Memorandum

To: Stace Lewer

From: Ian Dickson

Date: 27 July 2021

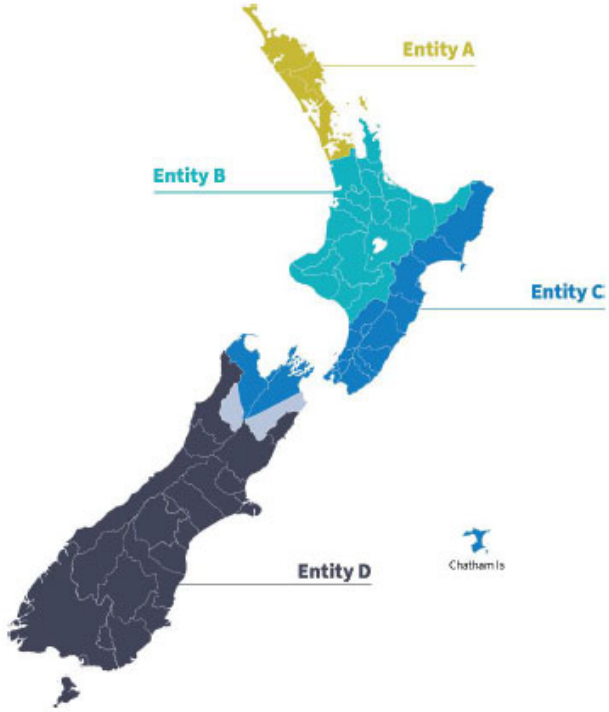
Subject: THREE WATERS REFORM: HOW SHOULD ŌPŌTIKI DISTRICT COUNCIL RESPOND?

Introduction

1. This paper summarises our findings from a preliminary review of the DIA Three Waters (3W) reform proposal and a limited early review of the financial model for the Ōpōtiki District Council supplied by DIA. The purpose of this paper is to provide inputs to a Council workshop to be held on 28 July 2021.

Overview

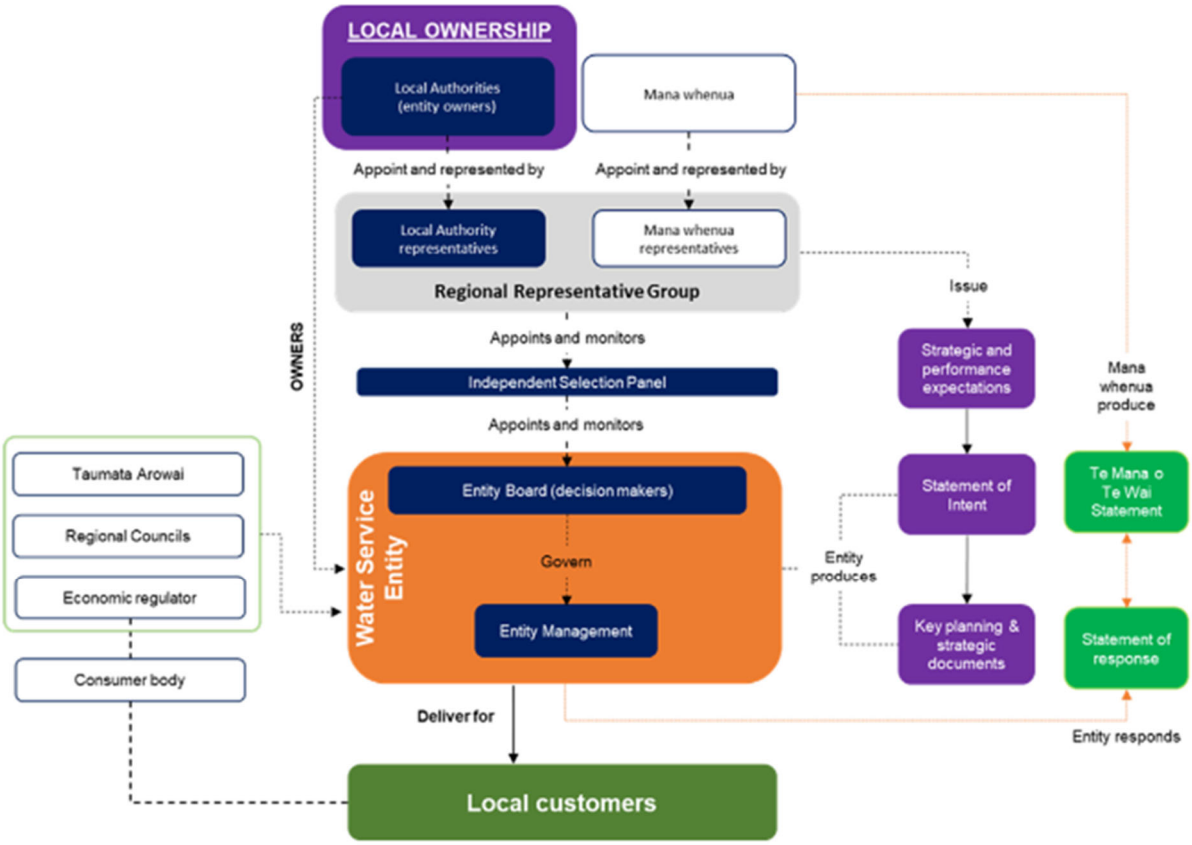
Figure 1 Proposed 3W Entity Boundaries



	Entity A	Entity B	Entity C	Entity D
Connected population (2020)	1.7m	0.8m	1.0m	0.9m
Average household cost (2051, real)[1]				
With reform	$800	$1,220	$1,260	$1,640
Without reform	$2,170	$4,300	$3,730	$4,970

2. The proposal is:
   (a) Four entities to take over drinking water, stormwater and wastewater from 67 councils.
   (b) Based on research showing a "U"-shaped $/citizen cost curve:
      (i) <100,000 too small to generate scale efficiencies.
      (ii) 600,000 to 800,000 is optimal.
   (c) Entities to be more closely regulated:
      (i) Service delivery and water quality standards.
      (ii) Charges (likely to the Commerce Commission's Input Methodologies, i.e., rate of return regulation).
   (d) Entities to be "owned" by local authorities, BUT no shareholding and no financial recognition of ownership stake, i.e., local authorities have limited decision rights" only.

Figure 2 Ownership & Governance Arrangements for 3W Entities



3. Benefits include:
   (a) Balance-sheet separation from debt-constrained councils.
   (b) The ability to spread [fixed] costs across larger areas over time.
   (c) Operational efficiencies [where these exist].
   (d) Career pathways in the water industry into the future.
4. Transaction mechanics. Three stages:
   (a) Separation of 3W assets and operations from Councils.
   (b) Establishment of 4 x 3W entities.
   (c) Amalgamation of assets and operations.
5. Issues:
   (a) Are there feasible combinations of communities that reach 100,000 citizens?
      (i) Greater Wellington is 450,000 so it is sub scale according to the model.
   (b) Are there enough avoidable fixed costs for amalgamations to make a difference?
   (c) Sunk costs and “stranded assets”
   (d) Transition mechanics and costs.
   (e) Tooth to claw ratio (TTR) and “management caravans”.
   (f) IT.
   (g) Are the “benefits” realisable?
   (h) Is the Scottish Water example relevant given:
      (i) Higher urban density in Scotland and generally larger small conurbations.
      (ii) What was the situation giving rise to big cost savings post-2002?
   (i) Reviews by FarrierSwier and BECCA:

(i) FarrierSwier:

" . . . we cannot provide an opinion on whether the forecasts and estimates generated by WICS by applying its methodology and assumptions are reasonable. Given this, we have focused our review on whether the modelling is likely to give estimates that are appropriately either positive or negative (i.e., direction) and are at an appropriate scale (i.e. order of magnitude)."

(ii) BECCA:

"On balance, the predictions from WICS modelling may well underestimate the necessary investment costs and could give overly optimistic timeframes for implementation due to supply chain limitations in New Zealand, and the pressures of managing and delivering improvement and asset renewals backlogs simultaneously."

Can it work?

6. There are three sources of savings from mass production of products and services:
   (a) Economies of scale are factors that cause the average cost of producing something to fall as the volume of its output increases.
   (b) Economies of scope are factors that make it cheaper to produce a range of products or services together than to produce each one of them on its own.
   (c) Managerial economies are a special case of economies of scale and scope that arise from specialisation of internal managers.
7. However, economies of scale and scope can have a dark side, called "diseconomies". The larger an organisation becomes in order to reap economies of scale and scope, the more complex it has to be to manage and run itself. This complexity incurs a cost, and eventually this cost may come to outweigh the savings gained from greater size.
8. What does the New Zealand evidence show? Key conclusions from NZIER:
   (a) Population served is only a partial driver for service delivery costs.
   (b) At a functional level the existence of scale economies can be observed, but:
      (i) Scale economies peak at fairly low level of served population.
      (ii) The served population peaks vary widely for different service functions.
   (c) Therefore, it is important to look at potential cost savings on a functional basis, not an organisation-by-organisation basis.
9. Auckland and Wellington already have substantially or completely centralised the delivery of drinking water. i.e., the low-hanging fruit is already harvested.
10. Evidence from NZ Statistics:

Table 1 Relationship between Sector-wide Local Authority Costs and Population

Includes District, Regional and Unitary Authorities

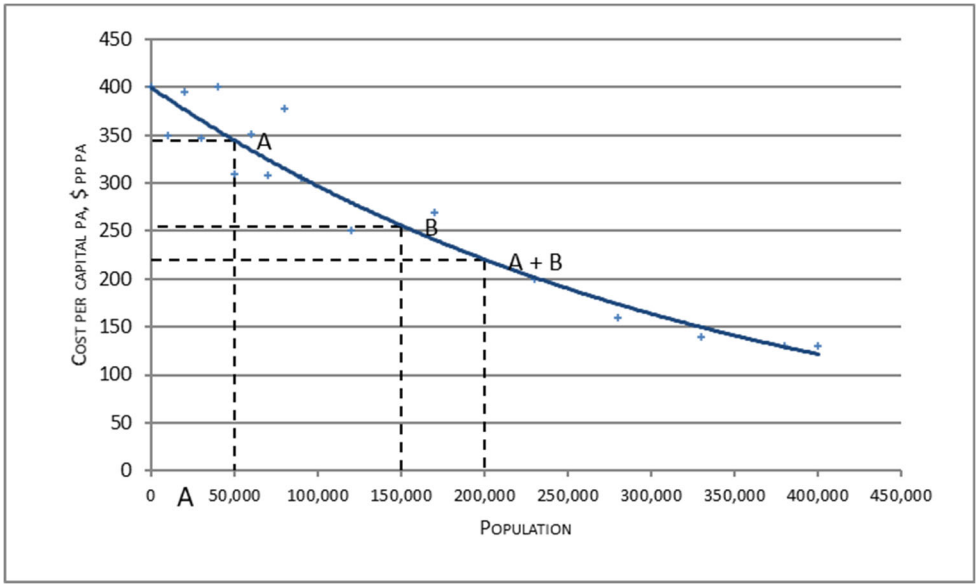
Service	Populations with lowest per capita spend	Change in cost as population increases	> with population	~ with population	< with population
Roading	150,000 and 350,000	Rapid decline for populations below 100,000 then almost flat	..	..	17%
Transport	Less than 50,000	Rapid increase with population	10%	..	
Water supply	250,000 to 400,000	Gradual decline as population increases		..	6%
Waste & storm water	350,000 to 400,000	Initial increase with population peaking for populations of 150,000 to 200,000 and 450,000	9%	..	..
Solid waste	150,000	Rapid decline for populations below 150,000 then almost flat	..	..	4%
Environmental protection	400,000 to 450,000	Gradual decline as population increases	..	..	3%

Culture	Less than 50,000 and 350,000	Increases as population rises, peaks for populations of about 150,000 to 200,000 but varies widely for higher populations	5%	..	..
Recreation and sport	50,000 and 400,000	Increases as population rises, peaks for populations of about 150,000 to 200,000 and then declines	8%	..	..
Property	50,000 and 400,000	Increases as population rises, peaks for populations of about 200,000 to 250,000 and then declines	..	5%	..
Emergency management	200,000 and over	Initial decline as population increases, but rate of decline slows	..	..	1%
Planning and regulation	350,000 to 400,000	Decline for populations below 100,000 then almost flat	..	..	6%
Community development	40,000 to 80,000	Initial decline as population increases then gradual increase	..	2%	..
Economic development	Up to 350,000	Varies in a narrow band for populations up to 300,000 and then increases	..	2%	..
Governance	Above 80,000	Initial decline as population increases, then flat	..	2%	..
Council services	Little change with population	Fluctuates in a narrow band	..	18%	..
Other activities	Little change with population	Fluctuates in a narrow band	..	2%	..
Total			**32%**	**31%**	**37%**

11. Conceptually, the case for combining sub-scale entities rests on a sharply downward sloping costs curve.

Figure 3 Concept for Efficiencies from Amalgamating Sub-scale Entities

"A" and "B" are sub-scale entities. Combining them into "A+B" lowers overall costs.

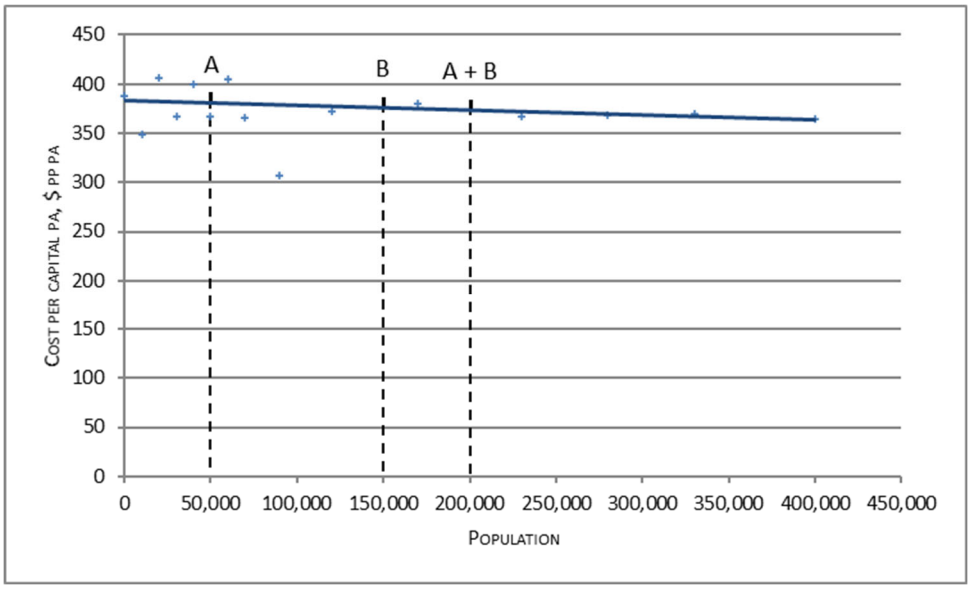


A	344 x 50,000	=	17,000,000
B	255 x 150,000	=	38,000,000
Total			55,000,000
A + B	220 x 200,000	=	44,000,000
Saving			11,000,000

But what if"

Figure 4 What if there are few Efficiencies from Amalgamating Entities

Combining "A" and "B" into "A+B" makes little difference to overall costs.



12. In this example where the costs curve is virtually flat across served population ranges, the benefits of combining A and B into A + B are 1 percent of combined costs.

But what are the costs entailed in such a reorganisation?

13. Cost:
    (a) Separating 3W assets and operations from Councils:
        (i) Stranded assets e.g., systems, premises etc. What are the costs?
        (ii) Is the residue viable?
        (iii) Coordination with new 3W entity.
        (iv) Costs of transition.
    (b) Establishment of 4 x 3W entities:
        (i) Tooth to claw ratio[1] and "management caravans"[2].
        (ii) IT systems time and cost. Government's track record with IT is appalling.
        (iii) Sclerosis in the transition phase.
    (c) Amalgamation of assets and operations.

What should ODC do?

14. A decision tree:
    (a) Can be used as a model for a sequential decision problem under uncertainty.
    (b) Describes graphically:
        (i) The decisions to be made.
        (ii) The events that may occur.
        (iii) The outcomes associated with combinations of decisions and events.

        Probabilities are assigned to the events, and values are determined for each outcome.

        The goal of the analysis is to determine the best decision based on available knowledge and a structured approach to decision making.

[1] Tooth to tail ratio is a military term that refers to the amount of military personnel it takes to supply and support (tail) each combat soldier (tooth). The tail includes logistical, life support, headquarters and administration.

[2] The true costs of hiring another manager ranged from 2 FTE for a line manager to 4.2 FTE for a senior manager.

(c) Can be used to determine least-cost or highest value course of action.

[Talk Through DT]

15. Work in progress:
    (a) Tree structure designed based on apparent choices and uncertainty about whether 3W Reform will be mandatory.
    (b) Ranges for probabilities assigned.
    (c) Values for outcomes yet to be determined:
        (i) Value of compensation available to ODC beyond $18.7 earmarked.
        (ii) Value of potential future costs avoided (including costs of tighter regulation).
16. As more information comes to hand the decision tree will be updated.
