

Activity Management Plan 2021 Summerhill-West Eyreton Water Supply Scheme

3 Waters | July 2021



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1 Executive Summary

The following table provides a summary of the key asset management components that have been assessed for the Summerhill-West Eyreton Water Supply Scheme. These have been identified through consideration of the levels of service, consents, asset condition, risk analysis, disaster resilience, growth projections, and capacity assessment:

Resource Consents	The scheme continues to comply with its resource consent conditions.
	Most levels of service are now being met. Those that don't relate to flow, losses and storage.
Levels of Service	Flow for restricted connections does not meet the LoS because of insufficient data, which the restrictor inspection programme will address with time. For the losses LoS,
	implementation of actions within the Water Conservation Strategy is required before LOS can be met.
	The provision of additional storage has been brought forward, funded from the Covid-19 stimulus grant, and will be complete by 2021/22
Capacity & Performance	The capacity of the well supply, headworks, treatment works and reticulation has been assessed as being capable of meeting current demand, although redundancy requirements need further analysis. The opportunity is being taken from the Covid-19 stimulus grant to bring forward a planned
	increase in storage which will be completed by 2021/22
Asset condition	The majority of the scheme is in good condition.
Risk Assessment	There are no extreme or high risks in the West Eyreton - Summerhill water supply scheme.
Disaster Resilience	The Disaster Resilience Assessment indicates the Hunter Glen Reservoirs, David Road Pump Station and West Eyreton headworks are all a high security hazards due to risk of public interference. These facilities also require further earthquake resilience assessments. The
	David Road Pump Station is a high wildfire hazard, requiring further resilience assessment.
Growth Projections	Connections on the scheme are predicted to increase by 86% in the next 50 years. Upgrades of the treatment and distribution system are programmed to accommodate this growth.

Table 1: Key Asset Management Components

2 Introduction

The purpose of this Activity Management Plan (AMP) is to:

- Provide an overview of the West Eyreton Summerhill water supply scheme and the assets that make up the scheme;
- Outline any significant issues associated with the assets, and show how the Council will manage these;

This plan summarises the various components of the West Eyreton - Summerhill water supply scheme, its condition and performance, and identifies future funding requirements including upgrades where necessary.

The data that has been relied upon to produce this document was taken at the end of the 2019/20 financial year (i.e. 30 June 2020). There are more up to date scheme statistics available on document <u>121108078783</u> which is intended to be updated quarterly.

Further details of the asset management practices used by Council to manage this scheme are summarised in the District Water Supply AMP Overview document (200120006283).

Projects identified to improve asset management processes for this scheme will also benefit the performance of other 3 waters schemes and are managed at a District level for efficiency.

Projects are also identified within this AMP that will maintain or improve levels of service.

All figures within this AMP exclude inflation.

3 Related Documents

The following related documents have been used as reference documents or for guidance in the development of some of the sections in this Activity Management Plan

- Waimakariri District Plan
- Population in the Waimakariri District (TRIM 170328030077)
- New Projections for LTP 2021-2031 (TRIM 200908117997
- WDC Asset Management Policy (TRIM 180605062091)
- 2019 Customer satisfaction Survey (TRIM 200313034937)
- Development Contributions Policy 2021/22 (TRIM 200729095963)

4 Scheme Description (What Do We Have?)

The West Eyreton - Summerhill Water Supply Scheme is a rural restricted water supply serving properties in both the West Eyreton and Summerhill areas.

West Eyreton and Summerhill used to be separate schemes, however in 2011 the Summerhill scheme was joined to the West Eyreton scheme as a means of upgrading the source for Summerhill. While the schemes are joint physically, they remain separate financially, with separate rates for the two schemes.

The water is sourced from two deep secure wells located at the West Eyreton headworks. The first deep well was drilled in 2005, and a second deep well commissioned in 2018 to provide additional redundancy. The water is treated with chlorine disinfection.

The source water complies with both the bacteriological and protozoal requirements in the Drinking Water Standards for New Zealand (DWSNZ).

The old river gallery source that previously supplied the Summerhill Water Supply Scheme has been abandoned.

There are also plans to supply the Poyntzs Road scheme from the West Eyreton headworks. At the time this document was being drafted, this project was planned to be completed by June 2021. Due to uncertainties around the timing of this project, which were exacerbated by the Covid-19 pandemic in 2020, the Poyntzs Road scheme has a separate AMP, and is not considered further within this document.

Some key statistics (2019/20 year) of the scheme are shown in Table 2 to 6. The extent of the currently serviced area and comprehensive flow data records are presented in Figure 25 and Figure 27.

A schematic view of the principal source, treatment, and distribution system is presented in Figure 1.

Scheme Parameter Statistics		Source		
Type of Supply	Rural restricted			
Principal Source	2 x deep secure groundwater wells at West Eyreton headworks			
Back-up Source	Non-secure shallow well headworks	at West Eyreton		
Treatment	Chlorine disinfection			
	West Eyreton	Summerhill		
Nominal Storage Capacity	60,000 litres West Eyreton Headworks (shared with West Eyreton scheme)	79,000 litres Hunters Glen reservoirs (5 tanks) 30,000 litres Davis Road pump station tank	<u>200121007544</u>	
Length of Reticulation	12.9 km	46.7 km		
Total Replacement Value	\$1.82 mil	\$4.37 mil	Water Asset Valuation	
Depreciated Replacement Value	\$1.47 mil	\$3.54 mil	53 - 55.	
Number of Connections	74	186		
Number of Rating Charges	256 units	532 units	2019/20 Rates Strike	
Average Daily Flow (5 year average)	99 m³/day	289 m³/day	Flow Data Analysis -	
Peak Daily Flow (5 year average)	166 m³/day	458 m³/day	Water	
Resource Consent Abstraction Limit (West Eyreton well no. 1 and 3)	15,120 m ³ per 7 day period (2,160 /day) (expires 10 Dec 2044)		CRC186214 200409044078	
Average Daily Flow per Connection (5 year average)	1,394 l/day/con 1,629 l/day/con		Flow Data Analysis -	
Peak Daily Flow per Connection (5 year average)	2,338 l/day/con	2,577 I/day/con	Water	

Table 2: Scheme Statistics for 2019/2020

Water Supply pipe length (m) by diameter and pipe material					
Pipe Diameter (mm)					
Pipe Material	< 50	50	100	150	Total
PE	0m	20,610m	47m	114m	20,771m
PVC	4,989m	8,289m	3,705m	8,972m	25,955m
Total	4,989m	28,900m	3,751m	9,086m	46,725m

Table 3: Water Supply Pipe Data Summary - Summerhill

Table 4: Water Supply Pipe Data Summary – West Eyreton

Water Supply pipe length (m) by diameter and pipe material				
Dine Material		Pipe	e Diameter (mm)	
	< 50	50	100	Total
PE	1,027m	7,156m	0m	8,183m
PVC	0m	307m	4,426m	4,734m
Total	1,027m	7,464m	4,426m	12,917m

Table 5: Water Supply Valve Data Summary -Summerhill

Water Valves		
Diameter (mm)	Count	
< 50	40	
50	48	
100	4	
150	1	
Total Valves	93	
Fire Hydrants	9	

Table 6: Water Valve Data Summary - West Eyreton

Water Valves		
Diameter (mm)	Count	
< 50	2	
50	11	
100	10	
150	0	
Total Valves	23	
Fire Hydrants	2	

Table 7: Data References

Data Reference	Trim Reference
Flow Data Analysis - Water	<u>121108078783</u>
2020 3 Waters Asset Valuation	<u>200824109857</u>
2020 Water Conservation Strategy	<u>200501050668</u>
2020 50 Year Water and Sewer Growth Forecast	<u>200224024348</u>
2018 West Eyreton Summerhill Water Safety Plan	<u>180419043059</u>
2018 West Eyreton Summerhill System Assessment	<u>180226019573</u>
2013 Public Health Risk Management Plan – West Eyreton/Summerhill	<u>130624047417</u>
2012 Water Supply System Assessment	<u>130624047413</u>
2020 Fire Fighting Code of Practice Compliance Update	<u>200904117110</u>

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Table8: Network Schematic

Activity Management Plan 2021 Summerhill-West Eyreton Water Supply Scheme

5 Scheme Management Issues (What Do We Need to Consider?)

There are a number of key aspects to consider when managing a water supply; these include:

- Target & actual levels of service
- Asset condition & criticality
- Capacity & performance of the supply
- Risks associated with the supply
- Growth predictions for the scheme

These issues have been assessed in detail and are explained in the following sections.

5.1 Levels of Service

Table 8 sets out the performance measures and targets specific to the Summerhill water scheme, and performance achievement against targets since 2008.

Mandatory performance measures are measured at the district wide level and are not included in the individual water supply scheme AMPs. They are located in the District Overview Water Supply Activity Management Plan. However there is considerable overlap between the measures at Scheme and District levels. Mandatory measures cover drinking-water standard compliance, water losses, time to respond to faults, and complaints. The scheme LOS measures also include drinking-water standard compliance, water losses and outages, among other measures. However, within the scheme AMP, these are assessed at the scheme level rather than at a district level. These scheme level results then feed into the district level results in the overview document.

None of the WDC targets are planned to change over the 10 year LTP period, so only the one target value has been shown in this document.

Performance in Table 8 is measured against the performance measures set in 2018, as part of the 2018-28 Long Term Plan process. Going forward from 2021 onwards, performance will be against the modified set of performance measures that were presented to the Council's Utilities and Roading Committee in 2020 (refer report 200406043184[v2]), and subsequently approved by Council. These revised levels and targets are detailed in the District Overview Water Supply Activity Management Plan.

Table 9: Elective (non-mandatory) Levels of Service Targets and Performance Measures as Assessed in 2020

* Note "Y" indicates that the LOS has been met, and "N" indicates it has not been met

* Details of performance measures may have been modified between various revisions of the AMP. The Previous Results reported are as assessed against the most relevant performance measure at the time of assessment.

		2018 - 2021 Porformanco	2018 - 2021		2020				Previous Results#			
Section	Level of Service	Measure	Target	Result	Commentary	Status	Action to Address	2017	2014	2011	2008	
Resource Consents	Consent Breach — Action Required	Number breaches of consent conditions that result in an ECan report that identifies compliance issues.	Nil/yr	Nil	No non- compliance reports from ECan.	Achieved	NA	Y	Y	Y	Y	
DWSNZ	DWSNZ - Aesthetic Compliance	Water supply delivers water that complies to a standard suitable for compliance with the aesthetic requirements of DWSNZ	Complies	Complies	Turbidity < 2.5 NTU, pH in range of 7 - 8.5	Achieved	NA	Y	Y	Y	N	
	DWSNZ – E. Coli Presence	Number of instances where the presence of E coli was detected at the headworks or within the reticulation	Nil/yr	Nil	No E. coli detected	Achieved	NA	Y	Y	Y	Y	
	DWSNZ - Protozoa Compliance	Water supply delivers water that achieves a standard suitable for compliance with the health requirements of DWSNZ	Complies	Complies	Secure groundwater status	Achieved	NA	Y	Y	Y	N	
	DWSNZ - Sampling Non- compliance	Number of instances where sampling programme did not comply with DWSNZ, as demonstrated by Water Information NZ (WINZ) database	Nil/yr	Nil	All samples taken in accordance with DWSNZ	Achieved	NA	Y	Y	Y	Y	

		2019 - 2021 Borformanco	2018 - 2021		202	20			Previou	s Results [#]	
Section	Level of Service	Measure	7018 – 2021 Target	Result	Commentary	Status	Action to Address	2017	2014	2011	2008
Water Flow	Flow Allocated Units	Water flow at the point of supply in Restricted or Semi Restricted schemes, excluding outages, as demonstrated by programmed restrictor audits, that tests restrictors at not less than 5 yearly intervals	>0.69 L/min/unit	Insuf. Data	Restrictor checks are programmed to be undertaken every 4 years. However, there is currently insufficient data.	Not achieved	Implement Phase 2 of AMIS project, to allow adequate data collection and analysis.	Insuf. Data	-		
Water Losses	Water losses as determined by measured or calculated minimum flow for On Demand schemes	Water losses as determined by measured or calculated minimum flow for On Demand schemes	< 240 litres/ connection/ day	631	Based on weighted average of figures for West Eyreton and 631 Summerhill. Data as per Water Conservation Strategy (2005010506 68).		Implement actions as identified in Water Conservation Strategy.	Ν	Insuf. Data	Insuf. Data	Insuf. Data
Service Outages	Outages - Events >8 hours	Number of events that cause water not to be available to any connection for >8 hours	Nil/yr	Nil	No events > 8 hours during 19/20 period	Achieved	NA	Y	Insuf. Data	Y	Y
Water Pressure	Pressure - Point of Supply - On Demand	Water pressure at the point of supply in On Demand and Semi-Restricted schemes, excluding outages, as	>150kPa for 100% of the time	Complies	Validated by water model, running scheme at target	Achieved	NA	N	Y	Y	Y

Activity Management Plan 2021 Summerhill-West Eyreton Water Supply Scheme

		2019 2021 Dorformance	2018 – 2021 Target		202	20		Previous Results [#]			
Section	Level of Service	Measure		Result	Commentary	Status	Action to Address	2017	2014	2011	2008
		demonstrated by a reticulation model or audits.			demand and ensuring target pressure is achieved.						
Scheme Capacity	Scheme Capacity - On Demand	Actual peak capacity of the scheme for domestic use - On Demand	>1150 litres/ allocated unit/ day	Complies	Validated by water model, running scheme at target demand and ensuring target pressure is achieved.	Achieved	NA	Y	Y	Y	Y
Storage Volume	Storage - On Demand	Volume of available and usable storage for On Demand and Semi- Restricted schemes (dependant on source type)	Source and demand dependent	9.1 hours	Required storage calculated based on resiliency and redundancy	Summer hill – Not achieved West Eyreton - Achieved	NA	Y	-		
Water Usage	Usage - Average Day	Actual usage on average day	Maintain the average daily water use below 100% of the assessed reasonable water use	Summerhill — 61% West Eyreton - 74%	Refer to Water Conservation Strategy (2005010506 68). Average of West Eyreton and Summerhill.	Achieved	NA	Y	Y	Y	NA

Section	Level of Service	2018 – 2021 Performance Measure	2018 – 2021 Target	2020				Previous Results#			
				Result	Commentary	Status	Action to Address	2017	2014	2011	2008
Water Usage	Usage - Peak Day	Actual usage on Peak Day	Reduce the peak daily usage to below 110% of the assessed reasonable water use	74%	Refer to Water Conservation Strategy (2005010506 68). Average of Summerhill and West Eyreton.	Achieved	NA	Y	Y	Y	

5.2 Asset Condition

The asset condition for the reticulation has been determined based on criteria set out in the International Infrastructure Management Manual (IIMM), published by the Institute of Public Works Engineering Australasia (IPWEA), combined with updated calculations of base lives for the pipeline asset types.

The IIMM sets out criteria for converting remaining useful life as a percentage to a Condition Grade from 1 (Very Poor) to 5 (Very Good). This is a relatively simple conversion. However the process for determining the base lives, which in turn gives the condition grading is more complex. The details of this process are outlined in the Water Overview AMP. The following expected asset lives have been adopted:

Pipe Category and Definition	Calculated Asset Life (years)
PVC Modern (PVC pipe installed post 1997)	100
PVC Old (PVC pipe installed prior to 1997)	60
PE Modern (PE pipe installed post 1990)	100
PE Old (PE pipe installed prior to 1990).	35
AC Small (AC pipe with diameter < 100mm)	55
AC Medium (AC pipe with diameter 100mm to 150mm)	60
AC Large (AC pipe with diameter >= 200mm)	90

Table 10: Adopted Reticulation Asset Base Lives for Pressure Pipes

Asset Condition Calculation

With the asset base lives calculated as per the process described above, and the condition defined as a function of remaining useful life, the remaining data required to calculate the condition of each asset is the year of installation of the asset. This information is held for each asset within the Council's TechOne asset database. Thus, through a combination of expected asset life, year of installation, remaining useful life of asset, the condition grade for each asset is able to be assigned.

Figure 2 & Figure 3 below has been generated using the above process, to show the assessed condition of all the pipe assets on the scheme. Also included within this is the pipe burst data held against each asset.

Figure 4 & Figure 5 shows this same information graphically, and also includes headworks assets, and Table 10 & Table 11 presents this information is tabular format.

"Headworks" is inclusive of all above ground assets associated with the water supply scheme (e.g. reservoirs, buildings, pump sets). "Reticulation" covers the remainder of the assets, which are typically below ground pipework related assets.



TableTable11: Pipe Condition Assessment Plan – Summerhill Water Supply



Table12: Pipe Condition Assessment Plan – West Eyreton Water Supply



Table13: Asset Condition Summary – Summerhill Water Supply

Table 14: Pipe Condition Summary - Summerhill Water Supply

Condition Grade	Definition	Pipeline Quantity	Total Reticulation Value	Total Headworks Value	Total Value
1	Very Good More than 80% of life remaining	25.4 km <i>53%</i>	\$ 2,411,000 65%	\$ 107,000 <i>16%</i>	\$ 2,518,000 <i>57%</i>
2	Good Between 50% and 80% of life remaining	8.2 km <i>17%</i>	\$ 407,000 <i>11%</i>	\$ 328,000 <i>48%</i>	\$ 735,000 <i>17%</i>
3	Adequate Between 20% and 50% of life remaining	14.0 km <i>29%</i>	\$ 912,000 <i>24%</i>	\$ 159,000 <i>23%</i>	\$ 1,071,000 24%
4	Poor Between 10% and 20% of life remaining	0.0 km <i>0%</i>	\$ - 0%	\$ 42,000 <i>6%</i>	\$ 42,000 <i>1%</i>
5	Very Poor Less than 10% of life remaining	0.0 km <i>0%</i>	\$ - 0%	\$ 48,000 <i>7%</i>	\$ 48,000 <i>1%</i>
Total		47.7 km	\$ 3,730,000	\$ 684,000	\$ 4,414,000



Table15: Asset Condition Summary - West Eyreton

Table 16: Pipe Condition Summary – West Eyreton Water Supply

Condition Grade	Definition	Pipeline Quantity	Total Reticulation Value	Total Headworks Value	Total Value
1	Very Good More than 80% of life remaining	10.9 km <i>84%</i>	\$ 1,234,000 <i>88%</i>	\$ 282,000 <i>61%</i>	\$ 1,516,000 <i>82%</i>
2	Good Between 50% and 80% of life remaining	0.4 km <i>3%</i>	\$ 30,000 <i>2%</i>	\$ 64,000 14%	\$ 94,000 <i>5%</i>
3	Adequate Between 20% and 50% of life remaining	0.0 km <i>0%</i>	\$ - 0%	\$ 43,000 <i>9%</i>	\$ 43,000 <i>2%</i>
4	Poor Between 10% and 20% of life remaining	0.0 km <i>0%</i>	\$ - 0%	\$ 10,000 <i>2%</i>	\$ 10,000 <i>1%</i>
5	Very Poor Less than 10% of life remaining	1.7 km <i>13%</i>	\$ 135,000 <i>10%</i>	\$ 60,000 <i>13%</i>	\$ 195,000 <i>10%</i>
Total		13.0 km	\$ 1,399,000	\$ 459,000	\$ 1,858,000

5.3 Asset Criticality

Asset criticality provides an indication of the importance of an individual asset and the corresponding impact on the service delivery should the asset fail for any reason. Criticality is used in risk based investment decisions to help decide when an asset should be replaced to avoid the consequences of failure. The Council has developed an assessment process which scores assets from most critical 'AA' to least critical 'C'. Further details of the criticality assessment methodology is covered in the WS Overview AMP.

The pipe criticality scoring process has been significantly improved through automation and dynamic links to GIS data layers for this AMP.

Figure 6 & Figure 7 provides a spatial view of asset criticality for the scheme.



Figure 17: Pipe and Facilities Criticality – Summerhill Water Supply

5.4 Risk Assessment

An Operational Risk Assessment was first undertaken for the Summerhill Water Supply Scheme in 2004, and it has been regularly updated since that time. It was last updated for the 2015 AMP review. The last two reviews have revealed no extreme or high risks for the Summerhill water supply scheme.

The District Wide Overview details the risk events considered and includes a summary of the risk assessment results for all the water supply schemes and is useful in indicating overall water supply network priorities.

Table 12 below shows a summary of the number of events at each level of risk for the Summerhill water supply scheme.

Risk Level	2004	2008	2011	2014
Extreme risks	1	0	0	0
High risks	10	8	0	0
Moderate risks	18	21	16	11
Low risks	12	13	28	33
Not applicable	14	13	14	14
Total	55	55	58	58

 Table 18: Number of Events per Level of Risk

District wide, moderate risks are being deferred until extreme and high risks have been addressed.

5.5 Water Safety Plan

Summerhill-West Eyreton has an approved Water Safety Plan (WSP). This provides a summary of how the scheme is operated, undertakes a risk assessment for the scheme, identifies preventative measures, and recommends any upgrades to address unacceptable risks. Under the Health Act, these are required to be renewed every 5 years. The Summerhill-West Eyreton WSP was last approved in 2019, which means it will be due for renewal next in 2024. However, as Poyntzs Road joins the supply, this will warrant a significant change, which will trigger an update in 2021.

Budgetary requirements arising from the plan are incorporated into the draft LTP.

When the Water Services Bill comes into effect, which is expected to be in mid-2021, the requirement for WSPs to be produced will be transferred from the Health Act to the Water Services Bill. The plans will then be submitted to Taumata Arowai, rather than the current Drinking-water Assessors which operate under the Ministry of Health.

5.6 Disaster Resilience Assessment

The 2009 Disaster Resilience Assessment (DRA) is a desk top study that primarily considered the risks to above ground structures presented by natural hazard events to above ground assets across all Council operated 3 Waters schemes. The original assessment was updated in 2012 using revised hazard and asset behaviour information captured during the 2010-11 Canterbury earthquake sequence.

Risk from earthquake events that could induce liquefaction, on brittle pipes (AC and earthenware) is managed using a reticulation vulnerability score. This is used as an input to the risk based renewals assessment.

Above Ground Facilities

The above ground facilities were assessed for risk of failure against 13 natural and 2 manmade hazard scenarios. The following risk profile (Table 13) reflects the likelihood of the event occurring and the consequence on the community of the facility failing. Hazards classified as having 'No Known Risk' have been omitted from the table.

Threat	Davis Rd Pump Station	Hunters Glen Reservoirs	West Eyreton Headworks
100 yr Local Flooding	-	-	L
475 yr Earthquake Induced Slope Hazard	L	М	L
Earthquake (50 yr)	L	М	М
Earthquake (150 yr)	L	L	L
Earthquake (475 yr)	L	L	L
Wildfire (threat based)	L	L	L
Snow (150 yr)	L	L	L
Wind (150 yr)	L	L	L
Lightning (100 yr)	L	L	L
Pandemic (50 yr)	М	М	М
Terrorism (100 yr)	Н	Н	Н
E = Extreme, H = High, M	= Moderate, L = Lov	N	

Table 19: Risks to Above Ground Facilities

The scheme is located outside the zone of potential liquefaction thereby reducing possible impact and asset damage from an earthquake event.

The Hunters Glen Reservoir site has been identified as at moderate risk from earthquake induced slope failure.

The facilities are rated as at high risk from terrorism although the sites are considered moderately resilient to this hazard.

The Councils response to these risks is being managed at a district level via the DRA Action Plan and related projects. Refer to the District level AMP for details. Since there is some overlap of the DRA and Operational Risk Assessment, a review and integration of the risk assessment methodologies is planned, prior to risk assessments next being carried out.

5.7 Growth Projections

Situation

For Summerhill, it is anticipated that the bulk of the growth will occur in a band to the west, south and east of the existing supply area, generally to lot sizes of 4 ha. This will involve significant extensions of the water supply beyond the existing scheme boundary but will be funded by the developers.

In addition to supplying water units to service 4 ha lifestyle blocks (typically two water units per property) there are a significant number of "extra" water units sold for farming activities. The residential connections will service the population growth and the additional units will be required for more intensive farming/lifestyle activity. The area is popular for lifestyle blocks and growth is expected to be steady.

For West Eyreton, it is anticipated that there will be slight extensions of the water supply beyond the existing scheme boundary. The growth is expected to continue in the southern part of the scheme, and occur as infill within the scheme boundary.

The overall district population growth scenario used for the 2021 AMP update was supplied by Council's Development Planning Unit, broken into towns and rural areas. Water supply growth projections were calculated using the New Projections for LTP 2021-2031 (TRIM200908117997), which was the basis for infrastructure planning.

Due to issues that have occurred with the Census 2018, the population projections that would normally be used as a basis for updating the work previously developed by the Council's Development Planning Unit have not been released by Stats NZ in time for the development of this assessment.

However, based on the historical growth patterns of new dwelling Building Consents over the last three years (636 in 2017/18, 661 in 2018/19 and 615 in 2019/20), the projections used for the previous LTP/infrastructure strategy remain valid to be used for infrastructure planning. As the timeframe for this infrastructure planning is for the thirty years between 2021 to 2051, the previous population projections have been extended out a further three years, as documented in New Projections for LTP 2021-2031 (TRIM200908117997)

It is important to provide a brief comment on COVID19 and the impact it could have on population projections. At the time of writing this paragraph (August 2020), New Zealand is currently in Level 3 restrictions in Auckland and Level 2 restrictions in the remainder of the country. While international migration is currently low arising from the COVID19 travel restrictions, a significant number of New Zealanders are returning home due to the impact of COVID19 on overseas countries. This has contributed to a high level of population growth nationally over the last six months, which has had a flow on effect to growth in the Greater Christchurch and Waimakariri Districts. How long this might continue for and when international migration (from other countries) might return to pre COVID levels is still to be determined. However the existing population projections remained the most appropriate to use for infrastructure planning at this time.

Demand

Demand on the Summerhill water supply scheme is expected to increase by 23%, by the end of the 2021-31 Long Term Plan (LTP) period.

This projection is based on 42 new dwellings and connections being established from 2019/20 to 2030/31. The number of restricted connections will be increased by an average of 4 per year during

the 2021-31 LTP period to accommodate this demand. Demand beyond the 2021-31 LTP period is forecast to transition to a slightly lower growth profile resulting in an average of 3 new connections per year, to 2070/71 (Table 14).

Demand on the West Eyreton water supply scheme is expected to increase by 23%, by the end of the 2021-31 Long Term Plan (LTP) period.

This projection is based on 17 new dwellings and connections being established from 2019/20 to 2030/31. The number of restricted connections will be increased by an average of 2 per year during the 2021-31 LTP period to accommodate this demand. Demand beyond the 2021-31 LTP period is forecast to transition to a slightly lower growth profile resulting in an average of 1 new connections per year, to 2070/71 (Table 15).

Cummonkill	Rates Strike July 2019	Years 1 - 3	Years 4 - 10	Years 11 - 20	Years 21 - 30	Years 31 - 50
Summernin	2019/20	2021/22 to 2023/24	2024/25 to 2030/31	2031/32 to 2040/41	2041-42 to 2050/51	2051/52 to 2070/71
Projected Connections	182	200	224	257	287	338
Projected Rating Units	542	592	663	758	841	988
Projected increase in Connections		10%	23%	41%	58%	86%
Projected Average Daily Flow (m3/day)	301	334	380	441	496	591
Projected Peak Daily Flow (m3/day)	477	535	616	725	821	990

Table 20: Growth Projections - Summerhill

	Rates Strike July 2019	Years 1 - 3	Years 4 - 10	Years 11 - 20	Years 21 - 30	Years 31 - 50
West Eyreton	2019/20	2021/22 to 2023/24	2024/25 to 2030/31	2031/32 to 2040/41	2041-42 to 2050/51	2051/52 to 2070/71
Projected Connections	72	79	89	102	113	134
Projected Rating Units	252	266	285	312	335	376
Projected increase in Connections		10%	23%	41%	58%	86%
Projected Average Daily Flow (m3/day)	108	117	130	147	162	188
Projected Peak Daily Flow (m3/day)	181	197	220	250	276	323

Table 21: Growth Projections – West Eyreton

Note that the time frames have been chosen to reflect the periods 3, 10, 20 and 30 years from the AMP release date, however due to the time it takes to complete the analysis the base rates strike data used was from 2019/20.

Demand over the next 50 years, for the combined scheme, is projected to increase by 86%. This long term projection is higher than the 2017 growth projections, 68% (Summerhill) and 66% (West Eyreton) (used for the 2017 AMP). Both 2017 and the latest projections utilised the best data and information available to project the connections for the water schemes at the time. Also both used the Council's Development Planning Unit rural population projection to determine the growth.

Water use predictions for the Summerhill and West Eyreton water supply scheme have been based on the standard assumption used when modelling the future water demands within the water distribution models. These are an average and peak daily water use per day of 1,000 litres and 2,500 litres respectively (including losses).

Projections

Figure 8 and Figure 10 present the projected growth and corresponding demand trends for the Summerhill Water Supply Scheme.



Table22: Population Projections – Summerhill



Table 23: Population Projections – West Eyreton







Table 25: Flow Projections - West Eyreton

5.8 Capacity & Performance

This section of the AMP considers the capacity and performance of the Summerhill and West Eyreton Water Supply, both given the current demand, and also taking into account the forecast growth. The specific aspects of the scheme that have been considered are the source, treatment, storage, headworks, and reticulation system. These are discussed in more detail in the following sub-sections. All of the upgrades mentioned in the following sections, necessary to maintain capacity for growth, have been included in the Long Term Plan budgets.

Source

The Summerhill and West Eyreton water supply schemes draw water from the following sources (Table 16).

Table 26: Scheme Sources

Well name	Well No.	Diameter (mm)	Depth (m)
West Eyreton Well 1 M35/9566		200	98.3
West Eyreton Well 3	BW23/0480	300	96.43

There is also a backup emergency well (Table 17).

Table 27: Back Up Supply

Well name	Well No.	Diameter (mm)	Depth (m)		
West Eyreton Well 2	M35/0055	150	15.2		

Well 1 has a capacity of 16 l/s and Well 3 has a capacity of 30L/s. Each well features a single submersible pump that pumps directly to the storage tanks at the West Eyreton headworks site.

Council plans capacity for its water supplies on the basis that one of the primary wells is out of operation at any given time. This concept was used in deciding when source capacity upgrades would be required. This ensures that each scheme has an acceptable level of redundancy. For Summerhill and West Eyreton, with two primary wells each capable of meeting peak demand, sufficient redundancy is achieved.

The resource consent (CRC186214) conditions allow abstraction from Well 1 and Well 3 at a maximum rate of 25 I/s and 37I/s respectively, with a combined volume not exceeding 15,120m³ in any period of seven consecutive days. This abstraction is to supply potable water for both the Summerhill and West Eyreton communities.

There are transfer pumps at West Eyreton to get the groundwater to Summerhill, these have a duty point between 6.1 L/s and 10.3 L/s. Summerhill receives approximately 7 L/s of source water from West Eyreton.

Table 18 presents the projected water demand and associated required source capacity for the Summerhill and West Eyreton supplies. To calculate the required source capacity, a contingency is introduced through assuming 10% down time, which increases required source capacity above the Peak Daily Flow.

	Oyrs	10yrs	20yrs	30yrs	50yrs
Summerhill Expected Peak Daily Flow (L/s)	7.4	8.9	10	11.1	13.4
West Eyreton Expected Peak Daily Flow (L/s)	3.4	3.9	4.5	5.0	5.5
Combined Expected Peak Daily Flow (L/s)	10.8	12.8	14.5	16.1	18.9
Combined Required Source Capacity (L/s)	12.0	14.2	16.1	17.9	21.0

Table 28: Projected Demand and Required Capacity for Summerhill and West Eyreton Schemes

The existing sources have sufficient capacity to meet the current demands. To meet future demand a transfer pump upgrade is scheduled in 2042/43.

Treatment

The West Eyreton deep bore provides certified secure groundwater which does not require treatment to comply with the protozoal requirements of the Drinking Water Standards. As this is a restricted scheme, the supply is treated with chlorine disinfection to maintain a residual chlorine level for disinfection in customers' own private storage tanks, as well as providing an additional barrier against bacterial contamination at any point in the system.

The treatment system (chlorine only) at the current shallow emergency backup well provides no protection against protozoan contaminants during the short periods this source may be used.

A "placeholder" budget has been included in the draft LTP in 2021 for installation of UV treatment in anticipation of the outcome from the Havelock North Water Supply Inquiry being that the category of a "secure" water supply will no longer exist.

Certain water supplies have a risk of being plumbosolvent. The definition of plumbosolvent water is water that is able to dissolve lead easily. Water that has low pH and alkalinity tends to be slightly corrosive and therefore plumbosolvent. The Council complies with the requirements of the Drinking Water Standards for plumbosolvency by advertising twice per year advising customers to flush the first 500 mls of water before taking water for drinking purposes. Adverts are district wide and do not distinguish between water supplies.

Storage

The Summerhill scheme has a total storage capacity of 112 cubic metres made up from three 11 cubic metre tanks and two 23 cubic metre tanks at Hunters Glen and one 33 cubic metre tank at Davis Road. The West Eyreton scheme has two 33 cubic metre tanks (66 cubic metre capacity) which are shared with the Summerhill water supply scheme. It is also noted that either scheme could provide water to the other in an emergency situation, effectively sharing the stored water if required. However to clearly present the projected storage requirements for each scheme, storage requirements have been kept separate.

Emergency storage requirements for Summerhill are 7.20 hours of Average Daily Flow, and emergency storage requirements for West Eyreton are 6.72 hours of Average Daily Flow, based on a 2020 update of the work carried out in the Water Supply Source Resilience Analysis (170623064893). Table 19 and presents the required storage capacity for Summerhill and West Eyreton.

	0yrs	10yrs	20yrs	30yrs	50yrs
Required Storage Volume (m3)	103	123	139	154	185
Planned Storage Volume (m3)	112	172 ¹	172	172	187²

Table 29: Required Storage Capacity for Summerhill Scheme

Note 1: This is an upgrade funded by stimulus funding for one 30m³ tank for the Summerhill scheme, and one for the West Eyreton scheme.

Note 2: Shared 30m³ reservoir, presented as 15m³ for each scheme.

Table 30: Required Storage Capacity for West Eyreton Scheme

	Oyrs	10yrs	20yrs	30yrs	50yrs				
Required Storage Volume (m3)	41	50	58	61	67				
Planned Storage Volume (m3) 66 66 66 81 ¹									
Note 1: Shared 30m ³ reservoir, presented as 15m ³ for each scheme.									

The storage requirements for Summerhill are governed by the emergency storage requirements. There is sufficient storage capacity to meet existing storage requirements. At West Eyreton, no storage is required for operational requirements for this scheme as the well pump exceeds the maximum flow from the supply pumps. Therefore the storage requirements are governed by the emergency storage requirements.

As part of stimulus funding, there will be a 30 cubic metre tank installed at Davis Road and a 30 cubic metre tank installed at West Eyreton (for the use of the Summerhill scheme). The total storage for the Summerhill scheme would then be 172 cubic metres. This work is not presented in the capital works section as it is stimulus funded.

Additionally there is a reservoir upgrade scheduled for year 2060/61, triggered by rural growth on both schemes. This upgrade is for a 30 cubic metre reservoir to be shared between West Eyreton and Summerhill. For simplicity this has been presented as 15 cubic metres for each scheme.

If Poyntzs Road was to connect to the West Eyreton supply, two new storage tanks would be constructed at the new Downs Road pumpstation required to join the schemes Poyntzs Road and would not affect the storage requirements at West Eyreton.

Headworks

The headworks for the Summerhill scheme is a shared site with the West Eyreton scheme. Whilst the source is shared, there are separate transfer pumps for both schemes.

Summerhill receives water from West Eyreton, to the Davis Road headworks (capacity of 7 L/s per pump), where it is pumped to Hunters Glen to be gravity fed to the scheme. Additionally booster pumps (capacity of 2.0 L/s) pump water to connections on the hill near Hunters Glen.

The existing West Eyreton headworks consists of two transfer pumps with variable speed drives (VSD's). The pumps operate as duty-standby and have an estimated capacity of 7 L/s per pump, but about 10 L/s when the two pumps operate together.

A reconfiguration will be made to the Summerhill scheme when an additional tank is installed at Davis Road (stimulus funded project). Currently the Davis Road headworks pumps to the entire Summerhill part of the scheme, with the pumps set to maintain a set pressure. The Hunters Glen tanks have a fill valve which opens to receive water as required.

Table 21 presents the projected peak hourly flows for the Summerhill and West Eyreton water supply schemes.

	Oyrs	10yrs	20yrs	30yrs	50yrs
Summerhill Expected Peak Hourly Flow (L/s)	7.4	8.9	10	11.1	13.4
West Eyreton Expected Peak Hourly Flow (L/s)	3.4	3.9	4.5	5.0	5.5

Table 31: Projected Peak Hourly Flows for Surface Pumps in Scheme

There is sufficient current headworks capacity for both schemes.

The Hunters Glen pumpstation will require a surface pump upgrade in 2036/37, increasing the capacity to 2.8L/s. This planned upgrade is due to growth and connecting other parts of the Summerhill scheme to this pump station.

The Davis Road Pump station will also require a surface pump upgrade in 2042/43 to 13.5L/s, capable of pumping to the Summerhill storage reservoirs.

Reticulation

The capacity of the water supply reticulation has been assessed using an uncalibrated but validated reticulation model. The model and associated monitoring has confirmed that the existing reticulation system has adequate capacity for the existing demands. To meet growth demands, the projected reticulation upgrades are to increase the diameter of pipes to feed outlying areas in the scheme and lower high head losses.

6 Future Works & Financial Projections (What Do We Need To Do?)

This section covers the future works required to meet the target levels of service, maintain the asset in an acceptable condition, reduce the risks to an acceptable level and accommodate growth.

Financial forecasts do not include inflation.

6.1 Operation & Maintenance

Operation and maintenance (O&M) expenditure incorporates the day to day running of the water supply network and allows the system to carry on functioning to deliver the agreed levels of service.

The O&M programme includes a combination of reactive and planned tasks. Examples of the differing nature of these tasks is summarised within the Overview document.

O&M budgets are set based on a combination of past expenditure (for reactive tasks), cost estimates for planned works, and adjustments going forward to account for growth, inflation, depreciation and any significant new works planned. Further detail of this process is provided in the Overview document. The end result of this is shown in Figure 32 & Figure 33. There are no known deferred maintenance items.







Figure 33: Projected Operation & Maintenance 30-Year Budget - West Eyreton

The primary reasons for the increase in the operation and maintenance budget are related to growth on the scheme, with operational budgets set to increase with an appropriate proportional relationship to increase in connections.

6.2 Renewals Programme

A renewals model is used to generate renewal timeframes for each reticulation asset on each scheme. This model takes into account the remaining life from the asset condition data, and the criticality of each asset, and recommends an acceptable renewals window for each pipe. More information on the model is provided in the overview document.

Renewal of pipework assets are then programmed on an annual basis, taking into account the outputs from the renewals model, but also being informed by other works that may be planned in the area, as well as local burst history for the cases where a particular asset may be performing differently than its base life suggests.

The outputs from the renewals models are summarised in Figure 14 & Figure 15 below, with category bands depicting how soon renewal is required of each asset. This data is available to staff for analysis on the Council's GIS mapping system (Waimap).

The first ten years of the programme are based on the above assessments by the Asset Manager, but from year 11 forward expenditure is taken directly from the model.

an Legend Water Renewals High Priority - Renewal within 5 years
 Medium Priority - Renewal within 15 years
 Low Priority - Renewal within 25 years
 VeryLow Priority - No Renewals Planned scale (A4) 1:40,000 Summerhill Water Supply WAIMAKARIRI DISTRICT COUNCIL PIPE RENEWAL TIME FRAMES DATE 31/08/2020

Table34: Pipe Renewal Time Frames – Summerhill Water Supply



Table35: Pipe Renewal Time Frames –West Eyreton Water Supply

The Figures below show the financial output from the model alone. Over a 150 year period it shows the projected expenditure; the value in the renewals fund; the level of funding required to ensure the fund can meet the required renewals programme, and the annual depreciation.

The figure only shows the output from the model, so expenditure shown in the graph for the first ten years may be different from the expenditure shown in the LTP, as adjustments may have been made by the Asset Manager from the direct renewals model outputs. Individual scheme AMPs detail the actual planned renewals budgets for the first ten years. There are no deferred renewals.





Figure 37: Annual Water Renewals 150-Year Budget - West Eyreton



The key parameters in the figure above are explained below:

Activity Management Plan 2021 Summerhill-West Eyreton Water Supply Scheme July 2021

- **Modelled Annual Renewals Expenditure:** This is the direct output from the renewals model, recommending the annual investment to be made in renewals each year.
- **Modelled Annual Funding Required:** This is the amount of annual renewals funding required, to ensure there are sufficient funds available to carry out the recommended annual renewals each year.
- **Budgeted Depreciation Funding:** This is the actual amount of depreciation being collected, which is extracted from the Council's budgets.
- **Modelled Renewals Fund:** This is the modelled balance in the renewals account, assuming the annual funding and annual expenditure is completed as per the recommendations from the renewals model.

As may be seen from the figures above, depreciation matches the modelled annual funding required.

6.3 Capital Works

The following graphs shows the 50 year budget for all capital works, including projects driven by growth and levels of service (Figure 38 & Figure 39). Renewals expenditure showing in the first ten years of the graph, includes the actual planned programme, not the model output. Stimulus funded and district wide rates funded projects are not included



Figure 38: Projected Capital Works Expenditure - Summerhill

Figure 39: Projected Capital Works Expenditure - West Eyreton



Table 22, Table 23 and Table 24 summarise the projected capital works for the next 50 years, including renewals, from which the spikes in the above graphs can be identified. Figure 21 & Figure 22 shows the corresponding location of the projected capital works. Not included in the tables is the \$510,000 UV installation for West Eyreton programmed for 2023/24, which is funded from a district wide rate.

The level of confidence in the budget for the works (High / Medium / Low) is presented in the table. For a more complete discussion on the level of optimisation, refer to the introductory chapter of the AMP. The figures in the table are not adjusted for inflation.

Any programme or project that occurs over a number of years, such as the renewals programme, is only shown within the table for the first year in which it occurs. The Project Value indicates the projected full total cost of the project over the number of years it occurs.

The majority of the new works programmed over the next 50 years are required to accommodate growth.

Year	Project ID	Project Name	Level of Confidence	Pro	oject Value	LOS Component		Renewals Component		Growth Component	
Year 1 - 10											
2022	URW0047	Summerhill Restrictor Upgrades	5 - Medium	\$	20,000	\$	20,000	\$	-	\$	-
2023	URW0274	Mairaki Downs Eastern Pipeline Renewal	3 - Low	\$	201,000	\$	-	\$	160,000	\$	41,000
2024	URW0064	Summerhill Headworks Renewals		\$ 575,791 \$		\$	-	\$	575,791	\$	-
2029	URW0195	Catherwoods Road Ring Main	3 - Low	\$	391,000	\$	-	\$	138,000	\$	253,000
2031	URW0190	Davis Road Trunk Main Upgrade 2	3 - Low	\$ 80,000		\$	-	\$	26,000	\$	54,000
Year 11 - 20											
2032	URW0063	Summerhill Water Renewals		\$	908,889	\$	-	\$	908,889	\$	-
2041	URW0192	Davis / Terrace Road Trunk Main	3 - Low	\$	369,000	\$	-	\$	159,000	\$	210,000
Year 21 - 30											
2051	URW0275	Terrace Road / Elliots Road Trunk Main Upgrade	3 - Low	\$	267,000	\$	-	\$	-	\$	267,000
Year 31 - 50											
2037	URW0191	Hunters Glen Pump Upgrade	3 - Low	\$	18,000	\$	-	\$	13,000	\$	5,000
2043	URW0188	West Eyreton Transfer Pumps Upgrade	3 - Low	\$	20,000	\$	-	\$	-	\$	20,000
2043	URW0189	Davis Road Pumpstation Upgrade 1	3 - Low	\$	20,000	\$	-	\$	-	\$	20,000
2056	URW0276	Stoke School Road Main	3 - Low	\$	114,000	\$	-	\$	-	\$	114,000
2061	URW0197	West Eyreton and Summerhill Reservoir Upgrade (Summerhill Share)	3 - Low	\$	18,000	\$	-	\$	-	\$	18,000
Grand Total				\$	3,002,680	\$	20,000	\$	1,980,680	\$	1,002,000

Table 40: Summary of Capital Works (Includes Renewals) - Summerhill

Year	Project ID	Project Name	Level of Confidence	Project Value		LOS Component		Renewals Componer		Growth Component	
Year 1 - 10											
2022	URW0028	West Eyreton Water Supply Pipe Renewals	3 - Low	\$	103,767	\$	-	\$	103,767	\$	-
2022	URW0039	West Eyreton Water Supply Headworks Renewals	3 - Low	\$	272,050	\$	-	\$	272,050	\$	-
2022	URW0235	West Eyreton Restrictor Upgrades	0	\$	2,000	\$	2,000	\$	-	\$	-
2025	URW0278	West Eyreton Surface Pump Upgrade	3 - Low	\$	\$ 30,000 \$		-	\$	-	\$	30,000
Year 31 - 50											
2061	URW0277	West Eyreton and Summerhill Reservoir Upgrade (West Eyreton Share)	3 - Low	\$	18,000	\$	-	\$	-	\$	18,000
2065	URW0199	Treatment Redundancy Upgrade	2 - Very Low	\$	200,000	\$	-	\$	-	\$	200,000
2065	URW0200	Fixed Generator at West Eyreton Headworks	2 - Very Low	\$	100,000	\$	-	\$	-	\$	100,000
Grand Total				\$	725,817	\$	2,000	\$	375,817	\$	348,000

Table 41: Summary of Capital Works (Includes Renewals) - West Eyreton

Table 42: Stimulus funded projects

Year	Project ID	Project Name	Level of Confidence	Proje	ect Value	LOS Component C		Renew Compon	Renewals Component		th 1ent
Year 1 - 10											
2022	URW00281	West Eyreton and Summerhill Storage upgrades	-	\$	75,000	\$	75,000	\$	-	\$	-
Grand											
Total				\$	75,000	\$	75,000	\$	-	\$	-



Table43: Projected Capital Upgrade Works (not to scale) - Summerhill

Activity Management Plan 2021 Summerhill-West Eyreton Water Supply Scheme July 2021



Table 44: Projected Capital Upgrade Works (not to scale) - West Eyreton

6.4 Financial Projections

The following graphs summarise the breakdown of projected total expenditure over a 30 year time horizon. It includes both operational and capital expenditure. Operational costs include operations and maintenance, and indirect expenditure. Indirect expenditure includes interest, rating collection costs, costs associated with maintaining the Asset Register, and internal overhead costs. Capital includes expenditure for growth, levels of service and renewals. Stimulus funded projects are not included







Figure 46: Projected Total Expenditure - West Eyreton

6.5 Valuation

A full peer reviewed valuation of assets is carried out on a three yearly cycle, using the asset data in our asset management information system. Table 24 and Table 25 below provide a summary of the replacement cost, depreciated replacement cost and annual depreciation for this scheme.

Asset Type	Unit	Quantity	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Valve	No.	93	\$212,999	\$175,939	
Main	m 46,725 \$3,250,		\$3,250,609	\$2,709,471	\$32,506
Hydrant	t No. 9		\$24,543	\$21,278	\$245
Service Line	Service Line Properties 183		\$194,937	\$158,182	\$1,949
Facilities			\$684,056	\$478,197	\$17,205
Total			\$4,367,144	\$3,543,068	\$54,043

Table 47: Asset Valuation – Summerhill

Table 48: Asset Valuation – West Eyreton

Asset Type	Unit	Quantity	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Valve	No.	23	\$59,813	\$59,813 \$52,749	
Main	m	12,917	\$1,220,540	\$1,012,708	\$13,919
Hydrant	No.	2	\$5,454	\$4,789	\$55
Service Line	Service Line Properties 70		\$74,566	\$52,504	\$979
Facilities			\$459,907	\$350,695	\$10,646
Total			\$1,820,279	\$1,473,446	\$26,205

6.6 Revenue Sources

Revenue is provided from two key sources; targeted rates and Development Contributions. Development Contributions are calculated in accordance with Council's Development Contributions Policy (TRIM <u>191129168016</u>), while targeted rates are charged in accordance with Council's Revenue and Financing Policy (TRIM 180522056008).

A further revenue source is the district wide rate that has been set up specifically to fund installation of UV disinfection at all schemes that do not already have it, although it is noted this is simply an alternative type of targeted rate, rather than a separate type of funding source.

7 Improvement Plan

7.1 2021 Improvement Plan

Table 26 details the scheme specific improvements and relevant district wide improvements recommended to address the management issues identified in Section 3. Each improvement item has been tagged to either a capital project or, a process improvement project to help manage and track Councils response. Short term indicates within the first three years of the LTP, long term, out beyond that timeframe.

If the table is empty, this indicates that all improvements required are either district wide improvements (covered by the Overview AMP), or covered by a capital project or projects, covered in the Capital Works section.

Project Ref	AMP Section	Project Description	Priority	Status	Estimated Cost
NA	NA	NA	NA	NA	NA

Table 49: 2021 AMP Improvement Plan

PLANS



Table50: A1- Plan of Serviced Area - Summerhill



TableTable52: Summerhill Water Supply Statistics

• • • • • • • • • • • • • • • • • • •														
Summernill	water s	supply s	tatistics		Summerhill		-		19/20		-		Last Update	
Note that shading indicates the relativ	/e quantity m	easured for th	e ten vear ne	eriod (i.e. the	lowest value	has no shadi	na the highe	st has compl	ete shading)				Jun-20	
Note that ondering indicates the foldar	io quantity in	July '09 -	July '10 -	July '11 -	July '12 -	July '13 -	July '14 -	July '15 -	July '16 -	July '17 -	July '18 -	July '19 -	5 yr	10 yr
		June '10	June '11	June '12	June '13	June '14	June '15	June '16	June '17	June '18	June '19	June '20	Average	Average
Nightly Flow	L/s	-	-	-	-	-	-	-	-	-	1.35	1.61	1.48	1.48
Average Daily Flow	m ³ /day	262	275	282	262	273	285	268	281	301	272	324	289	282
Peak Daily Flow	m ³ /day	397	396	591	477	384	461	395	415	477	456	549	458	460
Peak Weekly Flow	m ³ /day	387	388	588	334	367	439	357	390	449	425	508	426	425
Peak Monthly Flow	m ³ /day	340	354	475	332	324	373	327	370	410	362	473	388	380
Peak Hourly Flow	L/s	-	-	-	-	-	-	-	-	12.3	-	-	12.3	12.3
Peak Month		Mar	Jan	Jan	Feb	Feb	Jan	Dec	Feb	Dec	Feb	Feb		
Peak Week		Week 11	Week 2	Week 3	Week 10	Week 9	Week 2	Week 49	Week 9	Week 50	Week 5	Week 7		
Peak Day	•	4/03/2010	6/01/2011	10/01/2012	12/02/2013	22/02/2014	12/01/2015	1/12/2015	4/03/2017	9/12/2017	4/02/2019	11/02/2020		
Peaking Factor		1.5	1.4	2.1	1.8	1.4	1.6	1.5	1.5	1.6	1.7	1.7		
Total Annual Volume	m ³	96,102	101,072	103,544	96,322	100,228	104,416	98,365	102,947	110,503	99,932	118,740	106,098	103,607
Resource Consent	m³/day	864	864	864	864	864	605	605	605	605	605	605	605	709
Well Pump Capacity	m³/day	864	864	864	864	864	864	864	864	864	864	864	864	864
Surface Pump Capacity	m³/day	432	432	432	432	432	674	674	674	674	674	674	674	577
On-Demand Connections		-	-	-	-	-	-	-	-	-	-	-		
Restricted Connections		154	154	160	164	166	166	170	173	176	182	186		
Total Connections		154	154	160	164	166	166	170	173	176	182	186		
Average Daily Demand	L/con/day	1,700	1,788	1,763	1,600	1,645	1,714	1,577	1,621	1,711	1,496	1,739	1,629	1,666
Peak Daily Demand	L/con/day	2,579	2,571	3,694	2,911	2,313	2,777	2,321	2,401	2,709	2,503	2,952	2,577	2,715
Allocated Water Units	m³/day	485	485	495	420	502	494	504	511	511	542	532		
Average Daily Flow per Unit	L/unit/day	540	568	570	625	544	576	532	549	589	502	608	556	566
Peak Daily Flow per Unit	L/unit/day	819	816	1,194	1,137	765	933	783	813	933	841	1,032	880	925
On-Demand Rating Charges		-	-	-	-	-	-	-	-	-	-	-		
Restricted Rating Charges		-	-	-	-	-	-	-	-	-	-	-		
Total Rating Charges		-	-	-	-	-	-	-	-	-	-	-		
Data Quality		low	low	low	low	high	high	high	high	high	medium	medium		

Table 53: West Eyreton Water Supply Statistics

West Eyreton	West Eyret	on	▼		19/20		•		Last Update Jun-20					
Note that shading indicates the relative	ve quantity m	July '09 -	le ten year pe July '10 -	July '11 -	July '12 -	has no shadi July '13 -	ng, the highe July '14 -	st has compl July '15 -	ete shading.) July '16 -	July '17 -	July '18 -	July '19 -	5 vr	10 vr
		June '10	June '11	June '12	June '13	June '14	June '15	June '16	June '17	June '18	June '19	June '20	Average	Average
Nightly Flow	L/s	-	-	-	-	-	-	-	-	-	0.22	0.60	0.41	0.41
Average Daily Flow	m ³ /day	95	110	95	96	85	95	97	97	108	87	106	99	98
Peak Daily Flow	m ³ /day	140	164	130	160	158	153	155	181	179	141	174	166	159
Peak Weekly Flow	m ³ /day	124	159	129	146	133	144	135	153	168	129	168	150	146
Peak Monthly Flow	m ³ /day	117	152	118	131	122	135	121	137	148	118	149	135	133
Peak Hourly Flow	L/s	-	-	-	-	-	-	-	-	-	-	-	-	-
Peak Month		Feb	Dec	Jan	Feb	Feb	Jan	Nov	Feb	Dec	Feb	Jan	-	
Peak Week	,	Week 10	Week 52	Week 3	Week 10	Week 9	Week 5	Week 49	Week 9	Week 50	Week 8	Week 5		
Peak Day	,	21/12/2009	2/02/2011	10/01/2012	3/02/2013	9/12/2013	1/03/2015	6/03/2016	26/02/2017	11/12/2017	10/02/2019	27/01/2020		
Peaking Factor		1.5	1.5	1.4	1.7	1.9	1.6	1.6	1.9	1.7	1.6	1.6		
Total Annual Volume	m³	34,715	40,361	35,002	35,266	31,138	34,910	35,419	35,591	39,640	31,876	39,008	36,307	35,821
			1								1			
Resource Consent	m³/day	515	515	515	515	515	2,160	2,160	2,160	2,160	2,160	2,160	2,160	1,502
Well Pump Capacity	m³/day	190	190	190	190	190	1,356	1,356	1,356	1,356	1,356	1,356	1,356	890
Surface Pump Capacity	m³/day	631	631	631	631	631	285	285	285	285	285	285	285	423
			1	1	1		1		1		1		I	
On-Demand Connections		-	-	-	-	-	-	-	-	-	-	-		
Restricted Connections		48	4/	4/	48	68	68	68	/0	/1	/2	74		
Iotal Connections		48	4/	4/	48	68	68	68	/0	/1	/2	/4	L	4.500
Average Daily Demand	L/con/day	1,971	2,340	2,029	2,002	1,248	1,399	1,419	1,385	1,521	1,206	1,436	1,394	1,599
Peak Daily Demand	L/con/day	2,917	3,489	2,760	3,325	2,317	2,244	2,282	2,588	2,524	1,951	2,346	2,338	2,583
Allocated Water Units	m°/day	192	192	188	188	245	245	245	249	249	252	256		
Average Daily Flow per Unit	L/unit/day	493	573	507	511	346	388	394	389	434	345	415	395	430
Peak Daily Flow per Unit	L/unit/day	729	854	690	849	643	623	633	728	720	558	678	663	698
On-Demand Rating Charges		-	-	-	-	-	-	-	-	-	-	-		
Restricted Rating Charges		-	-	-	-	-	-	-	-	-	-	-		
Total Rating Charges		-	-	-	-	-	-	-	-	-	-	-	1	
Data Quality		medium	medium	medium	medium	medium	medium	medium	medium	medium	medium	medium		
Data Quality		medium	medium	medium	meaium	medium	meaium	meaium	medium	mealum	meanni	meulum	i i	