

MEMORANDUM

To: Jamie Cox, Wairoa District Council

From: Hamish Lowe, Lowe Environmental Impact

Date: 20 October 2017

Subject: A6I1 – Preliminary Assessment of values for wastewater discharge

INTRODUCTION

The second meeting of the Wairoa Wastewater Scheme Stakeholder Group was held on 4 May 2017. A key aim of the meeting was to identify values that Group members consider important for wastewater management in the Wairoa area. The issues identified will form the basis for assessing which wastewater management (treatment and discharge) options to further investigate. These issues reflect the stakeholder values and may (hopeful and likely) be aligned with the wider community values.

This memo provides a summary of the workshop process that was undertaken to identify issues and to assign the relative importance to the issues.

ESTABLISHING KEY VALUES FOR AN OPTION ASSESSMENT

There is a wide range of options available for the management of wastewater components. Between each component there is a wide range of combinations of network improvements, treatment improvements, reticulation distances, storage sizes and discharge environments. Figure 1 provides an example of a small selection of combinations of options for individual components.

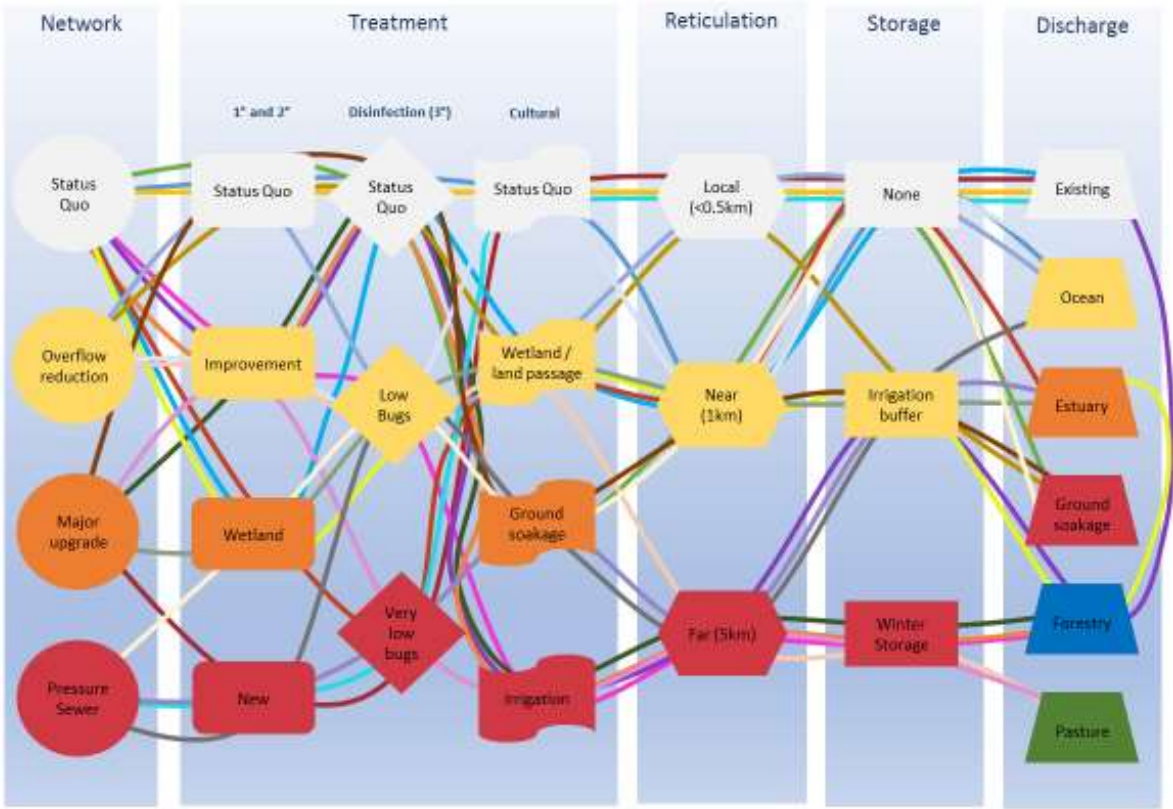


Figure 1: Option Combinations for Wairoa Wastewater Management

Historically the cost, and more recently the environmental impact, of options have been the key factors for determining a preferred option. Recently a greater understanding of the importance of non-cost aspects of options are being taken into account. This changing approach, of being more encompassing and looking at aspects other than costs and environmental effects, is now incorporated into regulatory processes. This means that the non-cost benefits are recognised and must be considered in the development of a **best practicable option (BPO)**.

Cost has been a simple quantitative measure, making an option evaluation a relatively straightforward process. The inclusion of non-cost benefits requires new methodologies to narrow the options and eventually to select a best practicable option.

Any discharge option assessment benefits from consideration of a quadruple bottom line approach. There are four pillars of this approach as shown in Figure 2, and each need to be balanced to enable the development of the **BPO**.

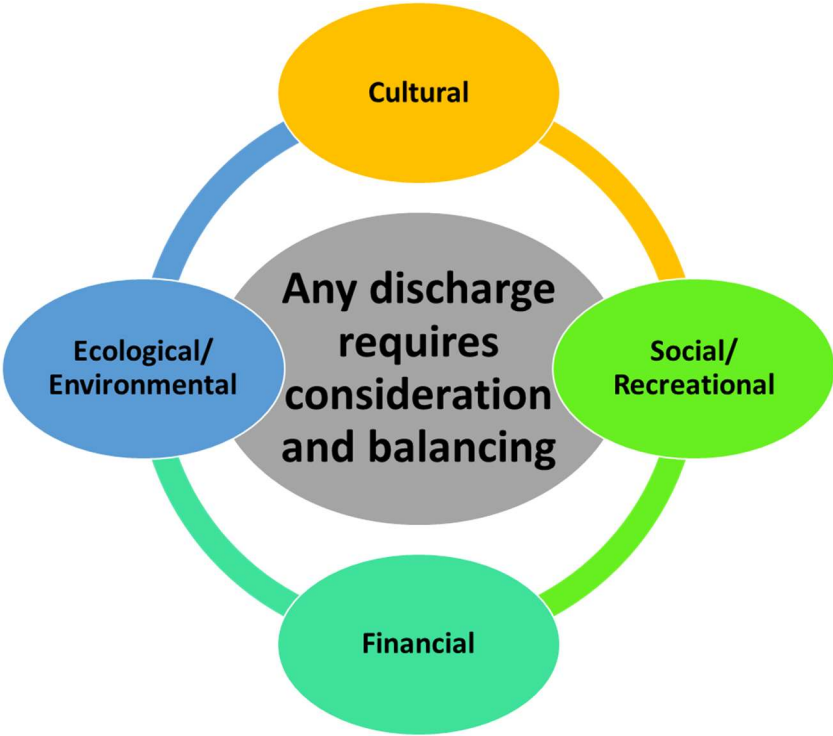


Figure 2: Pillars for Assessment of Best Practicable Option

Developing criteria for assessing each pillar requires values associated with that pillar to be established. Values tend to be highly subjective, necessitating consultation with those groups and people who are affected by decisions over wastewater management.

WDC has formed a Wairoa Wastewater Scheme Stakeholder Group, who are tasked with, amongst other things, assisting to guide the development of criteria for assessing the wastewater options and ultimately a BPO. The meeting on 4 May 2017 included a workshop exercise to identify and rank values that are held by the Stakeholder Group.

WORKSHOP METHODOLOGY

The purpose of the workshop (which was part of a meeting covering other issues) was to provide an opportunity for participants to identify what they considered was important to them. A key aspect of the exercise is soliciting individual opinion from all, rather than the opinion of the vocal minority. To assist this process the group was divided into groups of three people. This was done to enable ideas to be "bounced around" while ensuring that not only the "loudest voices" are heard. Figure 3 shows the process undertaken by the small groups.

In groups list on separate post it notes 10 factors important to your group when considering wastewater treatment and discharge

Order them in priority of 1 to 10

Sort them into the four pillars

Figure 3: Initial Factor Development

Following this initial task, the groups came back together, and the factors identified were incorporated as shown in Figure 4.

Take time to read them

Each person take 5 dots and allocate to a comment (group of comments)

Figure 4: Grouping and Ranking of Factors

Following the workshop, data from the four sheets representing the four pillars has been grouped according common issues and scored according to the number of dots assigned by stakeholders to each factor. The results of the analysis are outlined below.

RESULTS FROM THE WORKSHOP

For each pillar, the number of dots provides an overall score which demonstrated its importance within the issues of each pillar and also its relative importance across all four pillars. Figure 5 shows what proportion of the dots assigned by the stakeholders were for each pillar. In order of ranking the relative importance of each of the pillars is:

1. Cultural values;
2. Environmental values;
3. Financial considerations; and
4. Recreational values.

Of note, the first three pillars are separated by 2% each, suggesting relative importance is fairly even between them. The distant placing of the Recreational values may be a result of considering that, if the others are taken care of, recreational values are likely to be protected too.

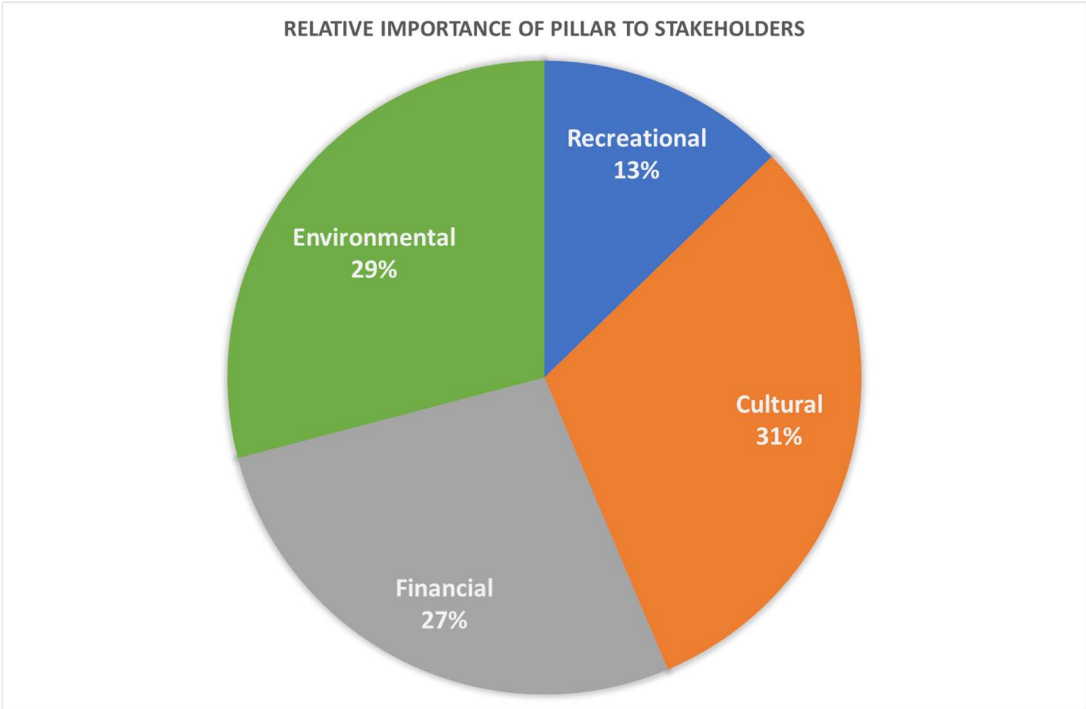


Figure 5: Overall Scores for Each Pillar

Within each pillar individual issues were grouped. Table 1 (attached) shows each issue, the score for each issue, the rank against other issues within the pillar and the overall rank against all other issues. Figure 6 shows the issues and their scores.

The Environmental and Recreational pillars resulted in the broadest range of issues, highlighting the wide range of considerations within these two Pillars. For the Cultural and Financial pillars, a high importance was placed on a more refined range of issues.

The overall ranking indicates the issues of most concern for Stakeholders. Table 2 (attached) shows the ranking for each issue.

The highest scoring issue (score of 9) was the consideration of:

Toitu te whenua, Toitu te moana, Toitu te iwi

This is essentially a concept of cultural sustainability. The holistic and encompassing nature of this issue may have influenced its score, in that it covers a broad range of issues important in Maoridom.

Other high ranked issues include:

<i>Need to invest in sustainable infrastructure with appropriate capacity</i>	(score of 7)	This issue could be broadly interpreted as meaning stakeholders consider the value of "future proofing" the infrastructure is high.
<i>Spread the payment over time</i>	(score of 6)	This may be seen as a method by which higher cost, but lower impact options can be achieved for the community.
<i>Enhance the quality of water to protect habitat</i>	(score of 5)	This issue was the fourth ranked option indicating that the primary environmental

		concern is water and its ability to support ecological health.
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All issues and the indication of their score is summarised in Figure 6 below.

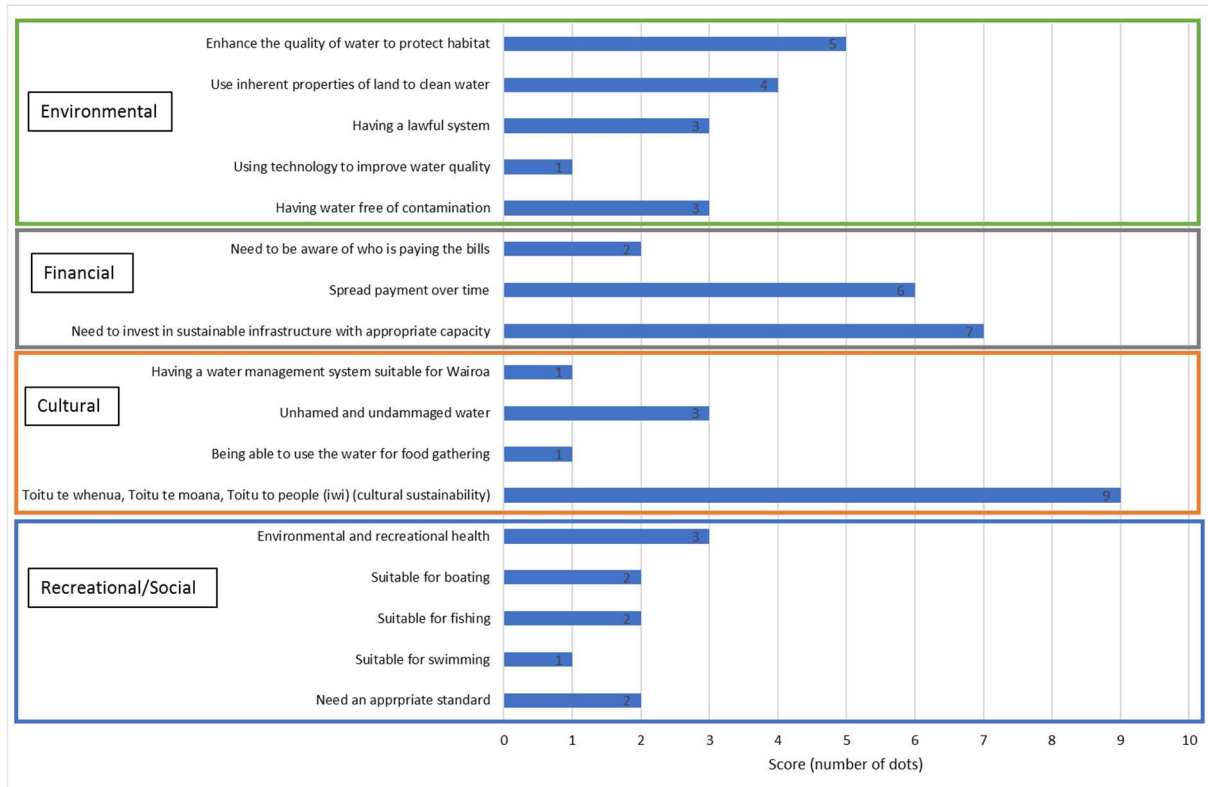


Figure 6: Scores for Each Issue

SUMMARY

This value setting exercise forms the basis for developing criteria to assess the options for wastewater management in the development of a **BPO**. In particular, the factors determined will assist with developing a qualitative or quantitative measure of the non-cost considerations. The aim will be to enable a multi criteria decision making process to be used to allow options to be evaluated on their importance to the community. Such a process is summarised in Figure 7 below.
















	Option 1	Option 2	Option 3
Environmental			
Recreational			
Financial			
Cultural			
Workable			

Figure 7: Concept of Multi-Criteria Analysis

The primary issue for selecting a preferred option (BPO) is that it should address and meet cultural aspirations of being culturally sustainable. The next two issues were affordability, being how much should be spent, and the term of any debt servicing. Potentially these three Issues could be developed to provide a simple “yes” or “no” with regard to the acceptability of any option.

The exercise has identified that cultural, financial and environmental considerations should take precedence in the evaluation. Each of these should be considered with a similar credence. However, within each pillar the number of assessment criteria is likely to reflect the range of issues identified (Table 1 and Figure 6).

ATTACHMENTS

Table 1: Issues, Scores and Ranking

Pillar	Comment	Score	Rank in Pillar	Rank over all
Recreational	Need an appropriate standard	2	1	10
	Suitable for fishing	2	1	10
	Suitable for boating	2	1	10
	Suitable for swimming	1	4	14
Cultural	Toitu te whenua, Toitu te moana, Toitu te iwi (cultural sustainability)	9	1	1
	Environmental and recreational health	3	2	6
	Unharmd and undamaged water	3	2	6
	Being able to use the water for food gathering	1	4	14
	Having a water management system suitable for Wairoa	1	4	14
Financial	Need to invest in sustainable infrastructure with appropriate capacity	7	1	2
	Spread payment over time	6	2	3
	Need to be aware of who is paying the bills	2	3	10
Environmental	Enhance the quality of water to protect habitat	5	1	4
	Use inherent properties of land to clean water	4	2	5
	Having water free of contamination	3	3	6
	Having a lawful system	3	3	6
	Using technology to improve water quality	1	5	14

Table 2: Overall Ranking

Pillar	Comment	Rank Overall
Cultural	Toitu te whenua, Toitu te moana, Toitu te iwi (cultural sustainability)	1
Financial	Need to invest in sustainable infrastructure with appropriate capacity	2
Financial	Spread payment over time	3
Environmental	Enhance the quality of water to protect habitat	4
Environmental	Use inherent properties of land to clean water	5
Cultural	Environmental and recreational health	6
Cultural	Unharmful and undamaged water	6
Environmental	Having water free of contamination	6
Environmental	Having a lawful system	6
Recreational	Need an appropriate standard	10
Recreational	Suitable for fishing	10
Recreational	Suitable for boating	10
Financial	Need to be aware of who is paying the bills	10
Recreational	Suitable for swimming	14
Cultural	Being able to use the water for food gathering	14
Cultural	Having a water management system suitable for Wairoa	14
Environmental	Using technology to improve water quality	14