BEFORE HEARING COMMISSIONERS
IN HURUNUI

UNDER THE	Resource Management Act 1991 ("**Act**")
IN THE MATTER OF	Notified resource consent applications **RC220060** and **RC220072** for subdivision and land use consent for Stages 3-6 of a multi-staged residential development known as "The Clearing", located at 64 Amberley Beach Road and 187 Carters Road, Amberley
BETWEEN	**UWC LIMITED** Applicant
AND	**HURUNUI DISTRICT COUNCIL** Consent authority

SUPPLEMENTARY STATEMENT OF EVIDENCE OF GARY NOEL STEVENSON

Commissioner: Dean Chrystal (Chairperson)

Commissioner: Dave Smith

INTRODUCTION

1. Please find my response below to the Minute 3 questions 6 bullet point 3 in regard to stormwater attenuation and 7 ii in regard to the lifetime costs of the Filterra System.

INFORMATION REGARDING THE FREQUENCY WITH WHICH THE ATTENUATION BASIN WOULD HAVE AT LEAST 1M OF WATER.

2. The expected frequency that water would pond to a depth of 1 m or more in the proposed attenuation basin to be formed in Dry Gully is annually. This is assuming climate change increased rainfall to the year 2081-2100 with an increase in carbon in the atmosphere following the RCP 8.5 (a pathway which assumes high future emissions). Though this could change

with detailed design of the discharge control from the basin it isn't expected to change significantly.

3. To give a greater understanding of the speed at which the basin may fill to a range of depths, and hence time people may have to walk out. The Table below gives the time to fill to a range of depths in a range of events.

Time to Reach Depth					
Depth	**Average Recurrence Interval Event**				
	1-year	2-year	5-year	10-year	50-year
1 m	1 hr	30 min	15 - 20 min	15 mins	10 - 15 mins
1.5 m	-	6 hrs	100 min	80 mins	30 min
2 m	-	-	-	300 mins	75 min

4. Again, these numbers will change with detailed design as the calculations can be refined but are not expected to change significantly.

ASSESSMENT OF THE LIFETIME COSTS OF THE FILTERRA SYSTEM.

5. The purpose of this assessment is to compare the Net Present Cost for both the Filterra and First Flush Basin over a term of 25 years and interest rate of 6.3% assuming a risk-free discount rate of 4.3% and inflation of 2%.

6. Stormwater360 have provided information that filter media in service for 20 years has not needed replacement with mulch replaced at the specified intervals. There was an instance where media was replaced when exposed soil in a 1:100 year flood event eroded and clogged the media requiring the top 100 mm of media to be replaced.

7. Based on Stormwater360 response I have assumed that at the end of 25 years use that the Filterra will require the removal of mulch and the top 100 mm of media to be disposed to landfill. I have assumed that vegetation will be salvaged. Stormwater360 have provided a rate of $600 per cubic metre replacement cost for media.

8. Table 1 below shows the estimated cost to replace 100 mm depth of media, mulch, and reinstate vegetation at today's price.

Table 1: Part media replacement costs in todays prices.					
Item	**Unit**	**Quantity**	**Rate**	**Total**	**Comment**
Media cost (100 mm thick)	m^3	47.5	$600.00	$28,500.00	Filter area is 475 m2
Remove and replace media	LS	1	$5,000.00	$5,000.00	1-2 days scrape and remove
Dump Fee	m^3	47.5	$200.00	$9,500.00	Assumed vegetation is salvaged
Replacement mulch	LS	1	$14,000.00	$14,000.00	Includes removal of existing mulch
Total				**$57,000.00**	

9. I have calculated the net present value over 25 years at the interest rate of 6.3% of a mixed stream of both annual mulch maintenance of $14,000 per year from year 3 (consent holder responsible for first 24 months maintenance period) and part media replacement cost of $57,000 at year 25.

10. I also completed a similar assessment for the first flush basin assuming maintenance costs of $9,000 per year over 25 years excluding the first 2 years of maintenance.

11. Table 2 below shows the NPV for Filterra and first flush basin over 25 years.

Table 2	
Item	**NPV, 6.3% over 25 years**
Filterra	$157, 750
First Flush Basin	$95,410
Difference	**$62,340**

12. The difference of $62,340 between the two options represents the additional cost of the Filterra in today's dollars when assessed over a 25 year term.

13. Find enclosed Net Present Worth Assessments for both options.

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Gary Stevenson
13 June 2023

Net Present Worth Assessments

COMPUTING THE FUTURE VALUE OF MIXED STREAM	
Filterra Net Present Worth	
Discount + Inflation rate	6.30%
Number of years	25
Year	**Cash flow**
1	$ -
2	$ -
3	$ 14,000.00
4	$ 14,000.00
5	$ 14,000.00
6	$ 14,000.00
7	$ 14,000.00
8	$ 14,000.00
9	$ 14,000.00
10	$ 14,000.00
11	$ 14,000.00
12	$ 14,000.00
13	$ 14,000.00
14	$ 14,000.00
15	$ 14,000.00
16	$ 14,000.00
17	$ 14,000.00
18	$ 14,000.00
19	$ 14,000.00
20	$ 14,000.00
21	$ 14,000.00
22	$ 14,000.00
23	$ 14,000.00
24	$ 14,000.00
25	$ 57,000.00
Net Present Value	$157,752.32

COMPUTING THE FUTURE VALUE OF MIXED STREAM	
First Flush Basin Net Present Worth	
Discount + Inflation rate	6.30%
Number of years	25
Year	**Cash flow**
1	$ -
2	$ -
3	$ 9,000.00
4	$ 9,000.00
5	$ 9,000.00
6	$ 9,000.00
7	$ 9,000.00
8	$ 9,000.00
9	$ 9,000.00
10	$ 9,000.00
11	$ 9,000.00
12	$ 9,000.00
13	$ 9,000.00
14	$ 9,000.00
15	$ 9,000.00
16	$ 9,000.00
17	$ 9,000.00
18	$ 9,000.00
19	$ 9,000.00
20	$ 9,000.00
21	$ 9,000.00
22	$ 9,000.00
23	$ 9,000.00
24	$ 9,000.00
25	$ 9,000.00
Net Present Value	$95,410.82