WATER SUPPLY ADVISORY COMMITTEE

Monday, May 1, 2023
at 1975 Field Road, Sechelt, B.C.

AGENDA

CALL TO ORDER **3:30 p.m.**

AGENDA

1. Adoption of Agenda

PRESENTATIONS AND DELEGATIONS

2. SCRD Water Communications — Verbal
   Manager, Communications
   Manager, Strategic Initiatives

MINUTES

3. Water Supply Advisory Committee Meeting Minutes of March 6, 2023 — Annex A Page 1-2

REPORTS

4. Draft Sunshine Coast Regional District Water Efficiency Plan — Annex B Pages 3-57
   Water Sustainability Coordinator

NEW BUSINESS

Invite to Chapman Water Treatment Plant Tour on June 15, 2023, 11:30am to 3:30pm, more details to come.

NEXT MEETING July 10 2023, online via Zoom

ADJOURNMENT

SUNSHINE COAST REGIONAL DISTRICT
WATER SUPPLY ADVISORY COMMITTEE

March 6, 2023

RECOMMENDATIONS FROM THE WATER SUPPLY ADVISORY COMMITTEE MEETING HELD ONLINE VIA ZOOM AND STREAMED IN THE CEDAR ROOM OF THE SUNSHINE COAST REGIONAL DISTRICT AT 1975 FIELD ROAD, SECHELT, BC.

PRESENT:	Chair	V. Macfarlane
	Vice-Chair	J. Bell
	Members	B. Fielding
		S. Fitchell
		K. Freemantle
		M. Hennessy
		S. Leech
		G. Moore
		B. Thicke
		L. Chivers

ALSO PRESENT:

(Non-voting)	Manager, Strategic Initiatives	M. Edbrooke
	Strategic Planning Coordinator/Recorder	S. Rempel
	Project Assistant	G. Lawrie
	Director, Area A	L. Lee
	Director, Area D	K. Backs
	Director, Area E	D. McMahon
	Director, Area F	K. Stamford
	Director, Sechelt	J. Henderson (in part)
	Public	3

CALL TO ORDER 3:36 p.m.

AGENDA An additional item to determine the location of the next WASAC meeting was added to the agenda. The agenda was adopted as amended.

MINUTES

Recommendation No. 1 *Water Supply Advisory Committee Meeting Minutes of January 9, 2023.*

The Water Supply Advisory Committee recommended that the Water Supply Advisory Committee meeting minutes of January 9, 2023, be received.

REPORTS

Manager, Strategic Initiatives, presented the report titled "Draft SCRD Water Strategy" for information and discussion.

Discussion included the following:

- Request for clarification on topics such as "Water Service Areas", "Water Systems"
- Overall framework and layout of the Water Strategy and subsequent Action Plans
- How the Water Strategy considers ongoing projects and feasibility studies
    - WASAC was interested in receiving a presentation regarding the Water System Modelling work at future meeting
- Request for more quantifiable actions, listing actions in order of priority, target start dates for projects where possible. Some members saw all actions as a priority and thought this increased detail belonged in the subsequent Action Plans.
- WASAC saw the plan as a useful tool for the Board, SCRD Staff, and for interested members of the Public as it shows the complex and integrated approach to water management being taken.
- WASAC did not think another large engagement period is necessary, as the feedback from the public will likely be aligned to what staff heard in 2022. Staff suggested combining multiple SCRD projects and initiatives into a small number of open houses to provide opportunity for engagement, while being aware of staff capacity.
- WASAC suggested involving community groups or attending community group events, putting posters and information up at BC Ferries terminals and on BC Ferries.
- Staff will integrate feedback received from WASAC into the draft Water Strategy, and requested any written feedback be received by March 31st. Staff will continue to consider feedback until the Board makes a decision on the Water Strategy.

NEW BUSINESS

The Committee discussed whether to continue alternating WASAC meetings in person, then on zoom. Members agreed to meet in person. The next meeting will be held in person.

Committee members also discussed the province's announcement of a $100 million investment in healthy watersheds and noted the British Columbia Watershed Security Strategy has opened a survey for public input on watershed planning in the province, WASAC encouraged to participate.

NEXT MEETING May 1, 2023, 3:30 p.m. in person at 1975 Field Road, Sechelt

ADJOURNMENT 5:20 p.m.

SUNSHINE COAST REGIONAL DISTRICT STAFF REPORT

TO: Water Supply Advisory Committee – May 1, 2023

AUTHOR: Graham Starsage, Water Sustainability Coordinator

SUBJECT: **DRAFT SUNSHINE COAST REGIONAL DISTRICT WATER EFFICIENCY PLAN**

RECOMMENDATION

(1) THAT the report titled Draft Sunshine Coast Regional District Water Efficiency Plan be received for information;

(2) AND THAT staff incorporate feedback from the Water Supply Advisory Committee into the draft SCRD Water Efficiency Plan and corresponding actions in the Water Strategy.

BACKGROUND

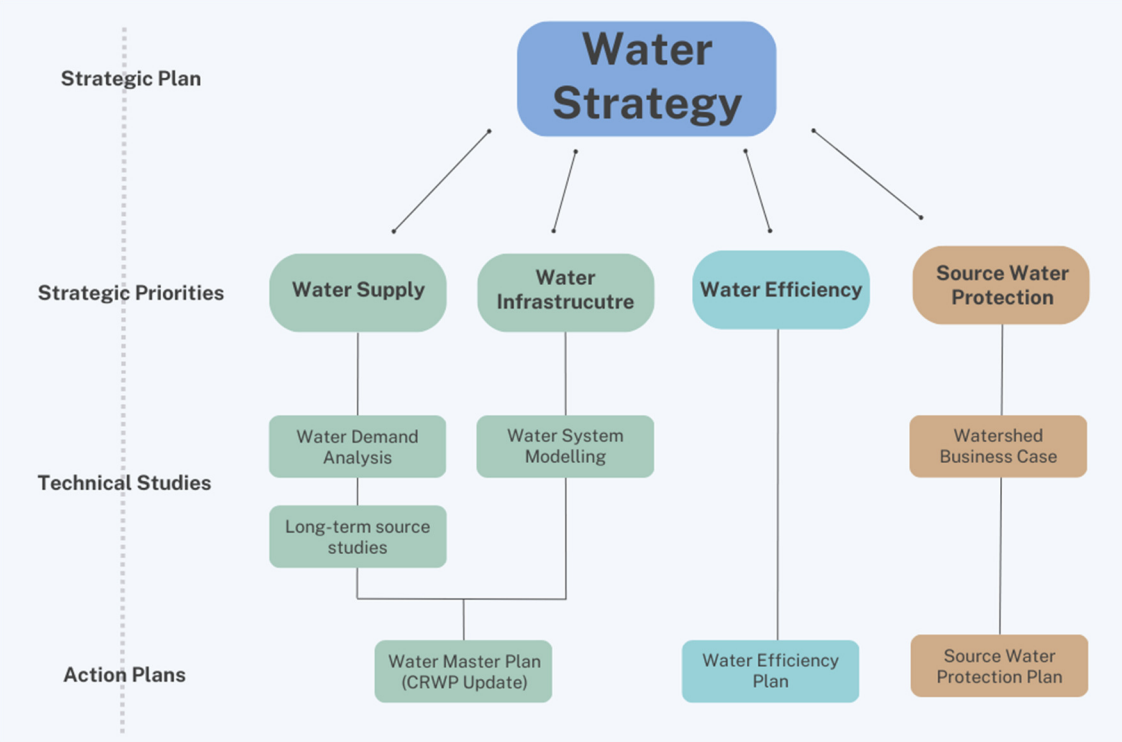
The Sunshine Coast Regional District (SCRD) provides drinking water services to more than 24,000 people in the region. Water efficiency remains a core component of the SCRD's long-term plan to provide safe and reliable water supplies to ensure the sustainable delivery of drinking water. Water efficiency is a cost-effective approach to defer the need to increase water supply, treatment, and distribution capacity in the water systems. As predictions indicate that climate change will bring longer, drier summers[1], the need to develop efficient water habits year-round can make a significant difference in reducing daily demand.

Staff began developing the Water Efficiency Plan (WEP) in 2022 in parallel with the development of the SCRD Water Strategy. Staff hired a consultant, Econics Services Ltd (Econics) to review SCRD's existing water conservation programs, communications, and initiatives. Econics also hosted a series of workshops with SCRD staff and conducted an analysis of SCRD water system data. Econics produced a draft report recommending actions to support public water efficiency and increase efficiency of Regional District operations. Staff incorporated these initiatives into the draft Water Strategy framework and engagement that was completed in Spring 2022, including the feedback form. Subsequently in Q4 2022 and Q1 2023, staff further developed the WEP in response to interdepartmental feedback and to align with the draft SCRD Water Strategy.

The WEP focuses on work that could be completed between 2023 to 2027. It describes a set of objectives and actions, establishes data-based targets, and outlines an implementation strategy and schedule. It balances the needs of customers to use water for amenities in their homes, businesses, and outdoor spaces, while continuously improving efficiency.

[1] Preliminary Strategic Climate Risk Assessment for British Columbia. (2019) https://www2.gov.bc.ca/assets/gov/environment/climate-change/adaptation/prelim-strat-climate-risk-assessment.pdf

The purpose of this report is to share the Water Efficiency Plan for discussion.



DEVELOPING A WATER EFFICIENCY PLAN

The WEP will be aligned with the final Water Strategy, that staff plan to present to the SCRD Board in 2023 for their consideration. The WEP is a Water Strategy Action Plan that will provide guidance to staff and communicate to the public the current and future SCRD initiatives and programs related to water conservation and efficiency through targets, actions and timelines. Some initiatives outlined in the WEP are already underway.

Water Efficiency Framework

The WEP is divided into five objectives, each with its own set of actions that include programs, initiatives, and materials the SCRD plans to undertake in the next five years. The plan has a list of targets which the actions aim to achieve.

Water Production Analysis

This plan considers water production for each water system to help identify needs based on water produced and consumed, in relation to water supply available. Analysis also supports improvement in SCRD operations including accounting and non-revenue water management. The analysis helps staff prioritize conservation and water efficiency efforts.

Financial Implications

The development of the WEP was funded through a grant from the Healthy Watersheds Initiative in 2021. Actions in the WEP will be funded through various sources and some actions will require

budget proposals. For example, water meter installations is a large capital project that already has funding approved, while actions related to communications will use existing staff resources. Any actions that are not currently incorporated into the SCRD budget will require future budget proposals for the Board's consideration when they adopt the annual SCRD budget.

Timeline for Next Steps

The Water Efficiency Plan will be brought to the Board for their consideration in 2023. The Water Summit Series is underway, which brings together elected officials from all local governments, may also inform the Water Strategy and related action plans. The next Water Summit meeting will be in held in May.

STRATEGIC PLAN

The SCRD Water Efficiency Plan supports the advancement of the SCRD 2019-2023 Board Strategic Plan. The Asset Stewardship goal, specifically the strategy to have a "plan for and ensure year-round water availability now and in the future."

CONCLUSION

The SCRD developed a draft Water Efficiency Plan that outlines the current and future initiatives and programs the SCRD is working on related to water efficiency. The plan looks to prioritize programs and communicate clearly what the SCRD is doing to promote water efficiency and conservation, and areas where SCRD can add or build upon work that is already underway.

Staff are seeking feedback from the Water Supply Advisory Committee on the Water Efficiency Plan.

ATTACHMENTS

Attachment A – Water Efficiency Plan

Reviewed by:			
Manager	X - M. Edbrooke	Finance	
GM		Legislative	
CAO		Other	

Sunshine Coast Regional District
Water Service Areas
2023-2027 Water Efficiency Plan

DRAFT V5
April 2023

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1.0 Introduction

The Sunshine Coast Regional District (SCRD) provides drinking water services to more than 24,000 people in the region. Water efficiency remains a core component of the SCRD's long-term plan to ensure the sustainable delivery of drinking water. Water efficiency is a cost-effective approach to defer the need to increase water supply, treatment, and distribution capacity in the water systems. As predictions indicate that climate change will bring longer, drier summers[1], the need to develop efficient water habits year-round can make a significant difference in reducing daily demand. By using this finite resource as efficiently as possible, together we can ensure that it will be there for us all in the future.

This Water Efficiency Plan sets out a direction for the period from 2023 to 2027. It describes a set of objectives and actions, establishes data-based targets, and outlines an implementation strategy and schedule. It balances between ensuring that customers can use water for amenities in their homes, businesses, and outdoor spaces while continuously improving efficiency. It also supports implementation of the Water Strategy, currently under development (see Figure 1), and the SCRD's commitment to provide safe and reliable water supply. The SCRD is working with First Nations, other governing authorities, residents, businesses, and community organisations to achieve this.

This plan was developed by Econics Services (Econics) with funding from the Healthy Watersheds Initiative in 2022.

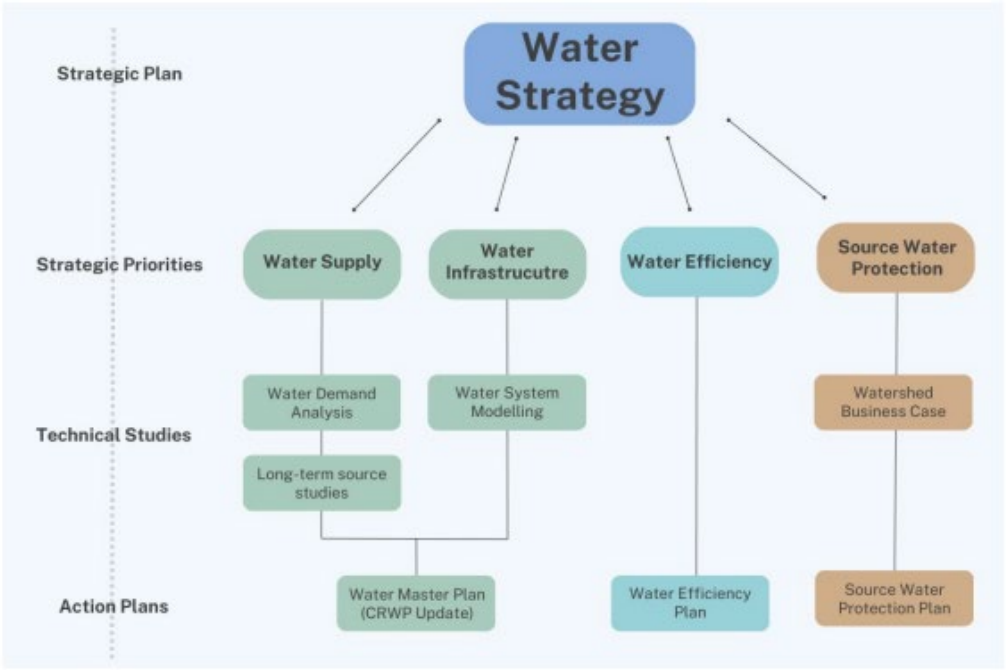

Figure 1: Relationship between SCRD Water Strategy and Water Efficiency Plan

[1] Preliminary Strategic Climate Risk Assessment for British Columbia. (2019) https://www2.gov.bc.ca/assets/gov/environment/climate-change/adaptation/prelim-strat-climate-risk-assessment.pdf

The Water Efficiency Plan has five main parts, as follows:

- Section 2 discusses the benefits of water use efficiency;
- Section 3 is an overview of SCRD Water Service Areas and a profile of water production;
- Section 4 sets out strategic context and this plan's objectives;
- Section 5 outlines the 2023 - 2027 Water Efficiency Plan under five objectives;
- Section 6 provides a high level implementation plan including targets, a schedule, early priorities, and a monitoring and evaluation framework.

How This Plan Was Developed

Creation of this plan commenced in early 2022. Econics reviewed SCRD's current conservation program including strengths, challenges, and opportunities. Econics analysed water production in SCRD's water distribution systems and facilitated virtual workshops with SCRD staff engaged in utility management and conservation program administration. Plan development was generally guided by direction in the Provincial Government's Water Conservation Guide (Province of BC et. al., 2013) as well as North American industry best practices as set out in AWWA (2006), AWWA (2013), Maddaus (2014), and Vickers (2001).

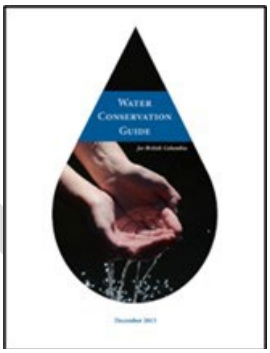

Figure 2: BC Water Conservation Guide

2.0 Benefits of Water Use Efficiency

Benefits of conservation vary from community to community depending on capital expansion plans, operating costs, energy use, the current demand profile, the water loss rate, and environmental drivers, among other factors. However, some typical environmental, financial, and community benefits residents might gain from implementation of this plan include the items listed in Table 1, below.

Table 1: Benefits of Water Use Efficiency

Community Benefits	Financial Benefits
• enhanced resilience to prolonged drought and a changing climate • retained water in reservoirs and aquifers for firefighting and other emergency needs • reduced impacts to drinking water quality, particularly during times of shortage • maintained aquatic and community recreation opportunities • greater equity and fairness (those who waste and put excessive demand on the system will pay more than those who conserve) • promotion of a stewardship ethic within the community	• minimized annual operating (i.e, energy use, pumping, distribution) and maintenance costs including emergency management costs for drought response • deferred or avoided capital investment in new bulk supply and treatment infrastructure (i.e., needs are met with conservation rather than new supplies) • improved chances of Provincial and Federal Government infrastructure funding and other grants by adoption of best practices • reduced peak demand – the point at which water use is greatest (usually hot summer days) - reducing the need to upsize pipes, pumps, treatment plants and reservoirs

Environmental Benefits	Policy and Legislative Linkages
• reduced or avoided impacts from construction of new infrastructure • reduced chemical use and disposal in water and wastewater treatment • reduced sewage disposal to the environment • reduced energy use and greenhouse gas emissions due to reductions in water treatment and pumping • maintained environmental flows for streams, fish, and aquatic ecosystems	• supports objectives in the *2019-2023 SCRD Board Strategic Plan* • supports implementation of the SCRD *Water Strategy* • supports implementation of an update to the *Comprehensive Regional Water Plan and other future water plans* • supports objectives in Official Community Plans • supports sustainable service delivery • supports implementation of the SCRD *Drought Response Plan* • contributes to meeting obligations under the Province's *Water Sustainability Act*, *Drinking Water Protection Act* and *Environmental Management Act*

From a community sustainability perspective, conservation will contribute to making SCRD water supplies more resilient to seasonal and longer-term droughts. Climate change modelling typically projects hotter and drier conditions in summer, placing pressures on lakes, streams, and aquifers. To mitigate this, decreasing per capita use through water efficiency measures is a top priority.

3.0 Water Service Areas Overview and Water Use Profile

This section provides a brief overview of the SCRD water systems and a summary of recent water production trends.

3.1 Systems Overview

SCRD operates seven unique **water systems**, each of which has its own supply sources, treatment infrastructure, and distribution network. The water systems are divided into three separate service areas which each has an independent budget and unique user fees and rates.

The service areas and their corresponding water are listed below.

North Pender Water Service Area

The **North Pender Harbour Water System** uses water from Garden Bay Lake and services the communities of Garden Bay, Irvine's Landing, Daniel Point and Sakinaw Ridge.

South Pender Water Service Area

The **South Pender Harbour Water System** uses water from McNeill Lake, and provides water to the communities of Madeira Park, Francis Peninsula and the surrounding area.

Regional Water Service Area

- **Egmont Water System** – Uses water from Waugh Lake and services the Egmont community.

- **Cove Cay Water System** – Uses water from Ruby Lake and services the community of Earls Cove.
- **Chapman Water System** – SCRD's largest water system, which services Electoral Areas B, D, E, F, District of Sechelt and shíshálh Nation Government District.
- **Langdale Water System** – draws water from Aquifer 560 and services Langdale.
- **Eastbourne Water System** - located on the eastern portion of Keats Island in Howe Sound and serves Eastbourne residents.

Note that in 2023, the Grathams Landing and Soames Point systems have been incorporated into the Chapman Water System upon completion of the Church Road Well Field Project. In the following section, the reference to nine systems refers to the number or systems operated prior to 2023.

Table 2: SCRD Water Distribution Systems

Water Service Area	Water Distribution System	Year Established by SCRD	Primary Water Source	Service Connections (2022 data)	Location
North Pender Harbour		2006	Garden Bay Lake	757	Garden Bay
Sound Pender Harbour		2008	McNeill Lake	970	Madeira Park
Regional Water Service Area	Egmont	2012	Waugh Lake	32	Egmont
	Cove Cay	1996	Ruby Lake	100	Earls Cove
	Chapman	1967	Chapman Lake, Gray Creek, and groundwater	9,627	Electoral Areas B, D, E, F and District of Sechelt
	Granthams Landing	2007	West Howe Sound Aquifer	85	Granthams Landing
	Soames Point	2004		100	Soames Point
	Langdale	1971		231	Langdale
	Eastbourne	2003		170	Keats Island

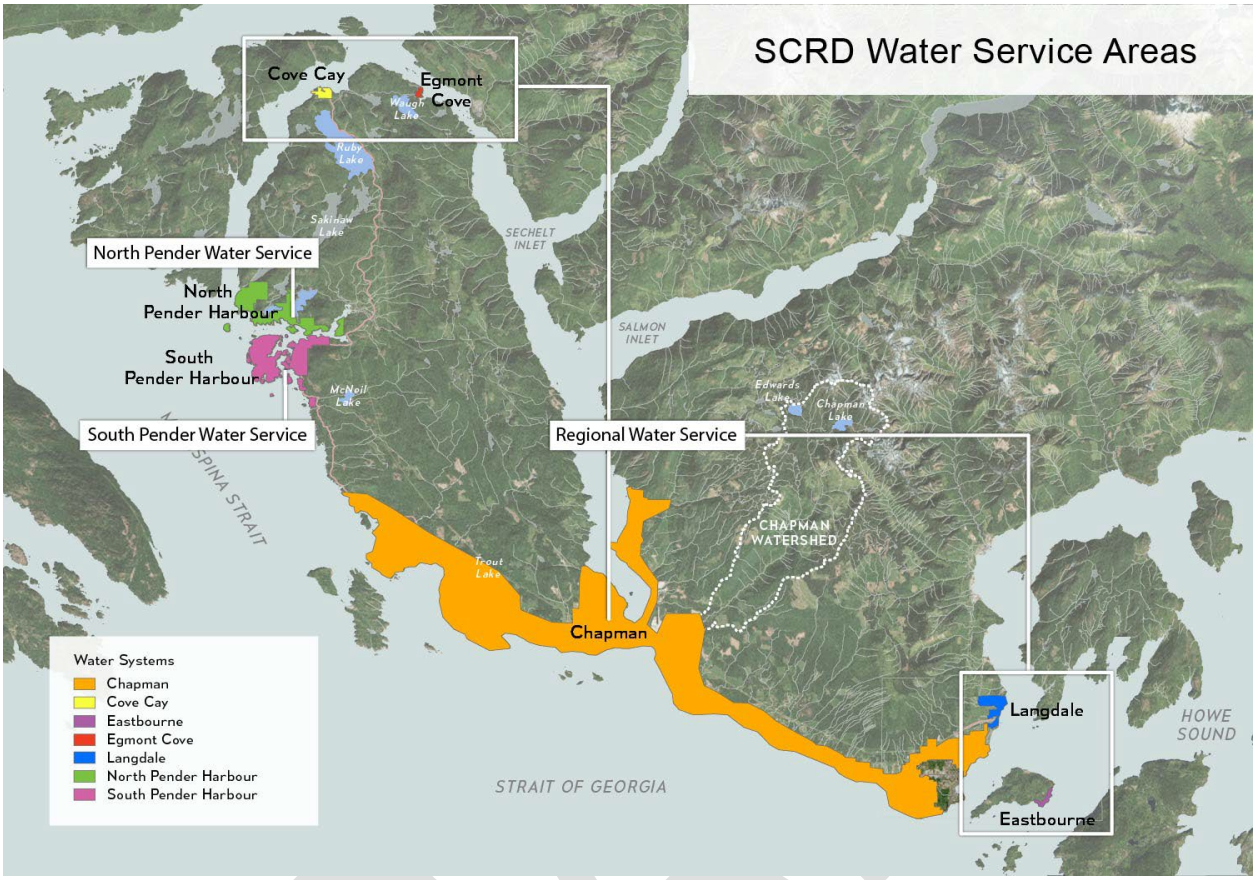

Figure 3: Water Distribution Systems Operated by the SCRD

3.2 Water Production Profile

To varying degrees, SCRD water systems serve a combination of full-time residents, seasonal residents, commercial and institutional buildings, and agricultural producers. When complete, universal metering across the water systems will enable detailed analysis of the proportion of water used by different sectors, and the extent of non-revenue water[2] for each system.

The current basis for understanding the status of and trends in water use for SCRD water systems is the use of daily bulk meter readings, which represent the volume of water removed from the water sources serving a particular water system. **The resulting data should not be interpreted as water *use* or *consumption* since it includes non-revenue water**.

Analysis of baseline water use for all nine water systems was completed by Econics, for all years for which data was provided by SCRD (2017-2021 for Chapman and South Pender, 2018-2021 for Eastbourne, and 2019-2021 for the remaining systems: Cove Cay, Egmont, Garden Bay, Granthams Landing, Langdale, and Soames). The results are displayed graphically in Appendix 3, along with a detailed methodology, including data limitations and assumptions.

[2] *Non-revenue water (NRW)* is water that has been treated and pumped through the distribution system, but is generally not billed and therefore does not contribute to utility revenues. It can include "real losses" such as leaks, overflows, flow tests and fire hydrant testing, or "apparent losses" from errors in meter reading and data handling or other factors.

A summary of key numerical findings from the analysis of water production data is presented in Table 3 below. It is important to note that the columns referring to average figures are, in some cases, based on data from different years due to data limitations (and as noted under each system name). The figures are presented as averages over the available timeframe. Figure 4 illustrates daily per capital production (in litres) for each system for all years for which data was available.

Key Highlights

While analyses were conducted to assess changes in annual production in all systems, the short time frame of the data set available (2019-2021), combined with the small size of many of the systems, resulted in some systems experiencing considerable reductions in total production (e.g., Langdale), while others experienced significant increases (notably Soames Point at 43.3% and Egmont at 22.4%). In interpreting this data, it is important to recognize that small systems are subject to greater data variability due to the proportionally larger impacts of single accounts (for example, leaks). Further, in the case of the period assessed, there were known change changes in the physical operations of the water supply infrastructure, pumping tests on wells, and in some cases periods of shutdown. Therefore, there is limited utility in extrapolating from the results in the *Change in total production* column of Table 3.

In general, other factors that may be contributing to the variation among systems include varying degrees of non-revenue water (including leaks on private or public property), varying water-use behaviours or uses (to keep lawns green or support backyard hobby farms or gardens), or different water conservation regulation imposed by SCRD to maintain water supplies through dry periods.

From an efficiency standpoint, SCRD's two largest water systems (Chapman and South Pender) had reductions in total production over the time periods reviewed. The exceptionally low figure for the Eastbourne system (58 litres per capita/day) is explained by it serving largely part-time and seasonal residents combined with a known supply deficit that results in use of higher stages of water conservation regulations routinely required.

From an infrastructure capacity standpoint, the extent to which water use increases during the summer is often measured by the peaking factor. The peaking factor compares use on the day that it was highest (referred to as the peak day production in Table 3) with average daily production throughout the year (referred to as the average daily production in Table 3). Peaking factors for each system are represented in a separate column and range from lows of 1.73 and 1.78 in the Langdale and Chapman systems, respectively, to 8.16 in the Cove Cay system.

Since water systems must be constructed with enough capacity to meet peak water production needs, high peaking factors can indicate pressure on the water supply system and present a challenge for drought resiliency. High peaking factors can also indicate potential to significantly reduce discretionary water use, which tends to be used outdoors. The combination of high per capita production and low peaking factors in a system (e.g., such as the Chapman and the Langdale and Granthams Landing systems to a lesser extent) can be indicative of significant non-residential water use and/or high non-revenue water.

Table 3: Summary of key water production figures for SCRD water systems

System	Estimated service population	Average total annual production (m^3)	Average daily production (m^3)	Average peak day production (m^3)	Average peaking factor	Average per capita production (Litres per capita/ day)	Change in total production (2019 to 2021)
North Pender (2019-21)	1,174	223,408	612	1,537	2.51	521	+13.9%
South Pender (2017-21)	2,018	381,945	1,046	2180	2.08	525	-11.4%
Egmont (2019-21)	42	11,368	33	84	2.57	775	+29.3%
Cove Cay (2019-21)	147	16,168	44	361	8.16	301	-3.1%
Chapman (2017-21)	21,624	4,460,388	12,214	21,791	1.78	565	-2.3%[3]
Granthams Landing (2019-21)*[4]	162	32,947	95.38	214	2.24	589	+4.7%
Soames Point (2019-21)	216	38,907	107	375	3.51	493	+43.4%
Langdale (2019-21)	470	75,876	208	359	1.73	442	-37.5%
Eastbourne (2018-21)	338	7,408	22	86	3.9	58	+6.0

[3] Over the longer 2017-21 timeframe, total production in the Chapman system declined by 9.9%.
[4] Production figures for two months in 2021 were interpolated from the most recent month's data from Soames Point Water System.

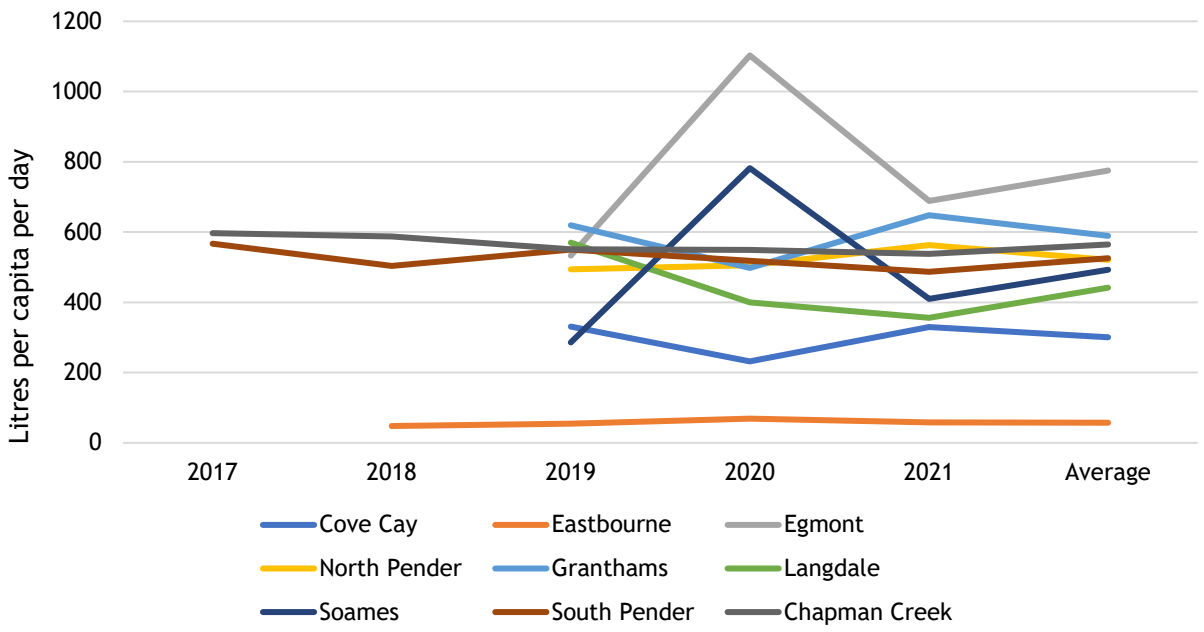

Figure 4: Per capita production (in litres) per day for all SCRD water systems (2017-2021)

4.0 Planning Context

This plan is guided by the 2019-2023 SCRD Board Strategic Plan, which includes the following direction related to water conservation:

- Strategy 2.1: Plan for and ensure year-round water availability now and in the future
  - develop water supply plans and water supply sources;
  - review and update the Drought Response Plan to ensure alignment with water supply capacity;
  - expand water conservation programs and increase engagement with residents and stakeholders on water conservation (abridged from SCRD, 2019, p. 8).

The SCRD is developing a Water Strategy, scheduled for completion in 2023. This plan includes a commitment statement, guiding principles, focus areas, and actions. The Water Efficiency Plan is an outcome of the Water Strategy, and incorporates feedback gathered during Water Strategy public engagement.

This plan is also guided by SCRD 2013 Comprehensive Regional Water Plan, which "provides guidance for water conservation and system expansion/improvement measures to accommodate growth projections identified in the various Official Community Plans to the year 2036" (Opus DaytonKnight, 2013).[5] That plan includes the following commitments, which are achieved or in progress:

- implement an intensive demand management program to reduce water demand to a target of 480 litres per capita per day (Lcd) for average day and 940 Lcd for maximum day demand by 2036;
- implement universal metering across the regional water service;
- implement annual sprinkling regulations;
- develop other measures including a conservation-based rate structure, leak detection, and additional education/outreach programs (Opus DaytonKnight, 2013, p. 1-2).

Through the Water Strategy, new water master plans will be developed in 2023 and 2024. This update will build upon water master plans like the 2013 Comprehensive Regional Water Plan (CRWP) and be informed by new water system modelling and an updated water demand analysis. Note that the CRWP only provided modelling for the Chapman Water System, and the update will include all SCRD managed water systems.

SCRD also implements a Drought Response Plan each year. The purpose of this plan is "to manage demand for drinking water during the summer months or during other unforeseen water shortage situations such as emergencies or major service disruptions" (SCRD, 2020, p. 2). It sets out a methodology for determining regulation stages, requirements at each stage, and communications guidance. Linkages between the Drought Response Plan and this plan are discussed further in section 5.1, below. This framework has been imperative to ensuring supply security in recent years, which have witnessed particularly dry summer conditions, low stream flows, and low reservoir levels.

[5] As discussed in Section 3.1, SCRD has three water service areas. The Comprehensive Regional Water Plan applies only to the Regional Water Service Area; however, much of the direction related to water use efficiency is relevant to all three service areas.

5.0 2023 - 2027 Water Efficiency Objectives and Actions

This section sets out the new and continuing measures SCRD will implement over the next decade to attain the targets set out in Section 6.1. The new plan places strong emphasis on helping residents and businesses become more efficient, measuring water use, and improving SCRD operations.

The actions in this plan are organized around five objectives:

1. **Reduce Use of Drinking Water Outdoors:** enhance the effectiveness of existing incentives and regulations that help residents reduce irrigation of lawns and gardens.

2. **Measure Water Use and Equitably Charge**: complete universal metering across the region and ensure water service pricing fully recovers costs of providing the service, is equitable and provides incentives for people to conserve. Ensure customers are notified of detected leaks and supported in repair.

3. **Effective Education and Outreach:** provide residents, visitors, and businesses tools to understand their water use and encourage efficiency. Where possible work with community partners.

4. **Efficient Regional District Operations:** Demonstrate leadership to the community through measures such as retrofitting SCRD facilities, irrigating SCRD parks and greenspaces efficiently, identifying and addressing sources of non-revenue water loss including leakage in distribution systems, and improving water data management and accounting.

5. **Adopt Water efficiency-centric policy and planning**: Update Official Community Plans, bylaws, and development permits to require efficient water use in new developments.

The diversity of objectives creates a broad and resilient approach addressing the cumulative impacts that make up the complex problem affecting the SCRD's water services. The nature of a complex problem is such that social, cultural, and economic forces are often interconnected making a single or perfect solution not possible. Therefore, an approach which provides numerous interventions, that work together to shift social norms, attitudes and beliefs in parallel with infrastructure and administrative improvements.

In most cases, the actions in this plan are enhancements of programs already underway. In other cases, new programs will be developed and implemented. Table 4 provides a summary of program actions and their status.

Table 4: 2023 - 2027 Water Efficiency Plan Summary

Objectives	Code	Actions	Status
Objective 1: Reduce Outdoor Water Use	1.1	Water Conservation Regulations	Maintain
	1.2	Rainwater Harvesting Rebate Program	Maintain
Objective 2: Measure Water Use and Equitable Water Service Rates	2.1	Universal Water Metering Program	Enhance
	2.2	Water Rate Structure Review	Enhance
	2.3	Leak Resolution Program	Enhance
Objective 3: Effective Education and Outreach	3.1	Water System & Project Communications	Maintain
	3.2	Residential Water Efficiency Resources	Enhance
	3.3	Monthly Water Use Updates	Enhance
	3.4	Visitor Water Conservation Communications	Maintain
	3.5	High Volume User Conservation Support	Maintain
Objective 4: Efficient Regional District Operations	4.1	SCRD Facility Audits and Retrofits	Enhance
	4.2	SCRD Park and Greenspace Irrigation	Enhance
	4.3	Non-Revenue Water Management	Enhance
	4.4	Water Data Collection and Accounting	Enhance
Objective 5: Adopt Water Efficiency-centric Policy and Planning	5.1	Update Official Community Plans and Bylaws	New

5.1 Objective 1: Reduce Use of Drinking Water Outdoors

As discussed in Section 3, water consumption grows dramatically in the summer, typically more than doubling the base demand in the winter. The majority of this is due to residents irrigating lawns and gardens, including residents who own properties and visit them seasonally during the summer.

Under this objective, SCRD will assist residents manage use of drinking water outdoors with the objective of reducing pressure on our water systems. In this way, people can maintain their gardens and other outdoor spaces while using water as efficiently as possible.

There is already a strong foundation of programs in place to build on. SCRD will continue to implement and enhance the following actions as a top priority under this plan.

Action 1.1 - Water Conservation Regulations

Regulatory approaches like watering regulations are cost effective because they make significant contributions to cutting demand without requiring large operational budgets, beyond enforcement and communications costs.

SCRD implements seasonal lawn, garden and maintenance watering regulations each year under the Drought Response Plan (SCRD, 2022) for a minimum period of May 1 to September 30 each year. Regulations focus on outdoor water use activities.

Regulations may escalate based on a four-stage system if there is stress on supplies due to hot and dry weather or other unforeseen circumstances. See the summary in Figure 5, and Appendix 1 for full details on the regulations.

Under ordinary conditions, Stage 1 allows lawn watering two days per week from May 1 to September 30 on an "evens and odds" house number system. Permitted hours are limited to mornings only, between 7am and 8am, which is consistent with North American best practice.

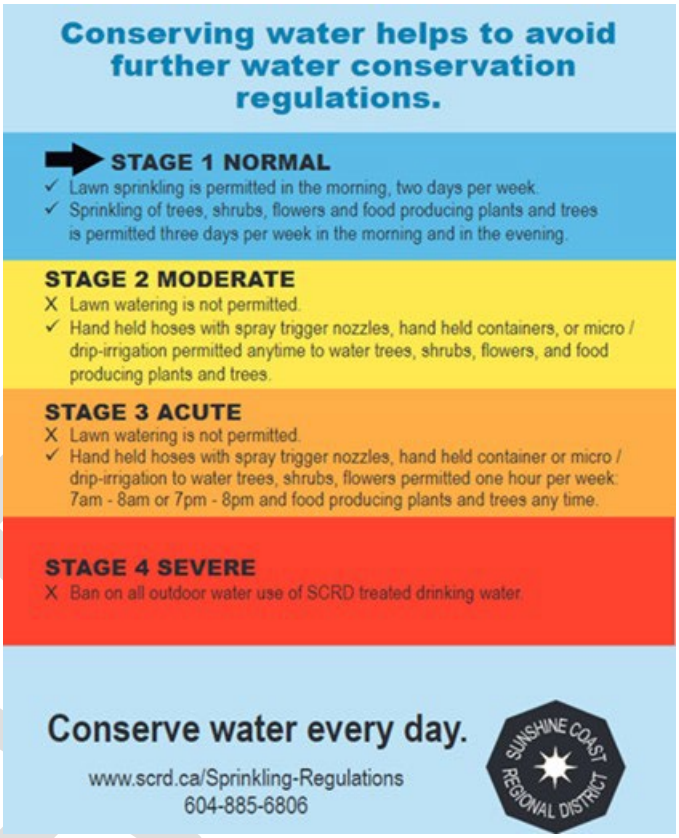

Figure 5: SCRD Water Conservation Regulations

The SCRD Water Sustainability Team works with bylaw enforcement staff to implement the regulations, with an emphasis on attaining broad and voluntary community compliance rather than on punitive enforcement (see Appendix 2). However, escalating repeated non-compliance, and immediate fines in Stage 4 are tools available within Bylaw 422. Planned efforts for the next operational period include the following:

- continue to heavily promote awareness of regulations, particularly during the start of the season, and through many channels including web, social media, billing inserts, posters, direct engagement, community events, and newspaper ads;
- continually review communications material to ensure that they send the right messages and strike the right tone;
- review enforcement approach and integrate increased support from protective services;
- implement targeted and escalating enforcement at properties with known instances of repeat non-compliance or high-use;
- during Stage 4, or extreme drought conditions, further measures will be considered.

Action 1.2 - Rainwater Harvesting Rebate Program

SCRD offers rebates to eligible customers who purchase and install rainwater harvesting systems to offset irrigation from drinking water and provide non-potable water for household

maintenance. Rebates are available on a first come, first serve basis and only to residential property owners with an SCRD utilities account. Applications must be pre-approved before purchase of the storage vessel to qualify. Other terms and conditions are found in the application form on the SCRD website. Rebate amounts are listed in Table 5.

Table 5: Rainwater Harvesting Rebate Program (2023)

Minimum New Rainwater Storage Volume	Rebate Amount
4,500 litres	$500
9,000 litres	$1,000

This program has been in place since 2018 and participation has been variable (see Appendix 2). SCRD will continue efforts to promote it, including the following:

- continue to offer two levels of rebates for different sized systems;
- actively promote the program to households with known high usage;
- aim to use 100% of rebates each year;
- continue to offer rainwater harvesting "best practice" education resources on the SCRD website and through other channels;
- continue to monitor program uptake.

5.2 Objective 2: Measure Water Use and Equitably Charge

Under this objective, the SCRD will measure the water use of all customers and ensure water service pricing fully recovers costs of providing the service including both operational and capital costs, is equitable and provides incentives for people to conserve. Water meter data will also be used to detect leaks and support customers in leak resolution.

Action 2.1 - Universal Water Metering Program

Measuring how much water each customer uses through a meter is a recognized best practice in utility management across the world. Meters can improve our supply system by:

- promoting efficiency and conservation;
- identifying leaks early, preventing property damage and water losses;
- offsetting the future cost of infrastructure projects; and,
- offering the opportunity for fair billing, so people only pay for what they use.

Many homes and almost all businesses are already metered in SCRD water service areas. In 2014/15, meters were installed in the North and South Pender Harbour Water Service Areas. In 2016/17, metering continued in the Regional Water Service Area, including Egmont, Earls Cove, Secret Cove, Halfmoon Bay, Roberts Creek, Elphinstone and West Howe Sound including Keats Island.

However, the job is not done. About 40% of homes remain unmetered in the Chapman Water System, including most residential properties in the Sechelt area. See Table 5 for status of residential metering in 2022.

Table 5: Status of Residential Metering by Water Distribution System (2022)

Water Service Area	Water Distribution System	Percent of Single-Family Homes that Have a Water Meter
North Pender Harbour		100%
Sound Pender Harbour		100%
Regional Water Service Area	Egmont	100%
	Cove Cay	100%
	Chapman	60%
	Granthams Landing	100%
	Soames Point	100%
	Langdale	100%
	Eastbourne	100%

In 2019, the SCRD Board of Directors adopted a target to complete development and implementation of a water meter program, including completion of meter installations, customer access to water use data, and the leak notification program. As of spring 2023, the contract award for the completion of the universal metering project is imminently pending. Completion of this project and development of a supporting water rate structure, discussed next, is integral to this Water Efficiency Plan and an early priority.

Action 2.2 - Water Rate Structure Review

All SCRD residential water customers currently pay a flat rate, regardless of how much water they use. As a result, they have little financial incentive to purchase water saving technology for their homes or to consume water wisely.

In 2023, the SCRD is working with consultants to complete a water rate structure study for all water service areas. The primary goal of this review is to ensure that revenue is stable and sufficient to cover the long-term costs of running systems. However, it will also consider other objectives including affordability, fairness, and communication simplicity. Volume-based rates may be proposed, wherein customers could be charged based on the amount they consume, a standard practice in most North American water utilities of all sizes.

While the primary purpose of rates is to ensure that there is sufficient revenue to fund continued operation of supply systems, effective volume-based pricing is a financial tool that can encourage conservation. When rates are structured so that customers pay more if they use more, they will have an incentive to do so wisely and to purchase efficient fixtures and appliances for their homes and businesses. This approach is also much fairer. Under the current “flat rate” system, SCRD residents who conserve end up subsidizing the costs of providing more water to high use households.

Rate structures will be set by the SCRD Board of Directors with community input. The review will follow industry best practices, including the procedures and principles set out the American Water Works Association Manual M1, Principles of Water Rates, Fees, and Charges (AWWA, 2017).

Action 2.3 – Leak Resolution Program

By analyzing meter data, SCRD staff alert residential property owners who have a possible water leak four times a year. The property owner receives a letter that shows their daily water consumption for the indicated month. Resources to help isolate and fix a leak, and clarification of customer responsibility are made available. Commercial customers are notified of potential leaks on their utility bills (sent quarterly). Additionally, customers are made aware that high volume unresolved leaks may result in supply shut off. Recipients of multiple letters with large leaks are typically escalated for immediate resolution.

Since this program was implemented in 2017, it is estimated that, on average, two leaks per day are resolved, saving millions of litres per year (see Figure 6).

Figure 6: SCRD Leak Notification Program Ad

5.3 Objective 3: Effective Education and Outreach

Public education and outreach are essential prerequisites to the successful adoption and implementation of conservation practices. This helps customers make sound choices, generate understanding of the issues, and builds support for the SCRD programs. Residents need to understand the reasons for water resource stewardship and planning and the associated economic and environmental benefits. SCRD's long running and successful community education initiatives will continue under this plan, building on past efforts.

Action 3.1 – Water System and Project Communications

Improve Water System information available to the public to increase understanding around local water supplies, water services investments, user fees, challenges, and priorities through online portals. Through sharing details of infrastructure and program improvements greater levels of community buy-in to conservation and water efficiency programs can be supported.

Action 3.2 – Residential Water Efficiency Resources

SCRD will continue to offer print and electronic resources to residents through various channels including the Regional District website, social media, the customer service desk, community events, and direct outreach by staff. This will include elements focused on outdoor demand, as discussed under Objective 1, as well as ones to help with efficient use indoors. Staff will continue to improve assets and the content on the website.

SCRD will continue to offer educational materials to residents to help them design and maintain attractive, welcoming, drought tolerant gardens with non-invasive plants suited to our west coast conditions and dry summers. This includes distributing the SCRD Waterwise Plant Guide (see Figure 7) and other publications through the website and print copies through community events, the customer service desk, and direct outreach.

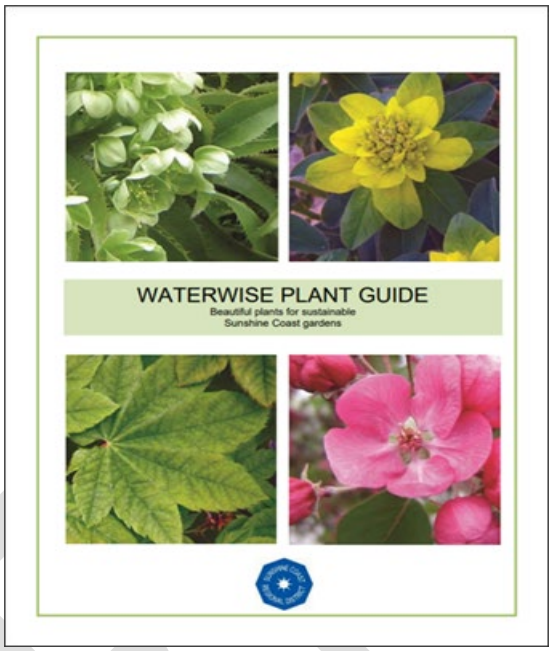

Figure 7: Waterwise Plant Guide

Action 3.3 – Monthly Water Use Updates

SCRD offers a monthly update by subscription to residents in its service areas by means of personalized email. The update provides them with in-depth information including their household's average daily consumption per month for the previous and present year. At the end of each year, they also see an annual total. A comparison chart to other SCRD residents gives subscribers a comparative benchmark and is updated monthly. Water news and relevant weblinks to online resources and information about SCRD programs are also included. The Monthly Water Use Update program began in 2019 and as of spring 2023 has more than 730 subscribers. Feedback from subscribers indicates this action has been effective in raising the water literacy of recipients. Interdepartmental discussions are underway to explore software solutions to allow all properties with meters to access their data online.

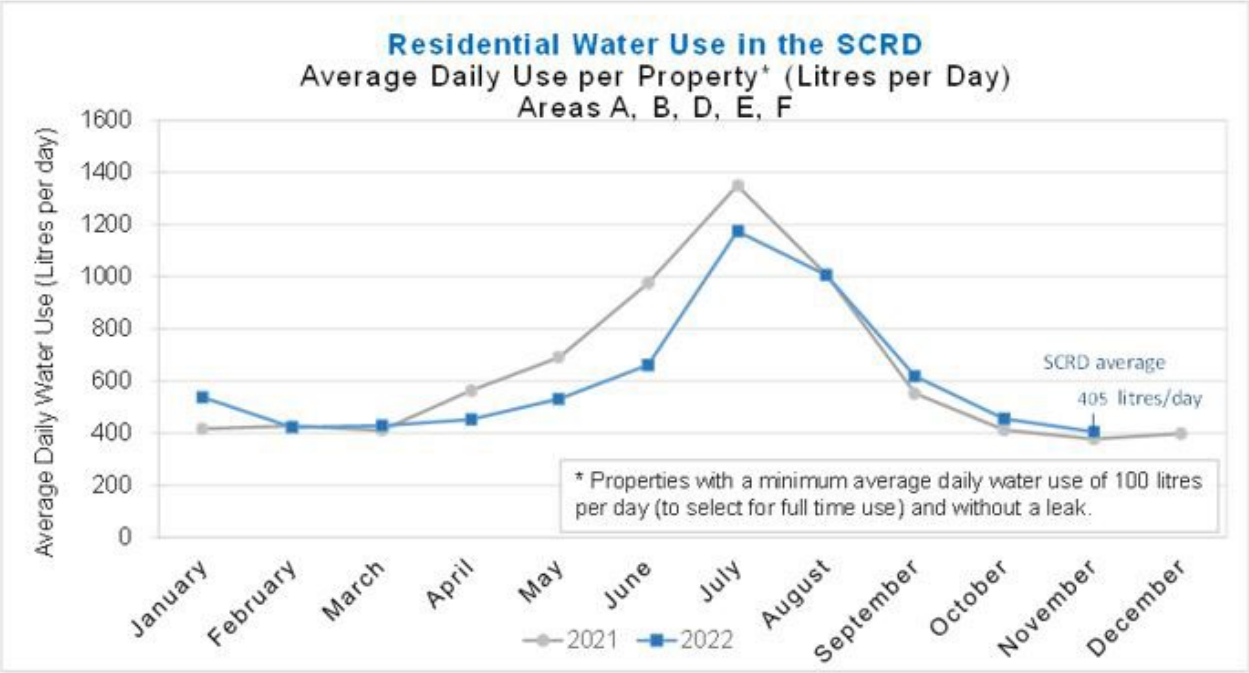

Figure 8: Monthly Water Use Update graph

Action 3.4 – Visitor Water Conservation Communications

SCRD supports Destination BC's work with the Sunshine Coast tourism sector to help increase visitor awareness of water supply constraints and the necessity for water conservation.

SCRD will continue working with Sunshine Coast Tourism and Destination BC to increase visitor water conservation awareness while ensuring positive tourist experiences.

Objectives include helping visitors take action to reduce their use and increasing awareness of the role they play in local sustainability. This work will continue the program that commenced in 2021 and earlier pilots. (see Figure 9).

Measures initiated with Sunshine Coast Tourism include the following:

- content tool-kit for businesses
- accommodations water conservation sign card
- written, photo, and video content for visitor-oriented social media
- links to sustainable business operation tools and webinars

Figure 9: Tourist Accommodation "Pledge Card"

Action 3.5 - High Volume User Conservation Support

Analysis completed by staff in early 2021 found that a small portion of residential households account for vastly disproportionate water use compared to their neighbours (9% of homes account about 38% of total consumption). This trend is consistent with what is found in other North American jurisdictions.

There are many explanations. For example, some residences have large families, some use more outside for gardening, some have older, inefficient fixtures and appliances, some have home-based businesses, and some may have large undetected leaks. Another challenge is that market research in other jurisdictions consistently shows that most of these customers will be unaware that their demand is markedly higher than the norm. This further exacerbated by the fact that people in different distribution systems can be under different stages of watering regulations during the summer because of variation in supply availability.

In 2022, staff piloted a Water Use Awareness program to support seasonal high water users in reducing their consumption. By comparing a water use diary to detailed meter data, a participant could learn about the impacts of different activities, such as irrigating or pressure washing. An invitation to participate was sent to more than 500 properties with demonstrated summer seasonal high water use. While several interactions from interested residents resulted, no residents signed up for the pilot. Feedback indicated that under the current flat rate billing structure, the incentives for high water users to change their behavior is low. Therefore, for the short term, the tools developed for the Water Use Awareness pilot will be available should they be requested in certain high use scenarios.

However, if volumetric billing is adopted, SCRD can further develop the pilot project to offer high water using customers a suite of tools to help residents reduce demand. Developments will involve building relationships with this market segment to help them find an approach that works with their situation, ideally in a way that saves them money and complements their lifestyles.

The suite of tools may include three components:

1. Education and Awareness – this may include personalized communication through inserts in bills or special letters, customized savings plans developed by completing questionnaires, online tools, and other tools. The objective at this stage is to create mindfulness about personal consumption and facilitate ongoing, positive communication between SCRD and participating households.

2. Detecting Inefficiencies – done through resident self-conduced home audits designed to help them understand which appliances and activities use the most water in their home, and how they can be more efficient. Leak repair and fixture replacements would be a key part of this component. SCRD will explore whether to offer targeted rebates or other incentives to further encourage changes.

3. Incentives – participants will be informed about the Rainwater Harvesting Rebate. In the future, other targeted incentives might be offered such as free toilet flappers, irrigation system rebates, or others. Eligibility could require that a water use assessment be completed first.

All participants would start at the first component of education, and other elements could be delivered sequentially with the goal of helping them reduce demand quickly and at low cost. Participation would be completely voluntary. Additionally, a similar approach and resources could be made available to interested high-volume water using businesses.

5.4 Objective 4: Efficient Regional District Operations

Improving the efficiency of SCRD operations can result in low-cost savings and, more importantly, demonstrate leadership to the community. Target end uses include park and green space irrigation, cleaning activities, facility management, and water service operations (including addressing leaks).

Action 4.1 - SCRD Facility Audits and Retrofits

Experience in other jurisdictions shows that opportunities to improve water use efficiency at local government facilities can often be easily identified and cost effectively implemented. This can include simple changes, like swapping out older showerheads or toilets, or more ambitious projects, such as replacing outdated cooling towers or other specialized systems. This kind of work also typically results in reduced energy use (less pumping and heating), which could help advance the SCRD Board Strategic Plan goal of moving “swiftly to reduce GHG emissions and enhance our region’s resiliency to the effects of a changing climate” (SCRD, 2019).

The Water Sustainability Team will work with other SCRD departments to systematically identify water-using SCRD facilities, conduct audits where it makes sense to do so, and implement cost-effective efficiency retrofits.

This will build on audit and retrofit work already completed by SCRD in recent years. Most notably, in 2019 five larger facilities were audited for energy and water use (Fleet Maintenance Building; Gibsons Fire Hall #1; Halfmoon Bay Fire Hall #1; Sunshine Coast Arena; Water Utilities Building), and up-to-date reports with recommendations are on hand (see Village Consulting, 2020).

However, there is still much to do. For example, not all the recommendations identified in the 2109 audits were completed. Moreover, there are approximately 92 SCRD facilities spread across the region, and most of these have not yet had water use audits. As well, not all these locations have meters, so their true water use is unknown (noting that completion of metering at many of these places is already planned, as discussed under Objective 2, above). As a result, an early priority is to identify how SCRD facilities currently use water, and which ones still need upgrades.

Action 4.2 – SCRD Park and Greenspace Irrigation

Sports fields maintained by SCRD include the following:

- Lions Park (13776 Sunshine Coast Hwy, Pender Harbour)
- Connor Park (8108 Northwood, Halfmoon Bay)
- Cliff Gilker (3110 Sunshine Coast Hwy, Roberts Creek)
- Shirley Macey (930 Chamberlain Road, Langdale)
- Maryanne West (1224 Chaster Road, Gibsons)

- Brothers Field (700 Park Road, Gibsons)

The Water Sustainability Team will work with SCRD Parks Department to inform municipal landscape and irrigation best practices. This will start with a pilot project involving sharing park water use data between departments to help stuff understand how water is currently used under Stage 1 and Stage 2 restrictions.

This will build on preliminary work completed in 2021 that identified locations where turf grass and other irrigation takes place, how water is currently used annually in these places, and opportunities to reduce demand (SCRD, 2021a).

Under this program, SCRD will look at options including retrofitting existing irrigation systems with more efficient technology, increasing use of horticultural practices such as mulching, drought tolerant planting, tailored weather-based irrigation scheduling, regulating pressure, looking for leaks, and other solutions. This work will be done following national best practice. Depending on results, SCRD could consider formalizing these practices in a Parks Department operational policy.

Action 4.3 - Non-Revenue Water Management

Managing non-revenue water in SCRD distribution systems, including system losses through leaks, is often one of the most effective ways to conserve. There are many components of non-revenue water. Some are operational uses, such as main flushing, fire hydrant testing, and water treatment plant back washing. Others are sources of waste, such as leaks and overflows. This approach has the added benefit that, when implemented carefully, it requires no behavior change by residents and has little or no impact on people's lifestyles.

SCRD strives to operate its systems as efficiently as possible and has already started work in this area. For example, in 2021, water leak correlator equipment was purchased. SCRD will continue to invest in improving water loss management as follows:

- develop clear objectives and goals for distribution loss management, including quantified targets;
- enhance monitoring and data collection;
- identify best management practices; and,
- develop an implementation schedule focused on activities with high potential for cost effective loss reduction.

Action 4.4 - Water Use Data and Accounting

There is some uncertainty about current levels of non-revenue water and system losses. There is also some uncertainty about household water consumption levels, particularly in areas that remain unmetered (as discussed under Objective 2, above).

As a result, the first task under this action will be to improve water use accounting methods. This will include conducting a formal audit following the procedures set out in American Water Works Association Manual of Water Supply Practices M36 (Water Audits and Loss Control Programs). This may involve conducting night flow analysis, adding additional system metering, or other system enhancements as required. Completing universal metering across all

distribution systems will also greatly improve the SCRD's ability to find and address leaks and understand community water use trends. Results of the audit will also be used to establish measurable loss reduction targets for the next decade. See Section 7.1, below, for more on targets under this plan.

Concurrently, staff can improve water production and consumption data management. This will include reviewing how relevant information management systems are used and the methodologies to calculate total and per capita water production and consumption. Tracking and reporting methods will be standardized and recorded in a procedure manual.

5.5 Objective 5: Adopt water efficiency-centric policy and planning

Action 6.1 – Update Official Community Plans and Bylaws

Updating bylaws to promote water conservation and water efficiency guides behavioural and technological choices of water users. Policy changes can impact both new and existing developments. Therefore, Regional District bylaws that manage land-use and development should be viewed with a water conservation lens.

Current SCRD's bylaw requirements include water metering, volumetric billing for specific activities and when the SCRD advises, and water conservation regulations. New and innovative requirements seen in other jurisdictions to promote efficient water use include policy such as, but not limited to:

- mandatory rainwater use for irrigation,
- limits on outdoor irrigation systems,
- prohibiting use of municipal water in once-thru cooling systems,
- volumetric water service billing for all water users,
- Development Cost Charges incentives,
- penalties for water leaks and wastage,
- limits to water use based on activity type, and
- requirements for water demand studies for large developments and land-use changes.

Official Community Plans and Development Permit Areas are also a regulatory tool to promote the protection of surface and groundwater resources and can promote water efficient development. SCRD often engages the public and relevant industries and businesses, and other levels of government on proposed changes to SCRD policies and bylaws.

During regular reviews and updates of SCRD policy, staff will use a water conservation lens to promote efficient water use. The SCRD will integrate water conservation into infrastructure, wastewater and land use planning and policies.

6.0 Implementation

This section describes how the plan will be implemented. It also provides a framework for monitoring, evaluation, and continuous improvement.

6.1 Water Efficiency Plan Targets

SCRD will pursue realistic production and consumption targets to measure success towards implementation of this plan. The following targets outlined provide measurements for consideration, however, the values of the targets if related to water volumes will be developed and instated with the completion of the updated water master plan, referenced in Section 4.0.

Target 1: Water Production

SCRD aims to reduce average water production across all distribution systems by XXX% each year for the next eight years. Some of this will occur naturally as people replace inefficient fixtures and appliances over time. The remainder will be driven by this plan. As such, the target (as shown in Figure 10) is:

- Reduce average water production per capita across all water distribution systems by XX% to a target of XXX Lcd for average day by 2030.

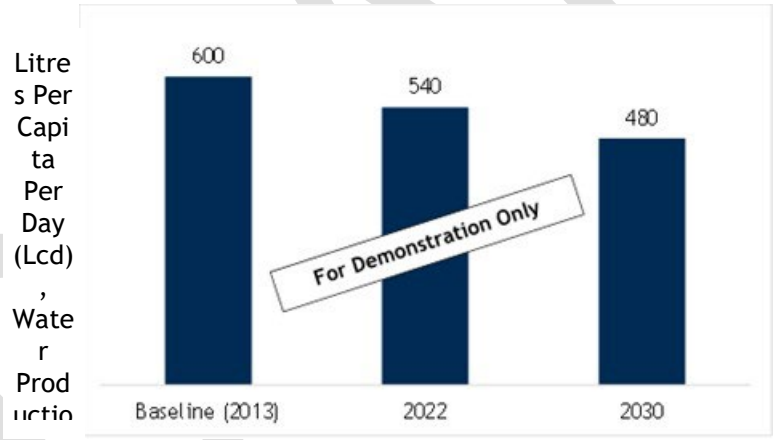

Figure 10: SCRD WSA Water Production Targets (Liters/Capita/Day)

Target 2: Peak Season Water Production

With respect to peak demand, targets for the 2023 to 2027 period are designed to understand the volume withdrawn from streams and aquifers during the summer. Maximum day production is highly variable and heavily influenced by summer weather conditions, including whether higher stage Water Conservation Regulations must be introduced. Summers are expected to become drier over the coming years. Considering this, the target for the next operational period is as follows:

- Reduce maximum day demand (average for water distribution systems) by XXX% from XXX Lcd to XXX Lcd on across all.

Target 3: Universal Metering

As discussed in section 5.2, SCRD will complete universal metering at remaining residential properties in the District of Sechelt, by the end of this Plan's operational period. Considering this, the target for residential metering (as shown in Figure 10) is as follows:

- Install meters at remaining residential service connections in the District of Sechelt in SCRD water service areas by 2024.

Target 4: Per Capita Residential Water Consumption

Benchmarking efficiency performance against average residential consumption as measured through a meter, expressed in litres per capita per day, is widely considered an industry standard. This metric allows "apple-to-apple" comparison to other jurisdictions because the influence of, for example, non-revenue water and any high-volume industry use is controlled.

As SCRD completes universal metering across all distribution systems, it will be better positioned to understand demand in the residential sector. Once these investigations have been completed and uncertainty has been narrowed, quantified targets in this area will be developed. As water metering has been complete for the South and North Pender initial methodologies for per capita calculations can be tested first.

The Comprehensive Regional Water Plan currently provides targets for per capita water production. This plan is set to be updated in the coming years, and with increased information from universal metering and water system modelling, will provide an updated outlook for per-capita water use in all water systems.

Target 5: Non-Revenue Water

As discussed in Section 5.4, improving management of non-revenue water and system loss is a priority under this plan. However, there remains some uncertainty about the current situation that will be more resolvable once universal metering has been completed. SCRD will develop an indicator in this area as an early implementation priority. This will be expressed as a target reduction of non-revenue water as a percentage of total production across all WSA. Alternatively, it may be possible to express this as an infrastructure leakage index (ILI) target based on the American Water Works Association methodology.[6] As water metering has been complete for the South and North Pender initial methodologies for per capita calculations can be tested first.

Target 6: Reduce Level and Duration of Water Conservation Regulations

With respect to the impacts on residents, businesses, and institutions, measuring the time periods and stage levels to which water restrictions are required can help determine the effectiveness of increased water efficiency. Weather conditions such as precipitation,

[6] It is noted that there are limitations to the use of the ILI metric for small systems. However, it may be possible to develop a reliable ILI specifically for Chapman water distribution system. AWWA (2016), Chapter 7 provides further guidance on this issue.

temperature and snow-pack also play a role in the levels and duration of Water Conservation Regulations which need to be taken into consideration with the results.

- Reduce the frequency and durations of escalation to more severe (Stage 3 and 4) summer watering regulations by XXX from the averages of last XXX years to XXX years

Target 8: Community Adoption of Water Efficiency Programs

While a direct measure will not be possible for the qualitative attributes of value and ethical shifts; however, two indirect measurements may provide some utility.

- Percentage of Rainwater Harvest Rebates claimed
- Subscription levels to the Monthly Water Use Update

6.2 Monitoring and Evaluation

Indicators for each program objective are compiled in Table 7. These are intended to support the strategic targets set out above. Performance will primarily be measured by SCRD Water Sustainability Team.

Table 6: Program Indicators and Metrics

Theme	Indicators	Metrics
Objective 1: Reduce Outdoor Water Use	Peak season demand	Maximum day water production per capita (Lcd)
	Compliance with Water Conservation Regulations	Number of community interactions
	Rainwater harvesting rebate uptake	Number of rebates issued per year
Objective 2: Measure Water Use and Equitable Water Service Rates	Residential water metering	Percent of single-family homes that have a water meter
	Water rate review completed	Board approves new rates and rate structure after review
Objective 3: Effective Education and Outreach	Per capita demand	Percent change in single family residential per capita consumption (Lcd)
	High volume residential household demand	Percent change in single family residential per capita consumption (Lcd) among household participating in SCRD program
	Water use updates	Number of households subscribing to water use updates
Objective 4: Efficient Regional District Operations	Facility audits	Number of facilities audited
	Park irrigation	Change in total volume of water used at SCRD parks based on metered consumption
	Volume of water losses (real and apparent)	Cubic metres (m^3)/service connection/year
	Volume of non-revenue water	Non-revenue water as percent of total system production
Objective 5: Adopt Water Efficiency-centric Policy and Planning	Bylaw changes	Board approves water efficient bylaws
	Official Community Plans	Board approves water efficient-centric policies in OCP

6.3 Implementation Schedule

A summary schedule for implementation is outlined in Table 8 on the next page. This may be modified as requirements are more clearly defined. Early implementation priorities include the following:

- complete universal metering at all SCRD water service connections;
- complete a water service rate review and introduce volume-based pricing for all water service connections;
- introduce new measures to improve management of non-revenue water;
- improve outdoor water use education; and,
- enhance the current leak notification and water use updates programs.

Table 7: Water Efficiency Plan Implementation Schedule

		2023	2024	2025	2026	2027	2028	2029	2030
Theme 1: Reduce Outdoor Water Use									
1.1	Water Conservation Regulations								
1.2	Rainwater Harvesting Rebate Program								
Theme 2: Measure Water Use and Equitable Water Service Rates									
2.1	Universal Water Metering Program								
2.2	Water Rate Structure Review								
2.3	Leak Resolution Program								
Theme 3: Effective Education and Outreach									
3.1	Water System and Project Communications								
3.2	Residential Water Efficiency Resources								
3.3	Monthly Water Use Updates								
3.4	Visitor Water Conservation Communications								
3.5	High Volume User Conservation Support								
Theme 4: Efficient Regional District Operations									
4.1	SCRD Facility Audits and Retrofits								
4.2	SCRD Park and Greenspace Irrigation								
4.3	Non-Revenue Water Management								
4.4	Water Data Collection and Accounting								
Theme 5: Adopt Water Efficiency-centric Policy and Planning									
5.1	Update Official Community Plans and Bylaws								

Legend	
	Implementation commencement
	Ongoing continuation

6.4 Plan Governance

Implementation of this plan will follow an adaptive management framework. This means learning from experience and responding as needed to fine-tune delivery. Progress towards targets set out in Section 6.1 and objectives in Section 5.1 will guide adaptation.

Regular progress reports will be provided to the SCRD Board of Directors and may be adapted to meet the Board's goals as set out in future updates to their Strategic Plan. Staff may also periodically seek advice from residents and other stakeholders as appropriate.

7.0 Conclusion

This document sets out a Water Efficiency Plan for the Sunshine Coast Regional District for 2023 to 2027. By continuing to encourage conservation, this plan will play an integral role in in fostering a sustainable Sunshine Coast. It will facilitate adaptation to future pressures from climate change and provide a range of other social, ecological, and financial benefits. It will also support ongoing implementation of the SCRD *Water Strategy* and its focus on improving water awareness, cost effective service delivery, reliance, and collaboration.

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Appendix 1: Water Conservation Regulations

Water Conservation Regulations

scrd.ca/water

				STAGE 1	STAGE 2	STAGE 3
WATERING				STAGES CHANGE BASED ON COMMUNITY DEMAND AND WEATHER		
	Handheld container Hose with spray-trigger nozzle Drip-Irrigation		Trees, flowers and shrubs	**PERMITTED**	**4 hours/day max.** 7am - 9am and 7pm - 9pm	**1 hour/day max.** 7am - 8am or 7pm - 8pm
			Food producing trees and plants	**PERMITTED**	**PERMITTED**	2 hours/day max. 7am - 8am and 7pm - 8pm
	Sprinkler Soaker hose Micro-spray		Lawns	**TWO DAYS PER WEEK** 7am - 8am Even numbered address: Thu/Sun Odd numbered address: Wed/Sat *(Hand watering is permitted at any time)*	**NOT PERMITTED**	**NOT PERMITTED**
			Trees, flowers and shrubs	**THREE DAYS PER WEEK** 7am - 9am and 7pm - 9pm Even numbered address: Tue/Thu/Sun Odd numbered address: Mon/Wed/Sat	**TWO DAYS PER WEEK** 7am - 9am Even numbered address: Thu/Sun Odd numbered address: Wed/Sat	**NOT PERMITTED**
			Food producing trees and plants	**THREE DAYS PER WEEK** 7am - 9am and 7pm - 9pm Even numbered address: Tue/Thu/Sun Odd numbered address: Mon/Wed/Sat	**TWO DAYS PER WEEK** 7am - 9am and 7pm - 9pm Even numbered address: Thu/Sun Odd numbered address: Wed/Sat	**NOT PERMITTED**
WASHING						
	Handheld container Hose with spray-trigger nozzle		Sidewalks, driveways, windows, fences and exterior building surfaces	**PERMITTED**	**NOT PERMITTED** except for preparing surfaces for painting or paving and for health and safety regulations.	**NOT PERMITTED** except for health and safety regulations.
			Vehicles and boats	**PERMITTED**	**PERMITTED**	**PERMITTED only** to wash off sea water.
FILLING						
			Swimming pools and hot tubs	**PERMITTED**	**PERMITTED**	**NOT PERMITTED**
			Garden ponds and fountains	**PERMITTED**	**PERMITTED**	**NOT PERMITTED**
STAGE 4				**BAN ON ALL OUTDOOR WATER USE**		

FINES	STAGE 1 $200	STAGE 2 $300	STAGE 3 $400	STAGE 4 $500

Appendix 2: Additional Program Information

This appendix provides quantitative information on recent program performance of the Water Conservation Regulations and the Rainwater Harvesting Rebate Program.

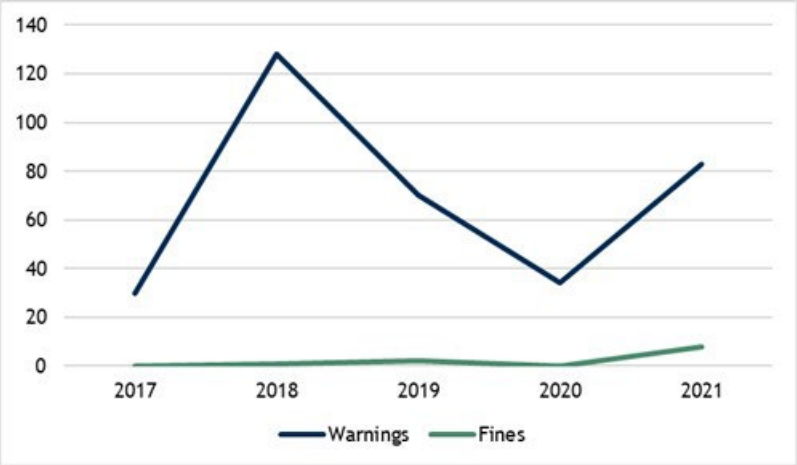

Figure 11: Annual Water Conservation Regulations Warnings and Fines (2017 to 2021)

The figure above shows annual warnings and fines issued under the Water Conservation Regulations. This demonstrates that, consistent with industry best practice and the approach in most jurisdictions, SCRD emphasizes compliance over enforcement by issuing warnings much more often than fines. Fines are reserved for specific situations and necessity, such as repeat offences.

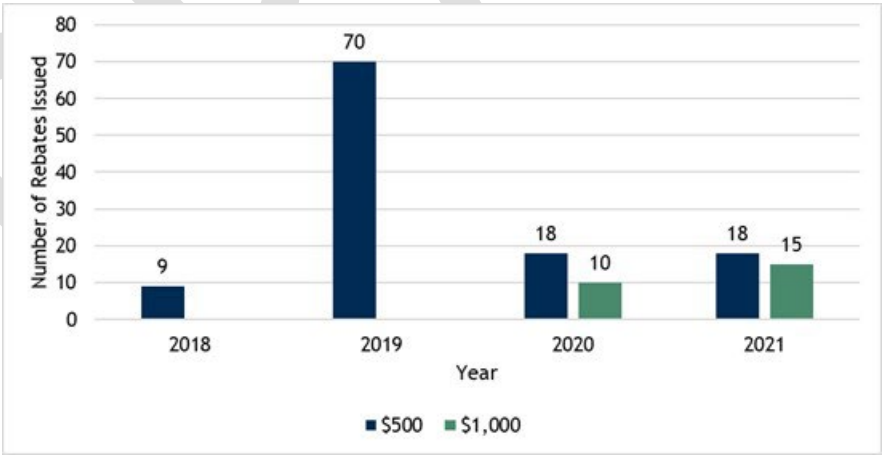

Figure 12: Number or Rainwater Harvesting Rebates Issued (2018 to 2021)

The figure above shows number of rainwater harvesting rebates issued by year. The $500 rebate (for 4,500 litre systems or larger) started in mid-2018. The $1,000 rebate (for 9000 litres or larger systems) started in 2020. This demonstrates that participation has been variable over time. Explanations include the newness of the program, fluctuations in marketing by SCRD, and perhaps the influence of the COVID pandemic in 2020 and 2021. Note that some participants in 2018 and 2019 likely installed systems larger than 9,000 litres.

Appendix 3: Water Production in SCRD Water Distribution Systems

Methodology

To understand water-use trends in SCRD water systems, daily master meter readings for each of the nine systems were provided for the years 2017-2021 for Chapman and South Pender, 2018-21 for Eastbourne, and 2019-2021 for the remaining systems (Cove Cay, Egmont, Garden Bay, Granthams Landing, Langdale, and Soames).

For each of the water systems and for all years for which data was available, they were analyzed to generate the following figures:

- time series of total annual production,
- monthly water production curves, and
- comparisons of average day demand to maximum day demand and corresponding peaking factors.

The results of these analyses are presented graphically on the following pages, along with explanatory notes to aid in interpretation of analysis where necessary.

Service population estimates were generated as follows:

- the total number of accounts for each system was collected from SCRD billing data,
- accounts with inactive service or no consumption in 2021 were subtracted,
- industrial, institutional, and commercial accounts were subtracted,
- each multi-family account was substituted with the number of units served by each (referred to as ‘service units’ in the SCRD billing system),
- the remaining number of accounts was multiplied by 2.1 (the occupancy rate or average number of individuals per dwelling, based on the 2021 Statistics Canada Census results for Sechelt).

Per capita production figures were subsequently calculated by dividing the total annual production figures by the number of days per year (accounting for the leap year in 2020) and then dividing the result by the estimated service population. The same billing account data was used for the entire period for which data was analyzed, meaning the analysis assumes the service population size remained the same throughout those periods (2017-21 for some systems, and 2018-21 or 2019-21 for others).

This approach to estimating service population appears to differ from the last estimate for per capita production conducted by Opus Daytonknight Consultants in 2013 for the SCRD Comprehensive Regional Water Management Plan in these ways:

- by accounting for residents in the region who use private wells (this was facilitated by using account numbers for the Chapman Water System rather than beginning with Statistics Canada Census population statistics for the region);
- by accounting for (i.e., removing) industrial, institutional, or commercial accounts;
- by accounting for multi-family accounts by substituting each account by the number of units it services; and

- by using 2.1, rather than 2.3, as the occupancy rate (the 2021 Census figure for Sechelt has been used in this report since it represents most SCRD water customers)[7].

Limitations and Assumptions

Limited data validation was undertaken by Econics, with a couple of exceptions. In a small number of instances when meter readings were not recorded (these ranged from 0 – 8 days in a single year for individual systems), daily production volumes were interpolated by using the average daily production volume for the nearest four like days of the week (e.g., if the volume was missing for a Monday, the average of the volumes for the closest four Mondays was used).

More significantly, SCRD staff reported that the Granthams Landing Water System was supplied by the Soames system throughout November and December, 2021 due to system maintenance. As a result, the average daily production for Granthams in the month prior was extrapolated to estimate use of water for the Granthams Landing Water System over this time period. The resulting volumes were subtracted from Soames Point production values for the corresponding dates to account for the transfer of water out of this system. In the small number of instances when the Chapman Water System was used to supply the significantly smaller Soames Point or Granthams Landing Water Systems, and Chapman production figures were not adjusted due to the relatively negligible volumes in question.

[7] As a result of these changes in methodology, the per capita production figure for the Chapman Water System from the 2013 Opus Daytonknight Consultants' report (592 litres per capital per day at a service population of 21, 772) is considered a low estimate and not comparable with the figure generated for this report (565 litres per capita per day with a service population of 23,530). To help gauge gains in per capita efficiency over the last decade, the existing per capita production was also calculated using the Opus method, which generated a result of 495 litres per capita per day. This is much closer to the target of 480 litres per capita per day (Lcd) for average day production identified in the Comprehensive Regional Water Management Plan.

Results

North Pender Harbour Water System

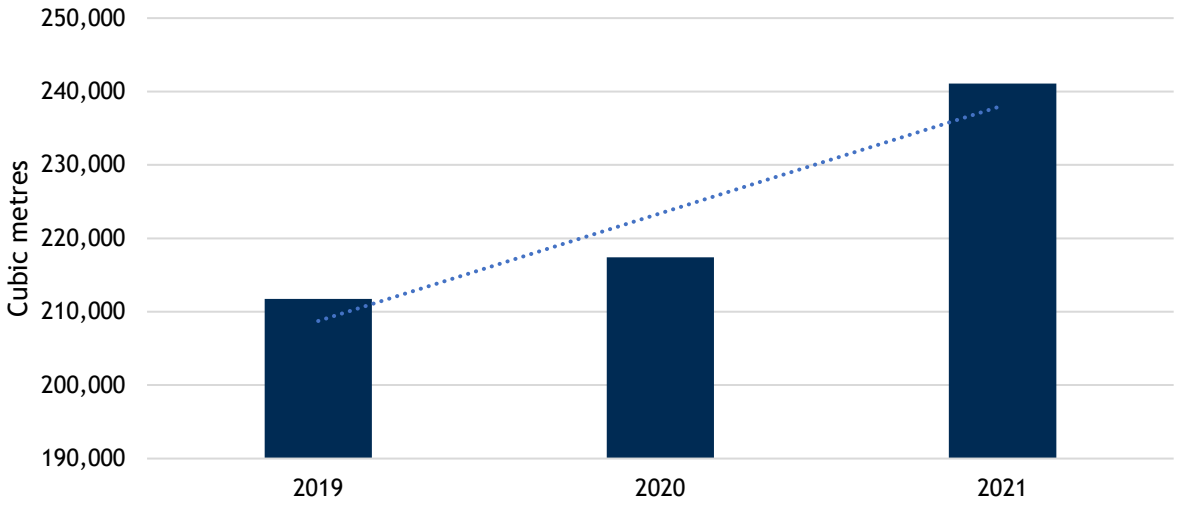

Figure 13: North Pender Harbour total annual water production (2019-2021)

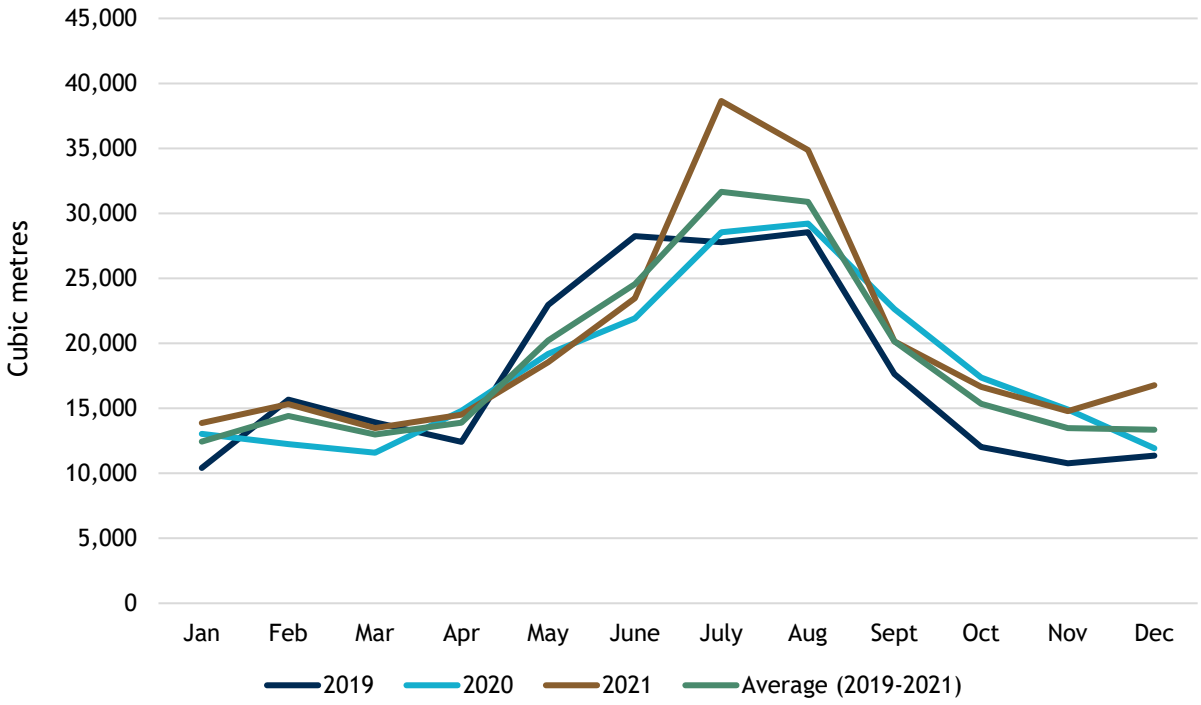

Figure 14: North Pender Harbour total monthly production (2019-2021)

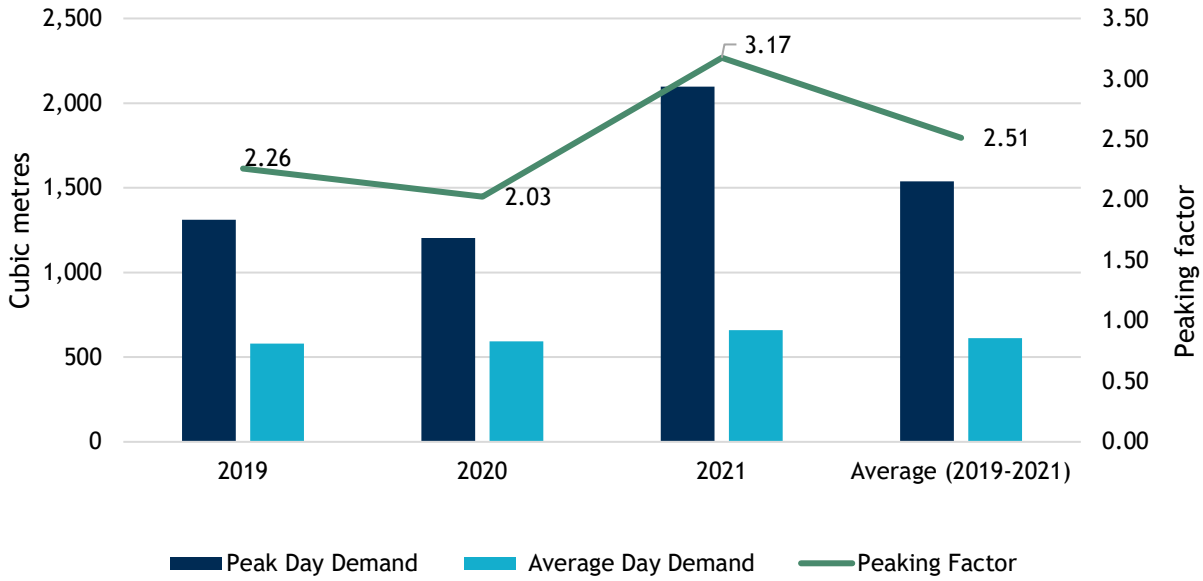

Figure 15: North Pender Harbour average day demand, maximum day demand, and peaking factors (2019-2021)

South Pender Harbour Water System

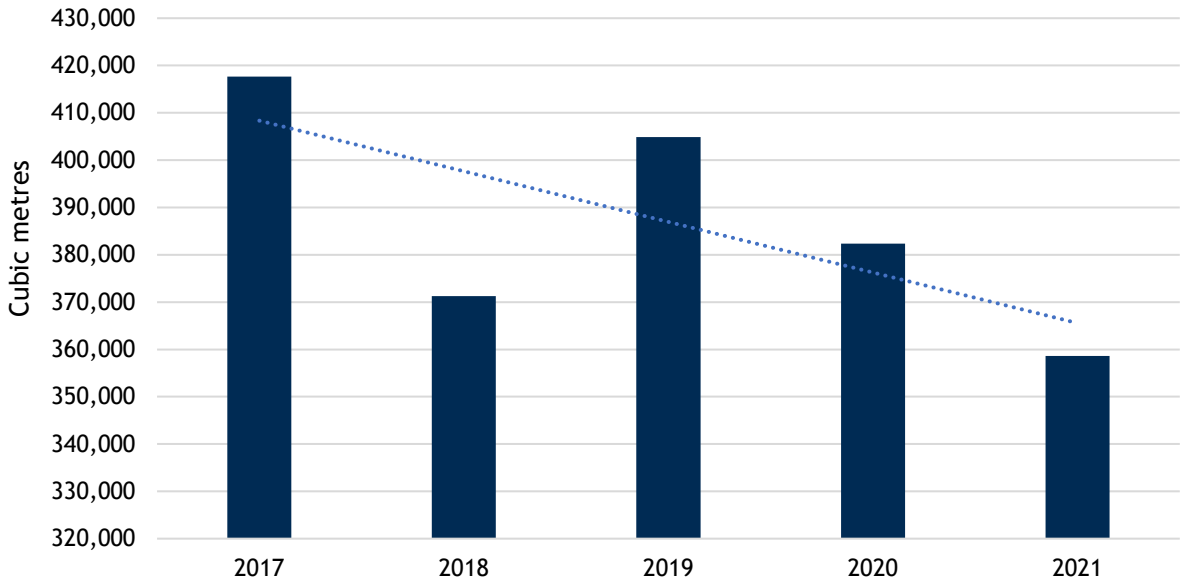

Figure 16: South Pender Harbour total annual water production (2017-2021)

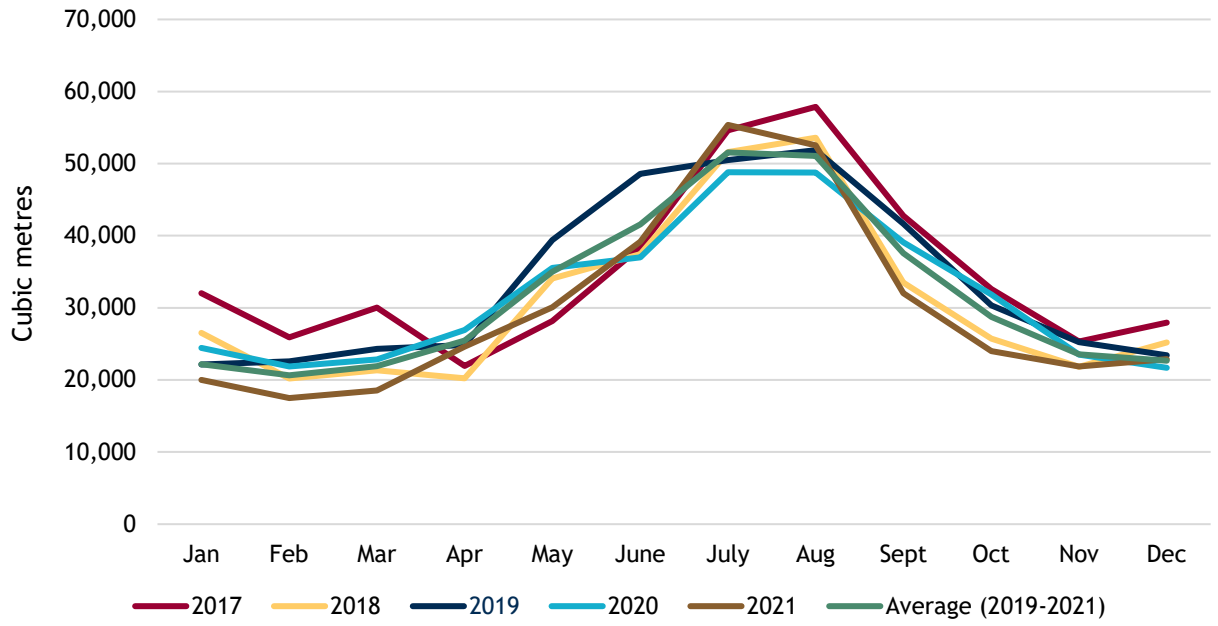

Figure 17: South Pender Harbour total monthly production (2019-2021)

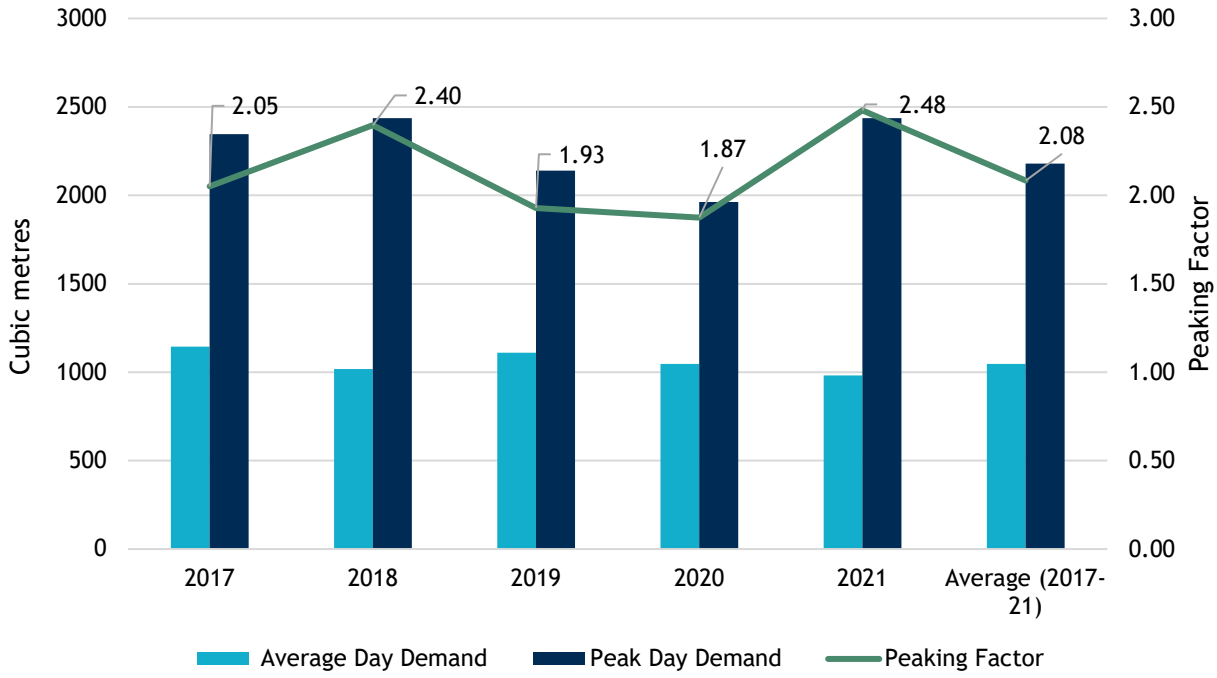

Figure 18: South Pender Harbour average day demand, maximum day demand, and peaking factors (2019-2021)

Egmont Water System

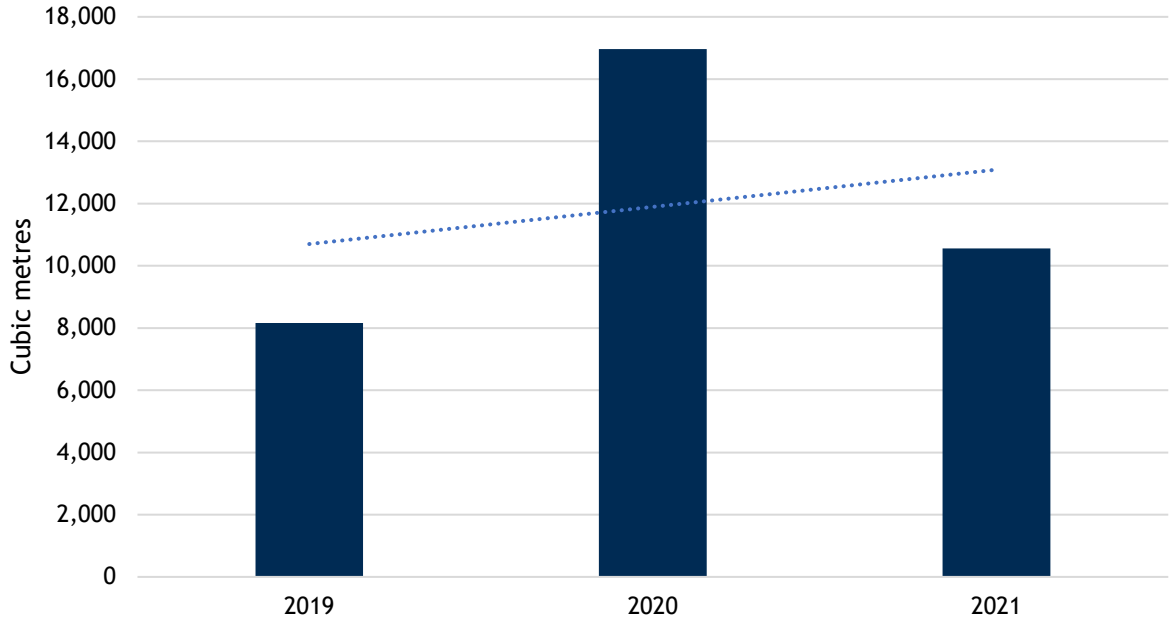

Figure 19: Egmont total annual water production (2019-2021)

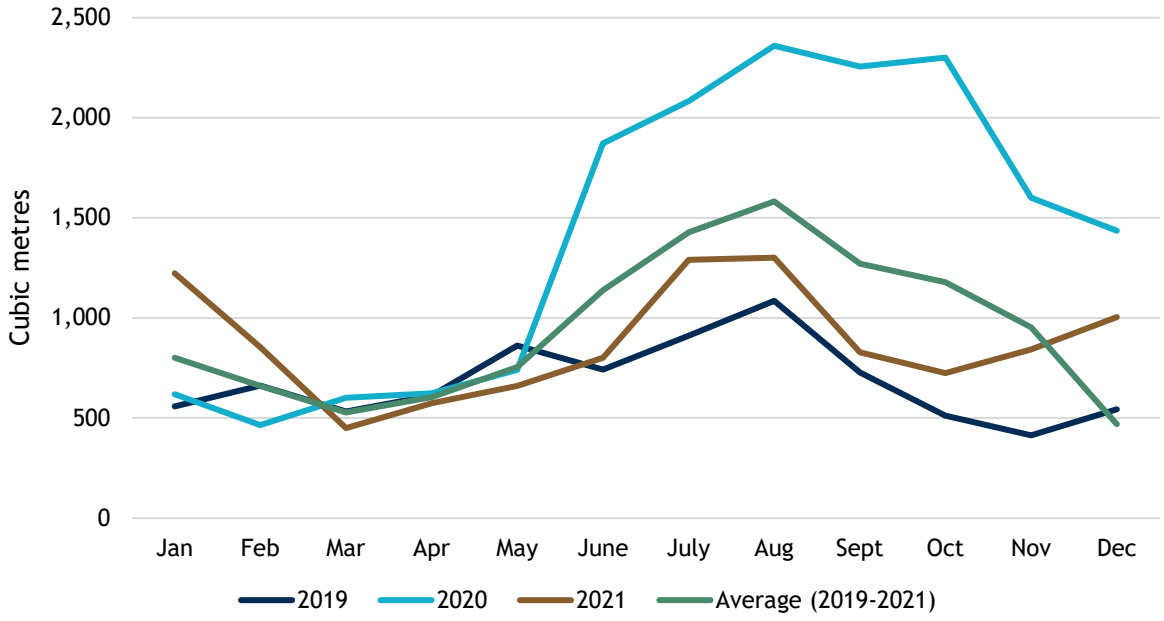

Figure 20: Egmont total monthly production (2019-2021)

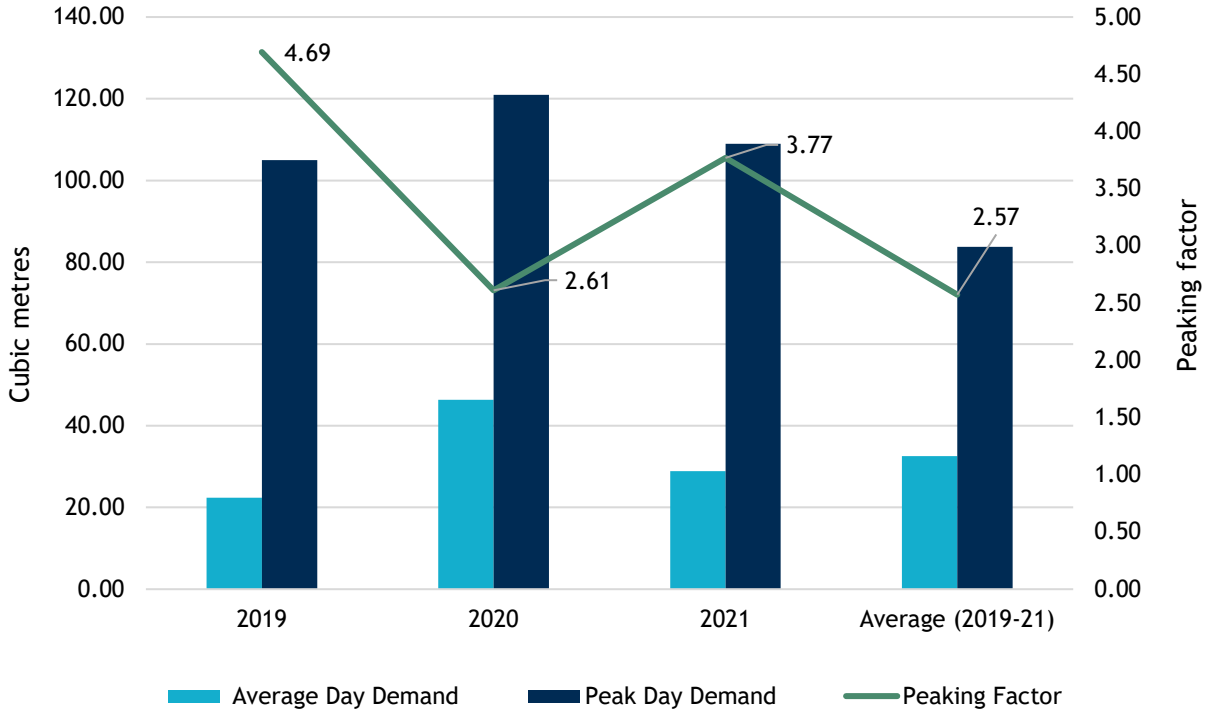

Figure 21: Egmont average day demand, maximum day demand and peaking factors (2019-2021)

Cove Cay Water System

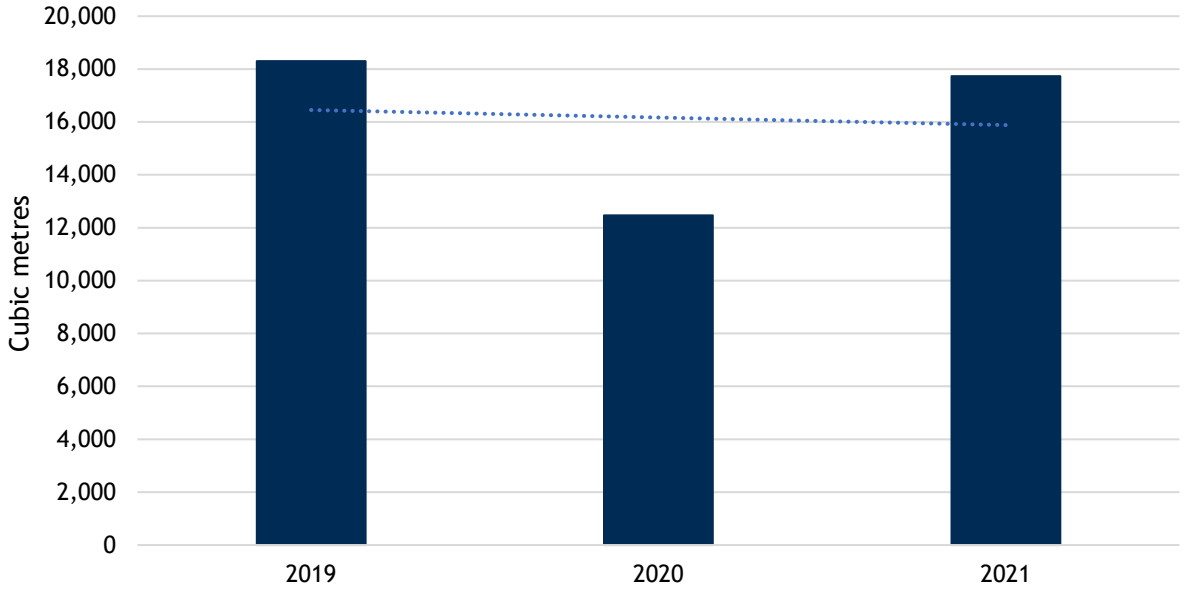

Figure 22: Cove Cay total annual water production (2019-2021)

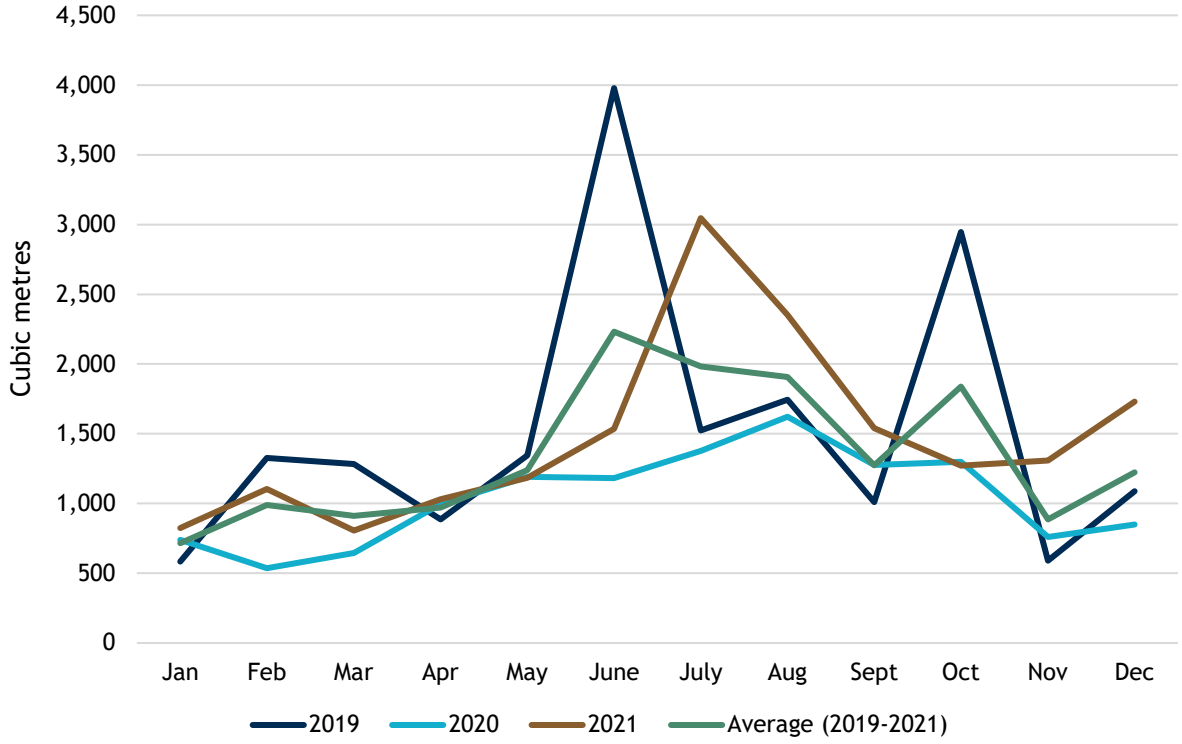

Figure 23: Cove Cay total monthly production (2019-2021)

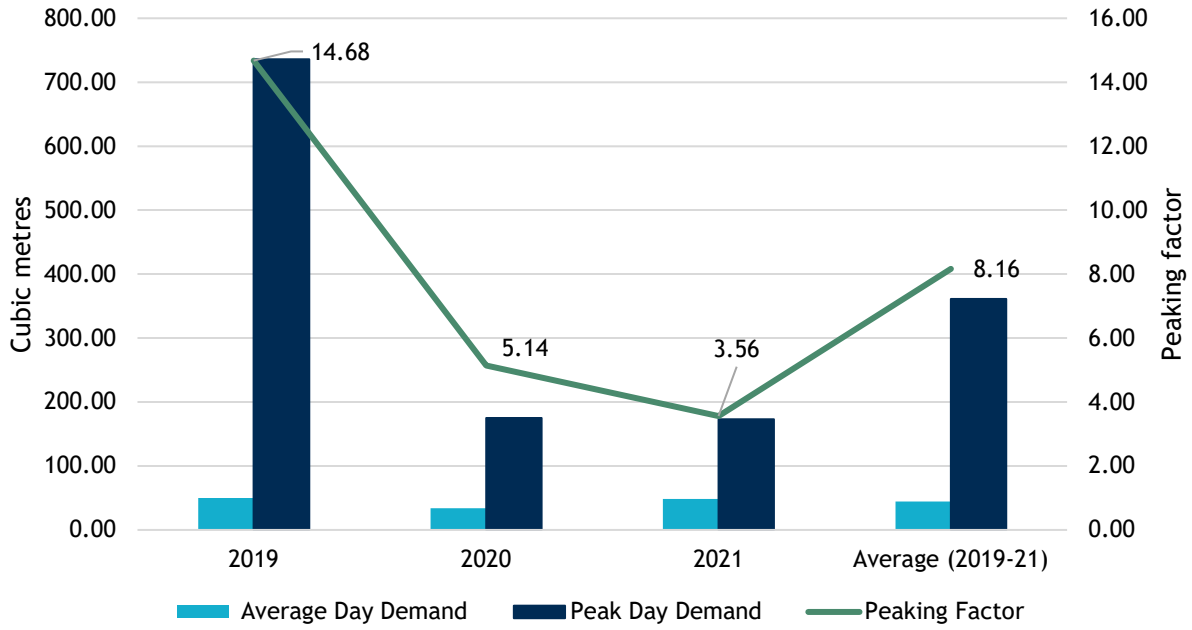

Figure 24: Cove Cay average day demand, maximum day demand, and peaking factors (2019-2021)

Chapman Water System

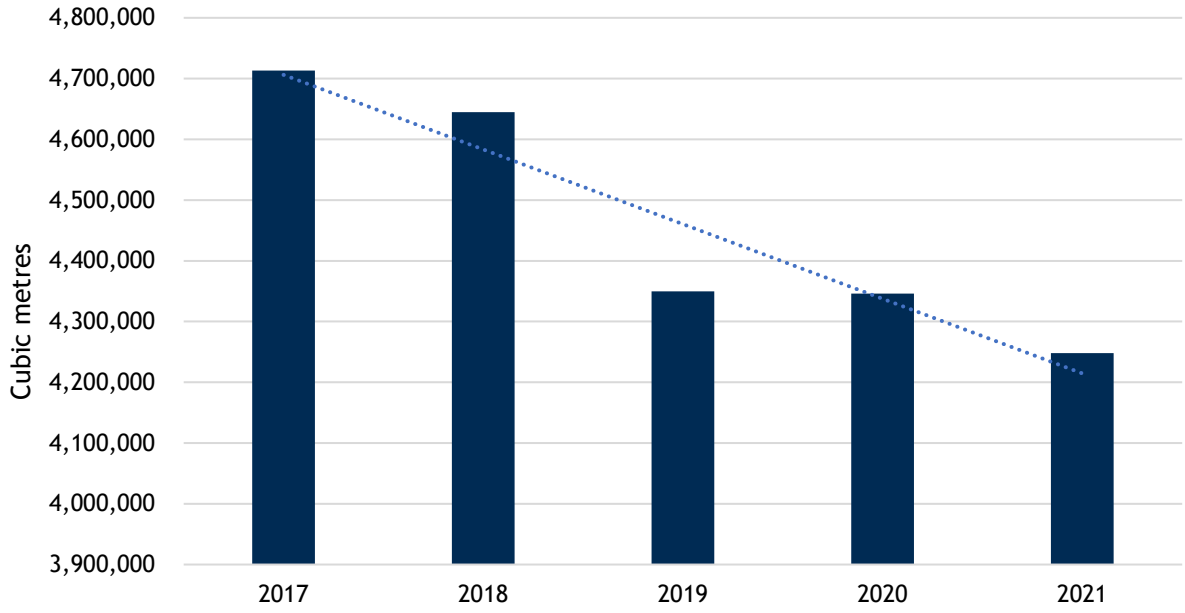

Figure 25: Chapman Water System total annual water production (2017-2021)

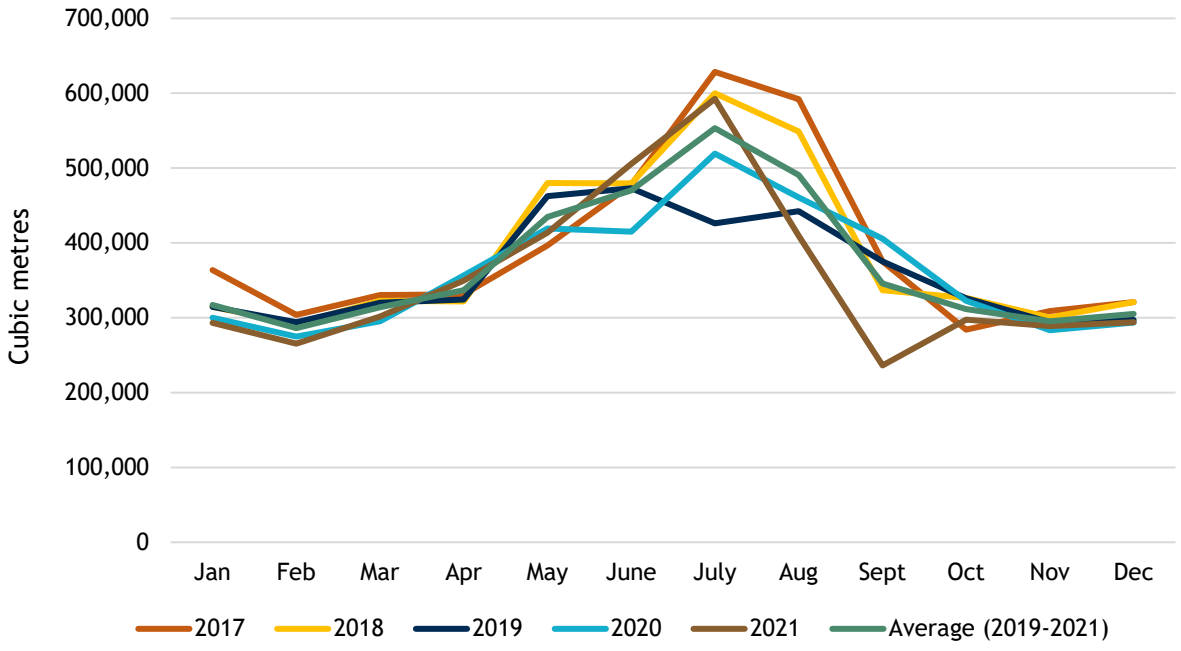

Figure 26: Chapman Water System total monthly production (2017-2021)

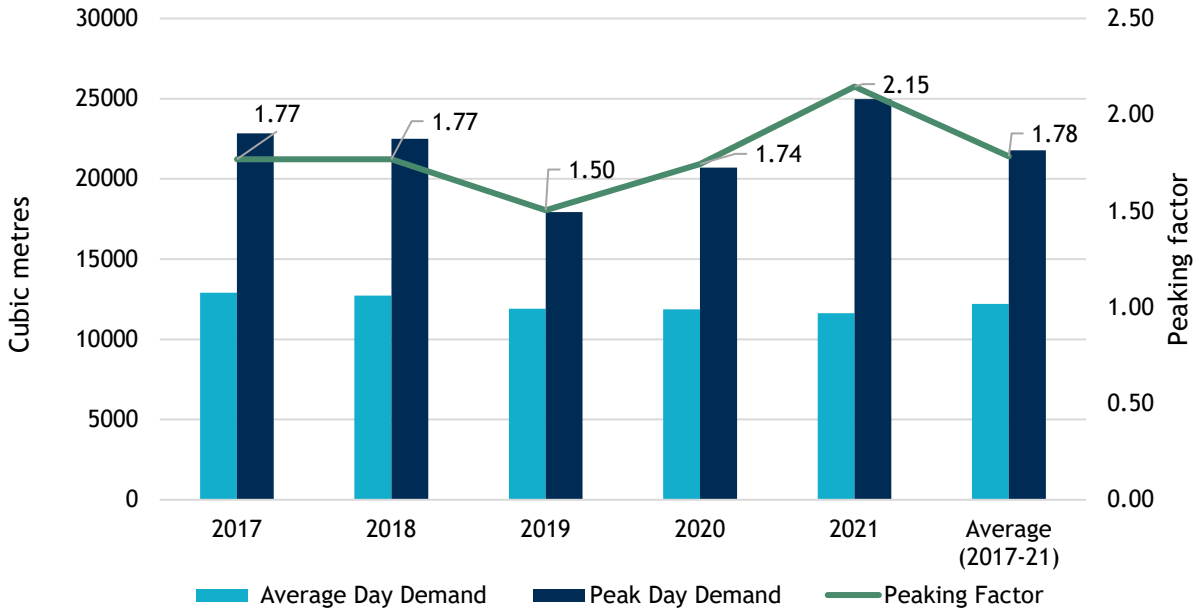

Figure 27: Chapman Water System average day demand, maximum day demand, and peaking factors (2017-2021)

Granthams Landing Water System

Note: The Granthams Landing Water System was supplied by water from Soames Water System throughout November and December of 2021. Since daily water use values for Granthams Landing Water System users are unknown for this time, estimates were derived using the average daily production of the month prior (October 2021). This reduces the reliability of 2021 data for the Granthams Landing Water System.

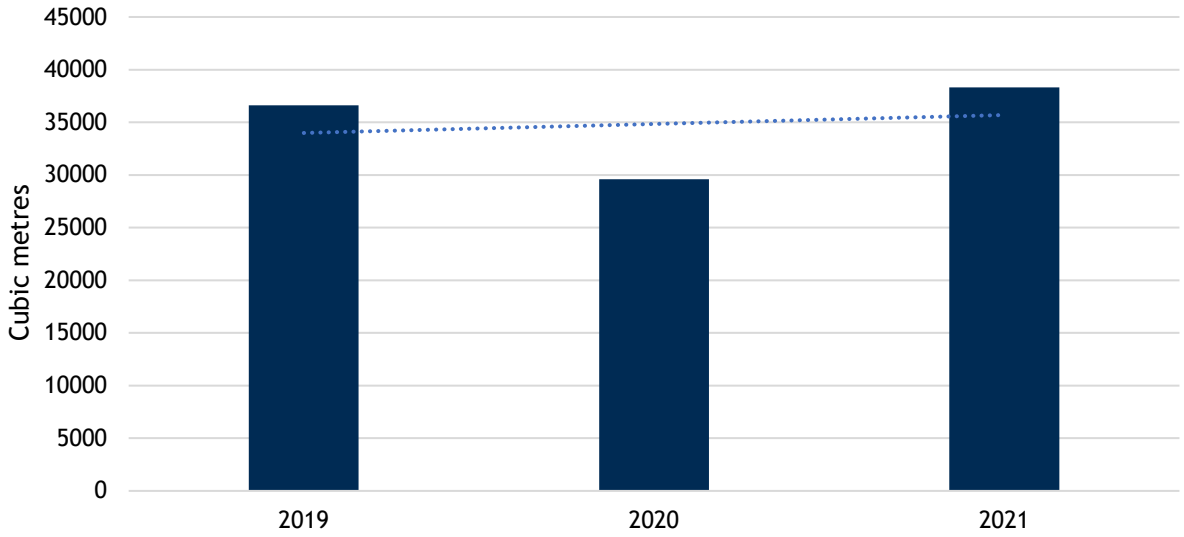

Figure 28: Granthams Landing total annual water production (2019-2021)

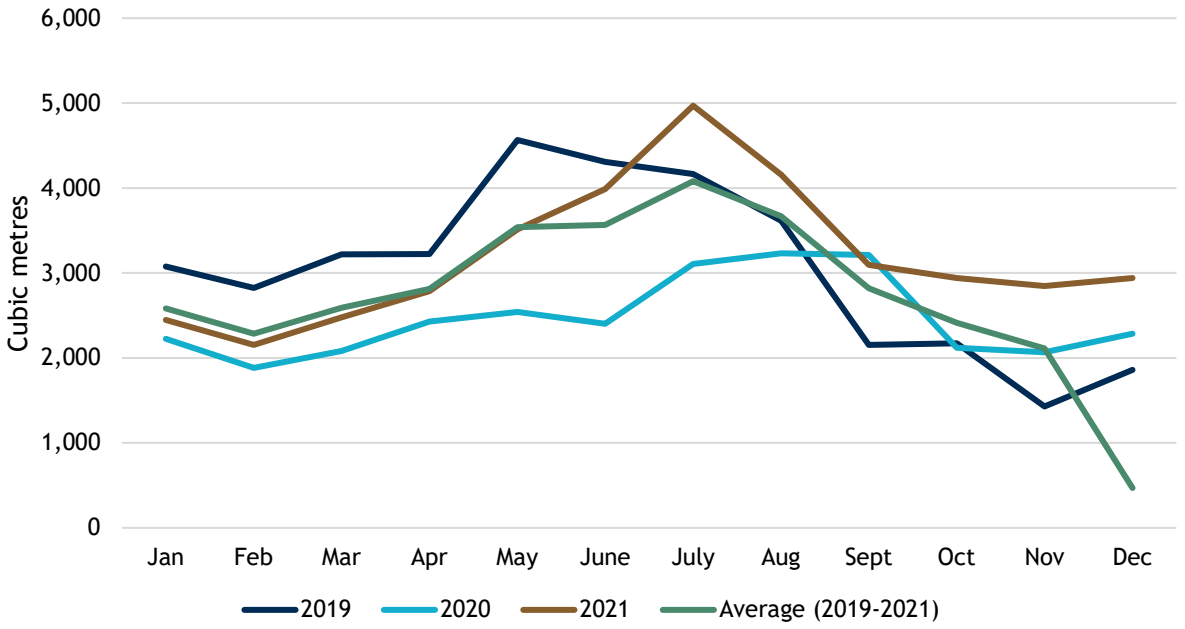

Figure 29: Granthams Landing total monthly production (2019-2021)

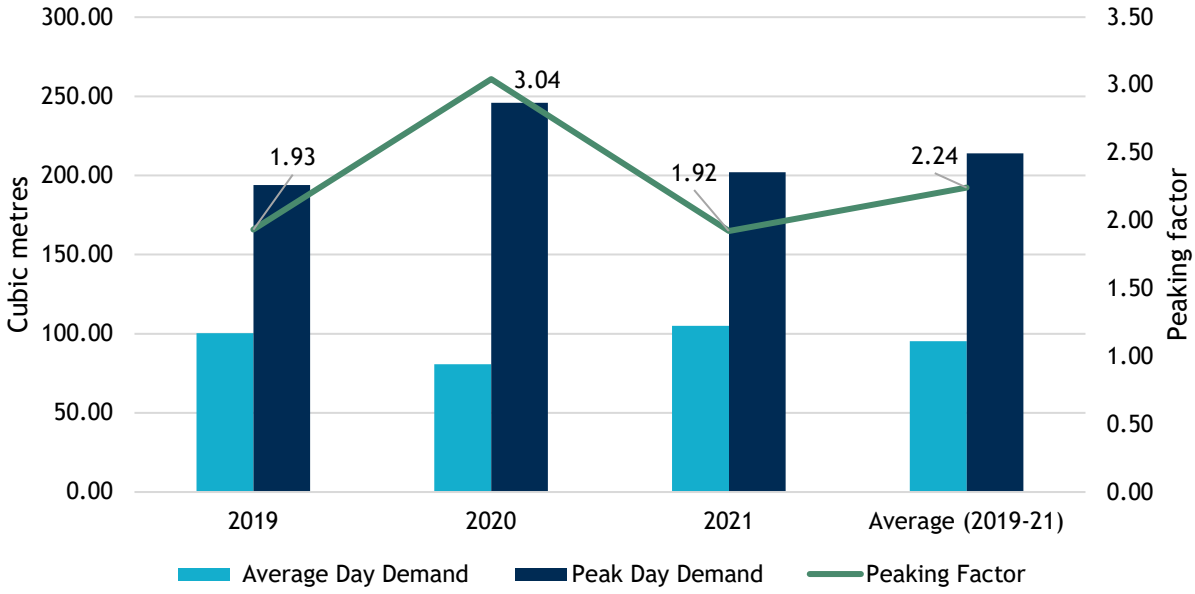

Figure 30: Granthams Landing average day demand, maximum day demand, and peaking factors (2017-2021)

Langdale Water System

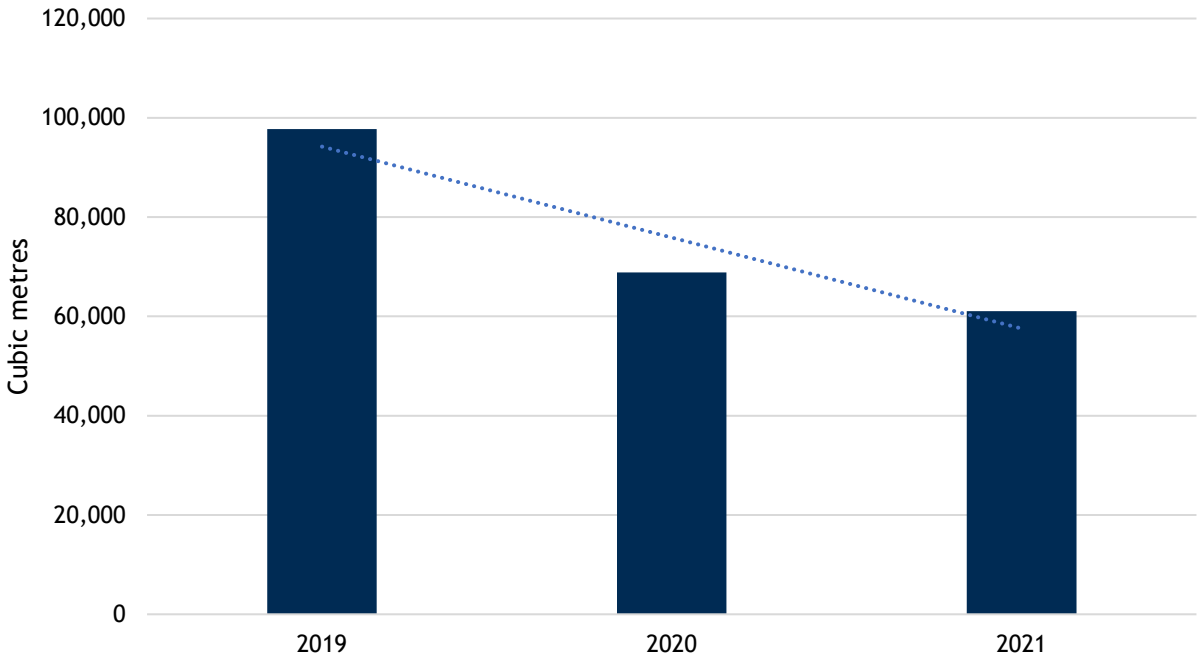

Figure 31: Langdale total annual water production (2019-2021)

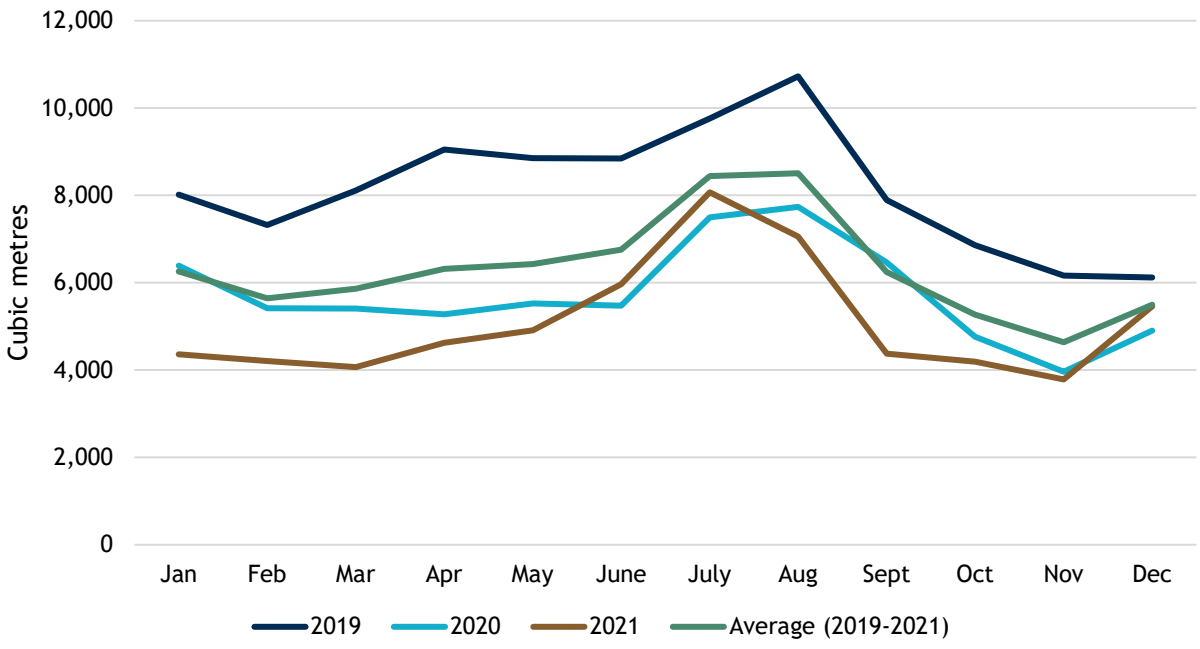

Figure 32: Langdale total monthly production (2019-2021)

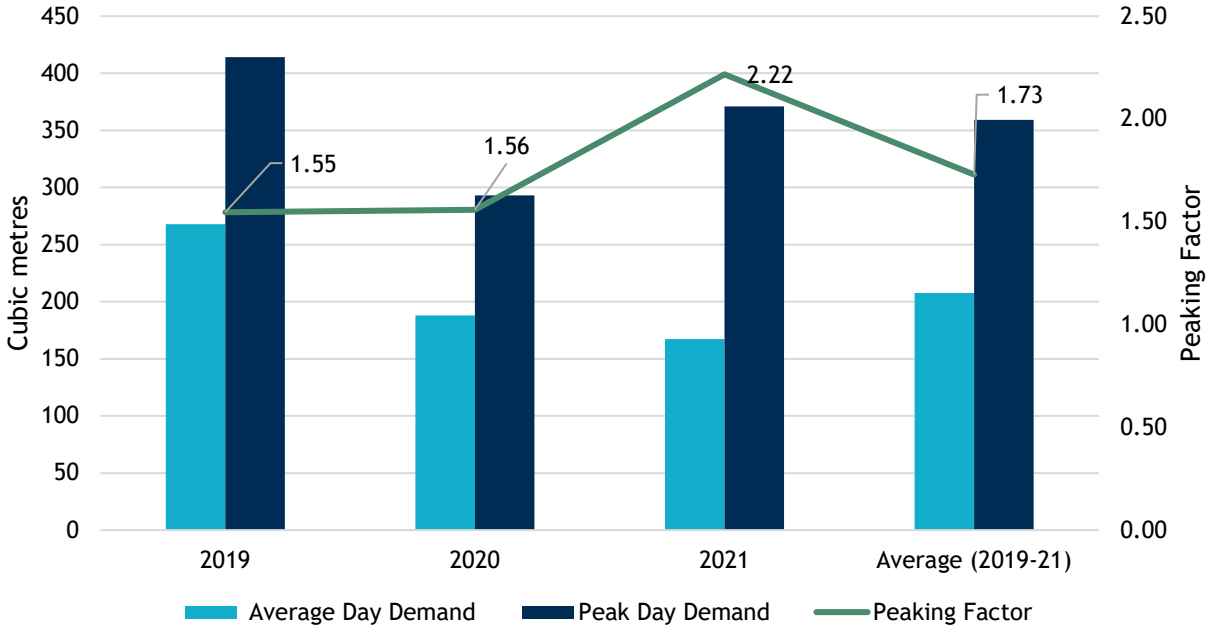

Figure 33: Langdale average day demand, maximum day demand, and peaking factors (2019-2021)

Soames Point Water System

Note: The Soames Point Water System supplied water to the Granthams Landing Water System throughout November and December of 2021. Since daily water use values for Granthams Landing Water System users are unknown for this time, estimates were derived using the average daily production of the month prior (October 2021). This reduces the reliability of 2021 data for the Soames Point Water System.

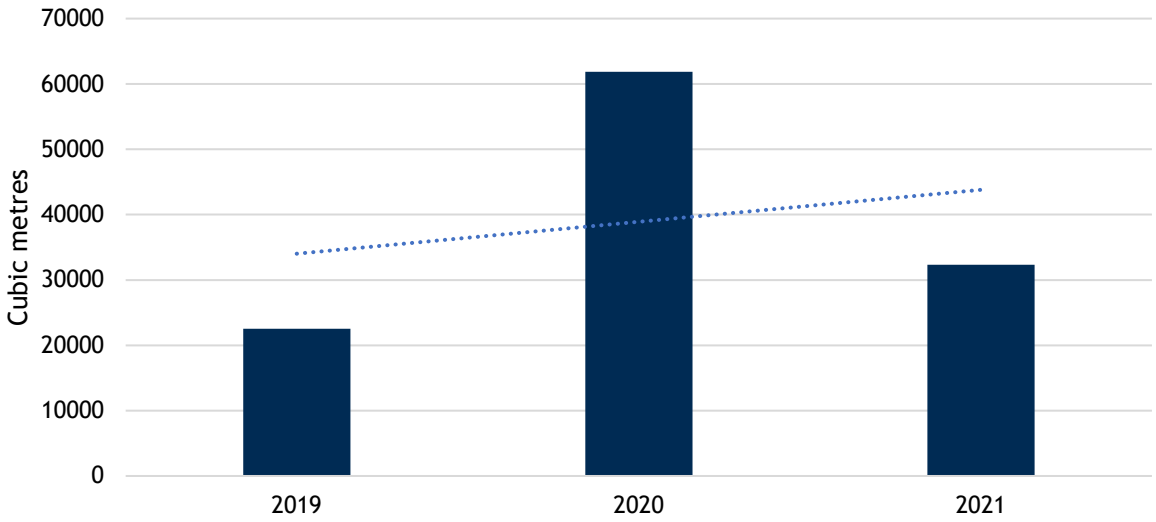

Figure 34: Soames Point total annual water production (2019-2021)

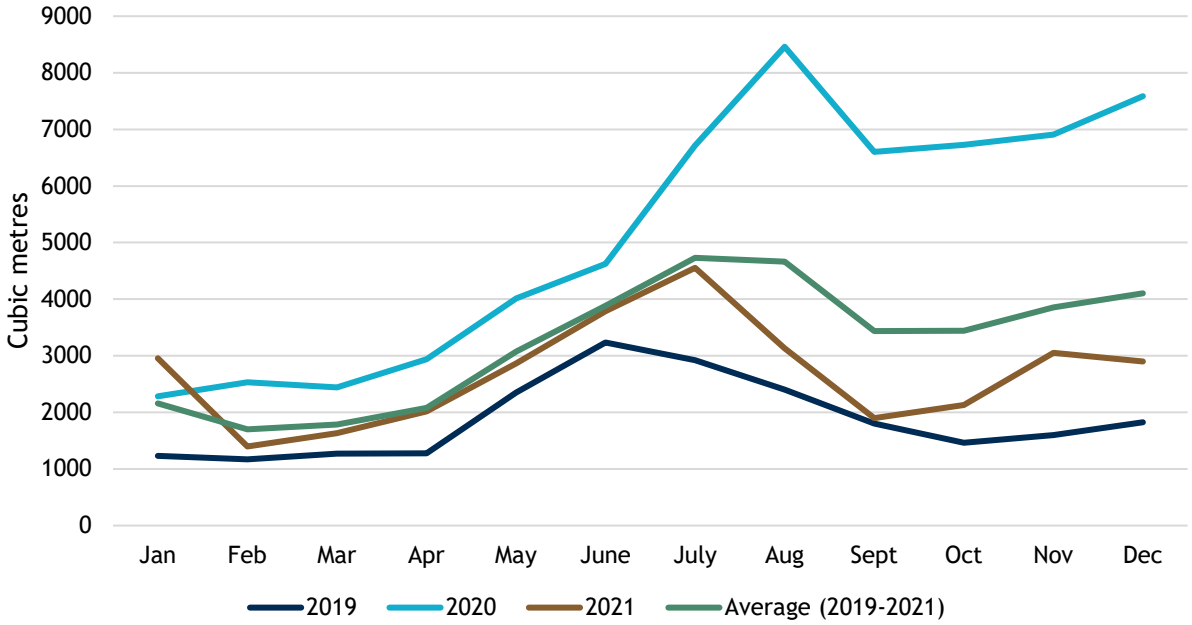

Figure 35: Soames Point total monthly production (2019-2021)

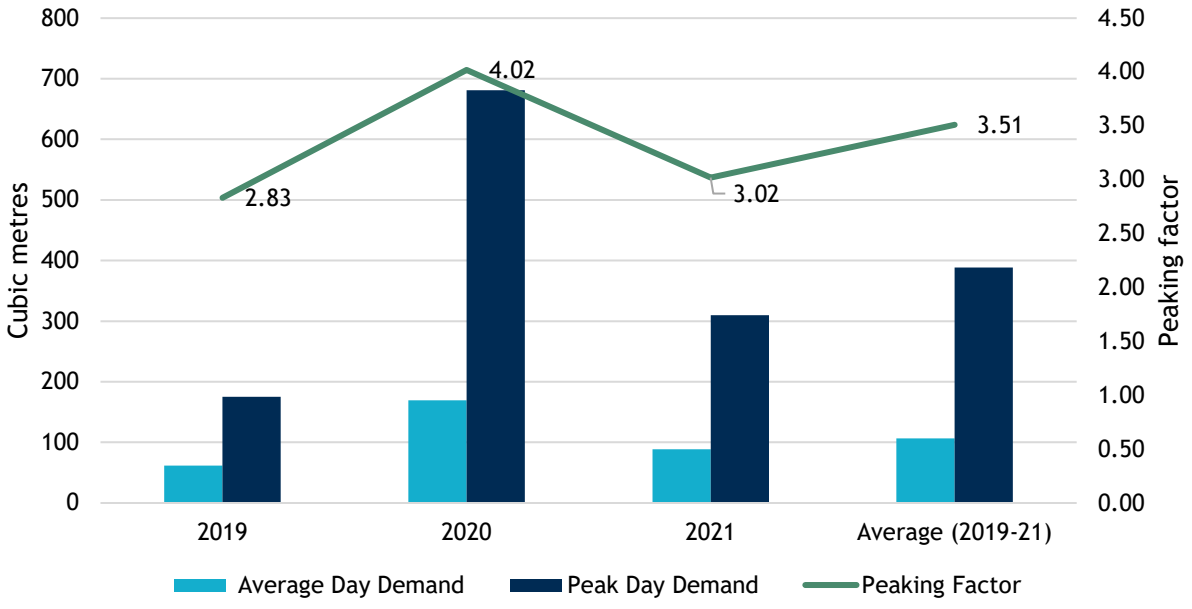

Figure 36: Soames Point average day demand, maximum day demand, and peaking factors (2019-2021)

Eastbourne Water System

Note: The Eastbourne water system serves primarily seasonal, part-time residents. This should be taken into account when interpreting the data below and per capita data analysis.

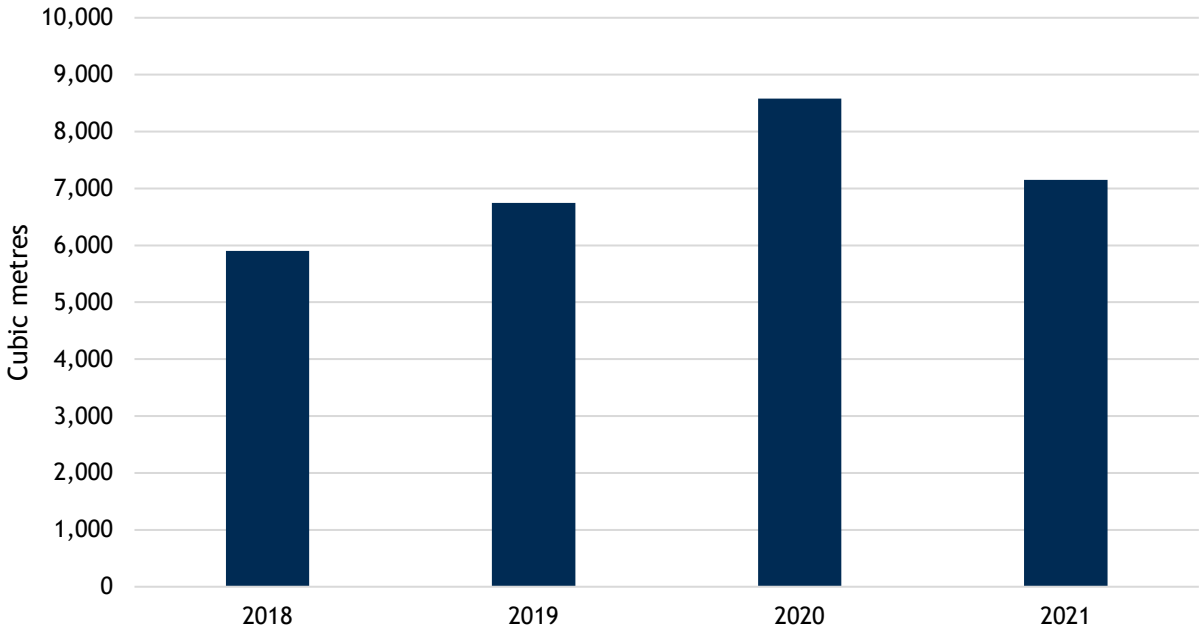

Figure 37: Eastbourne total annual water production (2018-2021)

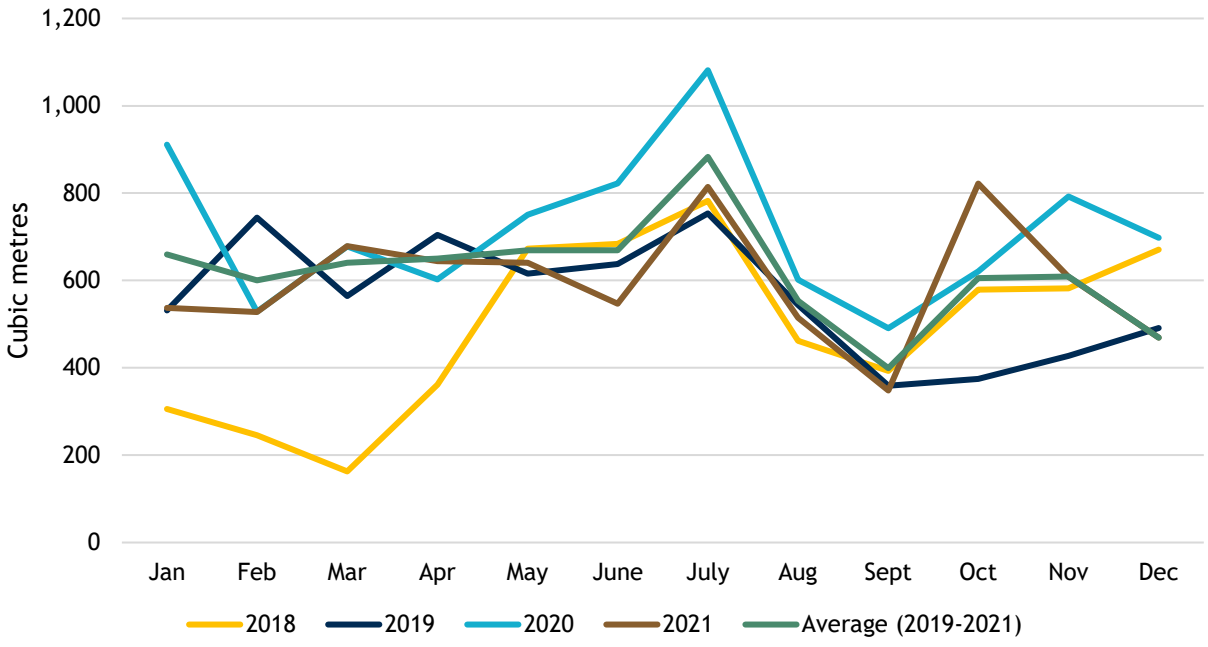

Figure 38: Eastbourne total monthly production (2018-2021)

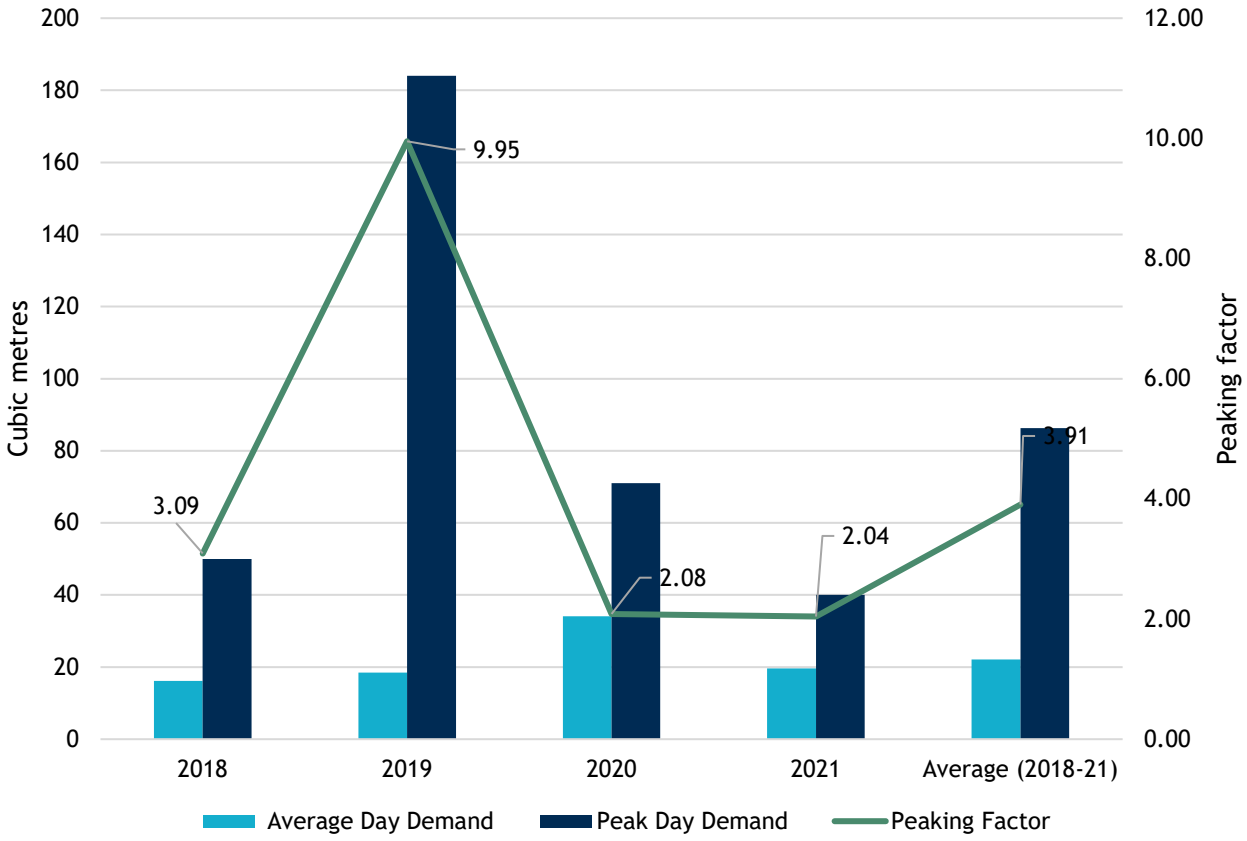

Figure 39: Eastbourne average day demand, maximum day demand, and peaking factors (2019-2021)

Appendix 4: Resources

The following list provides various resources from leading jurisdictions, non-governmental organizations and other agencies that may assist with implementation of plan.

Objective 1: Reduce Outdoor Water Use

Water Smart Irrigation Professionals (York and Peel Regions and Landscape Ontario)
https://www.watersmartirrigationprofessional.ca/

Fusion Landscape Professional (York and Peel Regions and Landscape Ontario)
https://www.fusionlandscapeprofessional.ca/

Alliance for Water Efficiency. Sustainable Landscapes: A Utility Program Guide
https://www.allianceforwaterefficiency.org/impact/our-work/sustainable-landscapes-utility-program-guide

Objective 2: Measuring Water Use and Volume-based Pricing

AWWA (2017). M1 Principles of Water Rates, Fees and Charges, 7th Edition.

Financing Sustainable Water (Alliance for Water Efficiency)
https://www.financingsustainablewater.org/

Brandes, Renzetti and Stinchcombe (2010). Worth Every Penny: A Primer on Conservation-Oriented Water Pricing. Prepared for the POLIS Water Sustainability Project
https://poliswaterproject.org/polis-research-publication/worth-every-penny-primer-conservation-oriented-water-pricing/

Waterworth Blog
https://waterworth.net/blog/

Value of Water Campaign
http://thevalueofwater.org/

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