certainly achieving adequate services is more costly per customer in a small community and 'network pricing' is often suggested as a mechanism for rectifying this. Network pricing is perhaps a misnomer when used to describe rationalising costs across separate networks to apply economies of scale from larger supplies to smaller ones. Wairoa District Council tends to refer to level of service pricing in these cases.

Wairoa District Council has historically applied a user-pays model to water services in the form of targeted rates. Costs for the services are ring-fenced and a robust model is in place to allocate a share of organisational overheads to each service. Traditionally this has extended to a funding model that allocated costs via targeted rate down to the individual scheme level – the various schemes shown below in Table 2.

Table 2: Water Services in the Wairoa District

Wastewater	
Wairoa	Traditional flush and forget
Tuai	Traditional flush and forget
Mahia (under construction)	STEP system
Opoutama (in design phase)	Traditional flush and forget
Water Supply	
Wairoa	Treated supply from Frasertown plant
Frasertown	
Wairoa 'peri-urban'	
Tuai	Untreated spring supply
Mahanga	Untreated groundwater supply

3.1 CASE STUDY – WAIROA AND TUAI WASTEWATER SERVICES

3.1.1 BACKGROUND – TUAI

Tuai provides an interesting counterpoint to Raupunga for whilst Raupunga was originally serviced by a railways water supply that according to local feedback was simply abandoned, Tuai is serviced by a water supply and wastewater system constructed by the New Zealand Electricity Department (NZED). The difference between the two scenarios is that when the NZED relinquished ownership and control in Tuai the community infrastructure was vested with the Wairoa District Council.

Council is underway with a MoH subsidised upgrade to the supply to meet the Drinking Water Standards New Zealand (DWSNZ) and this will result in compliant water being supplied to the 60 houses currently connected to the network. This upgrade would have been unaffordable for this community without the subsidy and is a further example of the necessity to treat the capital investment as public good.

Wastewater services are gravity reticulation to septic tank treatment followed by sand filters and UV treatment with discharge to water. There are currently no significant drivers for upgrades however it is expected that over time the discharge to water may become unsatisfactory and some form of land treatment may be investigated.

At the time Council was consulting on the Long Term Council Community Plan (LTCCP) in 2009 the proposed targeted wastewater rate for Tuai was \$620/household. This was a reflection of the fixed and variable costs attributable to the Tuai wastewater network and treatment system, including resource consent monitoring, maintenance, depreciation as well as an allocation of Council overheads. The full rate had never been applied because the costs had been off-set for many years by utilising a reserve fund specific to Tuai. The fund was under pressure and hence the cost was set to increase dramatically for those ratepayers connected to the scheme.

3.1.2 BACKGROUND – WAIROA

Wairoa is the main township of the Wairoa District. Water supply is surface water from the Waiau River, treated in a traditional process of chemical treatment and filtration with the recent addition of UV disinfection. Once fully commissioned and monitoring/reporting processes are embedded the supply will be compliant with the drinking water standards for bacteria and protozoa. The supply serves approximately 2000 commercial and residential connections. The most significant single user is AFFCO which takes approximately half of the water produced each year.

Wastewater services are a traditional gravity system with pump stations and an oxidation pond treatment system. In the 2009 LTCCP the proposed targeted rate for wastewater was \$237/household.

3.1.3 LEVEL OF SERVICE PRICING FOR WASTEWATER SERVICES

With targeted rates for Tuai reaching such a high level and the inability to continue funding this from a dedicated reserve fund it was necessary for Council to seek to address this potentially significant burden on one of the poorest communities in the district. Through the LTCCP consultation process in 2009 Council actively sought the community's view on a proposal to apply level of service pricing to wastewater services. The current situation was outlined in terms of Tuai and Wairoa customers each receiving the same 'flush and forget' service. The consultation process highlighted for both communities the significant difference in cost for receiving that same level of service.

The alternative option of level of service pricing was put to the community noting that the Wairoa targeted rate would increase from \$237 to \$246, while the Tuai targeted rate would decrease from the \$620 proposed to \$246.

Not surprisingly Tuai ratepayers were very much in favour of the change. Perhaps more surprisingly Wairoa ratepayers were also largely in favour. I discuss some of the reasons for this in Section 4 below. The proposal was accepted by Council and since 2009 Council has applied this funding model across the two schemes.

Note on new schemes currently under development

It is expected that when the Opoutama community wastewater scheme is completed and delivering the same level of service to that community as the Wairoa and Tuai schemes deliver a similar exercise will be carried out to determine the potential benefits of level of service pricing across the supply areas.

Not so clear is how we will assess the Mahia Beach community wastewater scheme where the STEP system imposes additional costs on each property for power usage and periodic clean out of the on-site tank.

3.2 CASE STUDY – WAIROA WATER SUPPLY

In the case of water supply even though Wairoa, Frasertown and the peri-urban area of Wairoa were receiving the water from the same treatment plant they were charged differently – a situation that dated back to before amalgamation in the 1980s when the Borough owned the supply but allowed connections by residents of the County, but under different cost allocation arrangements. This was adjusted in 2009 with a move to ‘level of service’ pricing similar to the discussion on Tuai/Wairoa wastewater. As this is a single supply the term network pricing is appropriate and the effect of shifting to network pricing is showing in Table 3, below.

Table 3: Effect of Network Pricing on Wairoa Water Supply

Supply Area	Proposed targeted rate	Revised rate after network pricing applied	%age Change
Wairoa	\$339	\$354	+ 4%
Wairoa peri-urban	\$393	\$354	- 10%
Frasertown	\$537	\$354	- 34%

Note on upgrades currently under development

As with the new wastewater schemes currently under development it is expected that when the Tuai water supply is upgraded to meet DWSNZ and is therefore providing the same level of service to the community as the Wairoa supply does a similar exercise will be carried out to determine the potential benefits of level of service pricing across the supply areas.

3.3 CONCLUSION TO SECTION

- These case studies demonstrate clearly that the tools already exist for council water services providers to implement network pricing or level of service pricing to bring greater equity. The fact that in many cases this approach is not applied is entirely down to the decision making processes of those communities and their councils. And it must be noted that under current legislation this is a decision for those councils to make in consultation with their communities. In the next section I explore some of the reasoning that may help to explain why Wairoa District Council takes the approach that it does.
- This issue in and of itself would not seem to be sufficient driver for reform of the scale proposed in the Water New Zealand discussion paper. Rather, a relatively minor amendment to existing legislation could require an assessment of equity as related to communities receiving similar services but where other factors create significant cost differences.

4 EQUITABLE COST ALLOCATION – AN ALTERNATIVE VIEW

What does ‘equity’ look like and does it mean different things to different people? To what extent does where you live colour or inform your thinking on what is equitable? In this section I share some observations I have made living and working in the Wairoa District over the past decade. The purpose is not to alter anyone’s view – rather to explain that there is more than one view and that my experience over the past decade suggests that at least in part the differing viewpoints align loosely to what sort of community people live in.

During the past year I have been party to a considerable amount of discussion on water services, their delivery and how they should be funded to ensure ‘equity’. In having these discussions it became clear to me that thinking on this appeared to differ between those who live in a large city versus the people I deal with day to day in small town Wairoa – and this was noticeably different again from the attitude of our predominantly Māori communities in the hinterland.

When talking to colleagues in Wellington for instance there was generally a position that volumetric charging for water services was the most equitable method of allocating cost. This held true even if people are opposed to metering for other reasons such as the implementation and administration costs rendering it uneconomic. Typical reasoning was along the lines of “With metered charges I pay only for what I use” or “Why should I pay the same as my neighbour who has 4 kids when my wife and I live alone, which is what happens with a targeted rate?” This is the here and now view. We pay today for what we use today – and only what we use today.

I contrast that to similar discussions in Wairoa where many people are born and raised, grow their own family, become grandparents and eventually depart this world. That is to say they go through life’s cycle as part of the one community. Certainly the community changes but it does not change as much or as quickly as it does in the city. Of course not everyone in Wairoa fits the description of ‘born, raised and grown old’; but those of us that move to Wairoa and stay for any length of time do so because the community suits us – and that suggests we share much the same values of the small community. The attitude in this small town (whose motto when I arrived 10 years ago was “*Wairoa, the way NZ used to be*”) is one of looking at equity over the course of a lifetime.

The decision makers for the district have taken a position over the years that there should be user pays for water services to the extent that if you are not connected you do not pay (targeted rate). However in my experience there has never been a suggestion that this should extend to ensuring each consumer ‘balances their account’ on a quarterly or yearly basis for what they consume relative to their neighbour. There is an understanding at a community level that when you have a young family you need to use more water. When your children go off to boarding school or move out of home you use less. When later in life one partner is left alone water use is down to the bare minimum.

The difference becomes more pronounced when we head into the hinterland. Our Māori communities like Tuai and Raupunga take an even longer term view. Whereas in a city you may know your neighbours, you may even know most of the people in your street, it is a completely different environment in these small villages where a good proportion of the residents are actually related to each other. And whereas my observation of attitudes in Wairoa is that as a general rule people just accept that different people are in different life stages and have differing needs, in the smaller villages it tends to go even further to the point that people feel duty bound or obligated to support those who are in greater need than themselves. This is quite understandable when we consider that those neighbours are aunty, koro or cousin.

These observations have no scientific basis but are drawn from my interaction and engagement with the communities of the Wairoa District over the past decade. The reason for presenting them is to add to the qualitative debate that is yet to happen regarding the 20%. In my view we have yet to settle the discussion about the best service delivery model for the 80%, but it is timely given the current reform environment to start thinking seriously about how proposed changes impact on our most vulnerable communities – those at the 8-10 end of the socio-economic deprivation index; communities like Wairoa, Raupunga and Tuai.

A comparison is often made with electricity supply as a utility which everyone accepts as a user pays model at the household level. But the very fact that water services are viewed differently suggests to me that people in the community where I live and work see water services more as a public good than a private good.

This is a separate discussion from whether there should be minimum standards for water quality or whether asset management practices should be improved. This is a simple question of whether a community should have the ability to allocate cost of service delivery as they see fit, or whether there is some higher ideal that should take precedence. It is a question that must be debated before any alternative model for service delivery is forced upon communities such as Wairoa ‘for their own good’.

5 EQUITABLE COST ALLOCATION

User pays is premised on an argument of fairness, of equity. It is often used as a synonym for universal metering and volumetric charging however that is challengeable, and in my view erroneous as there are other mechanisms that can equally be defined as user pays and perhaps more precisely allocate costs according to benefit received.

5.1 THE COST ALLOCATION SPECTRUM

Figure 2 shows the traditional spectrum of cost allocation from cross-subsidisation to user-pays.

Figure 2: Traditional Equitable Cost Allocation Spectrum



At one end of the cost allocation spectrum is some form of general taxation. Under a central model government derives income from a range of sources and if taxation was funding water services any person connected to water services would be provided that service with no reference to the amount of service they consume. Conversely everyone is paying regardless of whether they consume the service, or how frequently.

Funding from general rates is a short step away from general taxation but is a similar principle. Rather than the whole nation paying, the costs and funding are localised to a territorial authority boundary. Those connected to the service are being subsidised by those who are not. The only difference between this and general taxation would be the proportion of subsidisers to subsidised and the characteristics that make up each proportion, which only by coincidence would match the national averaging exhibited under a general taxation regime.

Next on the spectrum are targeted rates. In my view a targeted rate that genuinely accounts for the cost of delivery of a particular service fits absolutely the definition of user-pays. In order to ‘genuinely’ account for the cost of service the targeted rate needs to accurately account for the proportion of organisational overheads attributable to the service, and of course all direct costs would necessarily be ring-fenced. If a targeted rate satisfies this definition then it must be acknowledged as a genuine ‘user-pays’ charging regime as all users connected to the system pay for it and no non-users are required to contribute.

Volumetric charging takes user-pays down to the household level rather than the network level and is widely held up as being the fairest and transparent way to allocate costs – so much so that the mantra seems to now be accepted as gospel even by those who for other reasons are opposed to metering. In my view it is debatable whether volumetric charging is more or less accurate as a user-pays mechanism than targeted rates and there are two aspects in particular that bear further consideration. The first is the transparency of volumetric charges in the context of ‘network pricing’. The second is whether volume of water through the meter is the truest indication of service consumed.

5.2 TRANSPARENCY OF CHARGES

The respective rights and responsibilities of the service provider and customer in today's commercial climate would be better managed as explicit (and agreed) terms and conditions for the supply of water and receipt of sewage based on customer contracts. This is standard practice with other utilities in the electricity, telecommunications and gas industries. (Water NZ, 2011, pg 14.)

Certainly a metered tariff is more transparent than general rating, but is it more transparent that a targeted rate? With respect to targeted rates we discussed in Section 3 the situation between Wairoa and Tuai where Council consulted upon, and deliberated publicly upon, the proposal that where two separate communities were receiving the same level of service (in this case flush and forget wastewater services) the costs of delivering those services could justifiably be aggregated and apportioned evenly across those communities. This resulted in a significant saving for the smaller community due to the economies of scale kicking in – through a considered process that was absolutely transparent and open.

Volumetric charging on the other hand can create the illusion of equity because the consumer tells themselves 'I only pay for what I use'. What the consumer does not appreciate is that the cross-subsidy has simply been pushed up the pipe in the form of 'network pricing'.

The argument for volumetric charging as the primary user pays cost allocation method is spurious in the extreme when it is followed up by discussion of smoothing costs for small communities through 'network pricing'. In my view, and as discussed in Section 3 above the decision making process around targeted rates can be considerably more transparent.

Returning to the quote at the start of this section regarding a preference for a contractual relationship. This is an academic analysis at best while a more cynical view may interpret it as quite disingenuous support for a pre-determined position. The reality for the "...customer in today's commercial climate..." is that utility suppliers without exception set terms and conditions on a take it or leave it basis. There is no opportunity to discuss levels of service versus willingness to pay as occurs through Council consultation processes.

5.3 VOLUME OF WATER AS PROXY FOR AMOUNT OF SERVICE CONSUMED

Domestic customers in non-metered jurisdictions pay for water services through rates. There is little transparency in this method. (Water NZ, 2011, pg3)

The unstated presumption in the above excerpt is that metering does provide transparency. This is worth exploring further.

The cost of water to the consumer is made up of costs that vary with volume of water and those that do not. In the case of Wairoa water supplies the costs that vary directly with volume of water supplied are primarily chemicals and electricity. Costs not directly related to volume of water produced are by far the greater proportion overall including depreciation, staff time and (increasingly) insurance.

It could easily be argued that the fairest allocation model would be a fixed charge per connection that reflected all the non-variable costs, with a metered charge that accounted for those costs that increase or decrease with volume of water produced. For proponents of universal metering the problem with this approach of course is that unless meters are already installed the discussion quickly becomes solely academic because the economic argument for installing meters is even less compelling if only variable costs are able to be affected through demand management.

Where the substantive portion of costs are not related to the volume of water supplied a charging regime that bases itself solely on volume of water consumed is inherently inequitable. Furthermore that inequity would tend towards disadvantaging some of our more vulnerable citizens such as poorer families with large numbers of children.

In cases where there are high fixed costs relative to variable costs then a targeted rate provides a more equitable allocation of costs than a metered tariff. This is qualified to the extent that a mixed model of per connection charge to cover fixed costs combined with a metered charge for volume consumed would be more accurate than

either model applied individually. This mixed model is common in the electricity industry where customers are charged a daily fixed (or ‘line’) charge and then charged a variable rate for actual power use.

On this basis we can propose a revision to the traditional cost allocation spectrum presented in Figure 2 (Section 5.1) as shown in Figure 3.

Figure 3: Revised and Extended Equitable Cost Allocation Spectrum



5.4 DEMAND MANAGEMENT VERSUS COST ALLOCATION

It is worth clarifying the discussion between demand management and cost allocation. While there is no doubt that volumetric charging can drive demand down, to use that as an argument with respect to equitable allocation of costs is to confuse the two issues.

Where driving demand down is a primary objective volumetric charging may well be the most appropriate tool. Tauranga City is the exemplar for this where millions of dollars of capital investment was able to be deferred through reducing demand via volumetric charging. I would note that in Waitakere City where I lived for many years metering was the norm. But it was not metering that had the most significant effect on demand over the last 20 years, rather it was a massive education programme driven by need when supply was threatened to the point of restriction during the 1996 drought. The attitudinal and behavioural changes wrought in that community through leadership by the City Council continue to this day.

One may argue that it is a good thing to reduce water use regardless of whether there is a looming capital investment burden. This is quite true but such decisions must be made with reference to sound risk management that takes account of environmental, economic and social considerations. The inescapable conclusion is that where the environmental and economic benefits of reduced water use do not exceed the implementation and administrative costs the case for metering is flawed and can only be justified on ideological or philosophical grounds. The case is more even more flawed when the split between fixed and volume-based costs is defined with any level of accuracy.

5.5 CONCLUSION TO SECTION

- Universal metering enables the volumetric charging that has traditionally been seen as the most equitable manner in which to allocate costs on a user pays basis. However where fixed costs are a significant proportion of overall costs volumetric charging can in fact create inequity that disadvantages some of the more vulnerable sectors of our communities. In these cases robustly developed targeted rates are inherently more equitable.
- Volumetric charging is acknowledged as a primary tool for demand management however where the cost of implementing and administering metering exceeds the potential savings from reduced demand it is an uneconomic proposition. This is even more pronounced where fixed costs are accurately and appropriately allocated on a per-connection basis.
- Where metering is warranted on the basis of demand management to defer capital investment or protect a scarce water source the electricity industry model of a fixed (‘line’) charge to cover costs not related to volume of supply, supplemented by a variable charge to cover costs that are related to volume of supply is the most transparent and accurate cost allocation model.

6 BETTER LOCAL GOVERNMENT – HAVING THE RIGHT DEBATE

“The Right Debate” is a catchphrase that was originally associated with the LTCCP development and consultation process. In the past few years ‘having the right debate’ has become commonly understood to mean having a conversation with the right people at the right time about the right things in order to achieve the best outcomes for the whole.

What constitutes the right debate depends a great deal on breadth of vision. There is a certain luxury in focussing on a single issue and optimising within narrow constraints, which to a certain extent is what the Water NZ discussion document does. The information can be valid and the conclusions justified within the boundary conditions decided upon for the study but the discussion cannot finish at that point. The range of acceptable outcomes for any single issue must be balanced against every other issue and some give and take will inevitably result before an overall best acceptable solution is arrived at. To believe that some compromise is not required is to believe in a panacea of unlimited resources where we can all achieve the best of everything – we can have the best roads, the best water supply, the most beautiful parks and gardens etc.

Within the context of the water sector reform discussion it is not enough simply to demonstrate that efficiency could be gained within the water sector by undertaking some reform or other. While that may be sufficient for those with only an interest in water, for those with a wider mandate in looking after communities the potential benefits must be weighed against potential dis-benefits across the community.

As noted at the beginning of this paper it is my opinion that a governance and management model for water services could be adapted from international experience and of course it could work. However while I consider New Zealand to be sufficiently similar to other jurisdictions to enable adaptation of other delivery models, our local government is also sufficiently different from many overseas jurisdictions as to warrant caution in doing so.

By way of example in the United Kingdom local councils have a far greater social service role than those in New Zealand. UK Councils have a large mandate in providing social housing and they are involved in schools. In the USA local authorities often provide police, fire and paramedic services as well as social housing and even health services. Water services in those jurisdictions are a considerably lesser proportion of overall activity and expenditure than the equivalent in New Zealand, particularly when we consider our smaller and rural local authorities. Where water services constitute 20% or more of a local authority’s overall activity it is entirely possible that adverse impacts will occur in those communities if water services were to be divested.

This paper is not an attempt to defend the status quo, rather it is intended to raise for discussion the wider implications that mean decisions on water sector reform cannot simply look at water in isolation to truly assess the overall net benefits. With that in mind the discussion on potential water sector reform would be best undertaken as part of the overall Better Local Government reform package – and not done in isolation where unintended consequences could mean a community is actually worse off – even if their water is delivered more ‘efficiently’. It is noted that in the recently released report entitled *Implementing the National Infrastructure Plan in the Water Industry – A Pilot Study*, the authors (PWC and GHD) make the following recommendation:

- We recommend that the findings, and opportunities identified, be incorporated into the infrastructure work stream being established as part of the Better Local Government programme.

It is hoped that an objective, evidence-based and holistic approach will see improvement through change or reform occurring where it is warranted and where unintended consequences don’t create adverse impacts – particularly for smaller communities.

7 CONCLUDING COMMENTS

The title of this paper asks the question “Can one size fit all?” and I started the introduction conceding that of course a single model for urban water services delivery could work for New Zealand. But it is far from certain that one size can optimally fit all and therefore the question remains should one size fit all? And if we are to fundamentally change the way we deliver water services in New Zealand how can we protect the great things about our small communities and allow them to tailor the model to suit their specific needs.

I have raised questions that will need to be answered in the fullness of time. Questions such as to what extent would privately owned water services come under a new regime? Discussion has centred on local authority owned supplies but what about the likes of Raupunga which will have a community-owned water supply? Are we to advocate the nationalisation of private assets?

The academic arguments related to public good and private good can be something of a red herring but it is important that the discussion around water services acknowledges that water is fundamentally important to life and as such will always have a public good element to it – even if delivery of the service can be treated as a private good.

In my view there is considerable discussion still to be had to convince the general populace that volumetric charging is necessary or even economically justified across much of the country. And as discussed above in many circumstances volumetric charging based on a single tariff is actually less transparent, less equitable, and less representative of user pays than a well-constructed targeted rate.

Finally – my firmly held belief is that while there is considerable room for improvement across the broad spectrum of services delivered by local government in New Zealand, equally there is great potential for significant adverse impacts on small communities if water services (or other) reform proposals are not assessed within the wider context of local government service delivery. The appropriate forum to progress these discussions is in the forthcoming infrastructure review as part of the Better Local Government package.

ACKNOWLEDGEMENTS

For advice, commentary and support Geoff Swainson of Local Government New Zealand and The Board of INGENIUM – in particular the water sub-committee.

REFERENCES

GHD Ltd and PWC Ltd, (2012) *Implementing the National Infrastructure Plan in the Water Industry*

Water New Zealand, (2011), *Future Face of Urban Water Services in New Zealand? A Discussion Document*