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Myrtle Pond Water Service

# Development Financing Options Study

Final Report  
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KWL Project No. 0355.021

Prepared for:  
qathet Regional District



**qathet**  
**REGIONAL DISTRICT**



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## Executive Summary

The qathet Regional District (qRD) retained Kerr Wood Leidal Associates Ltd. (KWL) to complete a review of options for recovering costs associated with development or expansion of the Myrtle Pond Water System in Electoral Area B. The project included a review of available infrastructure information to identify improvements needed to support forecasted community growth, a review of alternatives for financing infrastructure upgrades needed to service additional users, and a recommended development financing program.

A draft *Development Financing Options Study* report was completed by KWL in July 2019. One of the recommendations was to complete a water system capacity assessment to confirm the system can supply peak flows and hydrant flows for existing and potential future users. This assessment would enable the qRD to establish suitable terms for inclusion of adjacent lands in the service area.

A *Capacity study for existing and potential future users at Myrtle Pond Water System* was completed in 2021 by MSR Solutions Inc. This final report incorporates the findings of the capacity study.

## Development Financing Alternatives

A review of the following alternative means of funding growth in the service area and extension of the service to include additional lands was conducted:

- User fees and charges (an inclusion charge can be established as a specific type of user charge);
- Development cost charges (DCCs);
- Local improvement charges (e.g., frontage tax, parcel tax, specified area charge);
- Latecomer charges
- Development works agreement; and
- Comprehensive development agreement.

The qRD currently employs user fees and parcel tax to recover costs of service from the existing users. DCCs are not practical, as the system would likely not require any upgrades to service full build-out of the existing service area. Latecomer charges may be well suited to extensions to undeveloped or partially developed areas where development is expected to occur within the next 15 years; however, they are likely unnecessary for inclusion of lands that are already developed. A development works agreement was previously negotiated for inclusion of a 30-lot subdivision and is a feasible financing mechanism for new development by a single landowner; however, terms are negotiated on a case-by-case basis, which is not practical for including an area of land that is already subdivided and held by numerous different owners. Comprehensive development agreements are intended for large-scale redevelopment projects involving multiple municipal services and are unnecessarily complex for a small rural water service.

A user charge per single-family lot for including lands in the service area is recommended.

## Development Forecast

There are 82 developed lots and 2 undeveloped lots in the Myrtle Pond Water Service Area. Development is predominantly single-family residential, with the exception of four multi-family properties. The service area also includes a commercially zoned property with 43 affordable housing units that is not currently connected to the water system. There are 101 serviced dwelling units in the service area. Assuming an average household size of 2.2, the population of the service area is estimated to be 222. Two lots in the service area have potential for



subdivision, creating up to three additional residential lots. Assuming the affordable housing units are connected in the future, that the undeveloped and subdividable lots are built out, and that secondary suites could be developed and occupied in half of the single-family parcels in the future, the estimated build-out population of the current service area is 326.

There is high potential demand for servicing lands adjacent to the Myrtle Pond Water Service Area, which includes both existing homes at densities similar to those in the service area, and undeveloped land. It is estimated that 81 residential lots could readily be included in the service area with watermain extensions on Centennial Drive east of the service area, and on Pebble Beach and Traffe Roads south of the service area. The full build-out population of the expanded service area is estimated to be approximately 520, on 174 lots.

## Infrastructure Capacity and Servicing Needs

The Myrtle Pond water system consists of three wells, a small treatment plant, a 444 m<sup>3</sup> reservoir, distribution mains, a pressure reducing station, line valves, hydrants, and customer service connections with pit meters. The supply and treatment system are designed for a maximum day demand of 286 m<sup>3</sup> with all three wells operating. The wells are estimated to have safe yields of 436 m<sup>3</sup>/d, 155 m<sup>3</sup>/d and 60 m<sup>3</sup>/d (total 651 m<sup>3</sup>/d). The safe yield with the 155 m<sup>3</sup>/d well (which has poor source water quality) out of service is estimated to be 496 m<sup>3</sup>/d.

The current maximum day demand (MDD) on the system is estimated to be roughly 235 m<sup>3</sup> (MSR, 2021). Well capacity is more than double the current estimated MDD, providing sufficient capacity to service all foreseeable densification within the current service area. The treatment system has adequate capacity for build-out of the current service area but would require additional capacity for extending the service area to either the Centennial Drive area or the Pebble Beach and Traffe Roads area, or both.

The capacity study (MSR, 2021) found that the watermains in the service area are adequately sized for peak demands and fire protection within the service area, and for supplying water to an expanded service area that includes Centennial Drive, Pebble Beach, and Traffe Roads. Existing 100Ø watermains and a tank serving the Centennial Drive area were found to be undersized for fire protection and are at the end of their useful lives. Water infrastructure in the Pebble Beach and Traffe Roads area consists of individual wells. New watermains, services and hydrants would be required to serve both expansion areas. The new watermain required for each of the two expansion areas is approximately 700 m of 150Ø PVC. No additional storage would be required, and the existing Centennial Road tank would be removed.

## Eligible Projects and Costs

The projects recommended for an inclusion charge program are shown in the following table.

Project Name	Conceptual Year	Estimated Cost <sup>a</sup>	% Benefiting New Users	New Users Share	qathet Share
Centennial Drive Extension	2025	\$ 571,000	100%	\$ 571,000	\$0
Water Treatment Expansion	2030	\$ 1,142,000	100%	\$ 1,142,000	\$0
Pebble Beach/Traffe Road Extension	2035	\$ 571,000	100%	\$ 571,000	\$0
<b>TOTAL</b>		<b>\$ 2,284,000</b>		<b>\$ 2,284,000</b>	<b>\$0</b>

a. Cost estimates prepared by MSR Solutions Inc. (MSR, 2021), adjusted for inflation to 2022. All costs are Class "D" and in 2022 constant dollars and include 50% contingency.





## Inclusion Charge

The amount recoverable through an inclusion charge over a 20-year program timeframe (2022-2041) is \$2,284,000. The recommended Myrtle Pond water inclusion charge rate is as follows:

Land Use Designation and Unit	Unit	Number of Units	Total New Users Share	Recommended Inclusion Charge
Residential	Single-Family Lot	81	\$2,284,000	<b>\$28,200</b>

For inclusion of a subdividable parcel of single-family residential zoned land, the inclusion charge will be based on the maximum potential number of single-family lots. For all other land, the inclusion charge will be calculated based on the estimated maximum day water demand, at a rate of \$14,100 per m<sup>3</sup>/day of required maximum day flow capacity.

If water distribution system extension is funded separately or is not required to service land outside the service area, the inclusion charge should be based only on the cost of the water treatment expansion: \$14,100 per single-family lot or \$7,050 per m<sup>3</sup>/day.

## Recommendations

1. An inclusion charge of \$28,200 per single-family lot (2022 dollars) is recommended for including land in the Myrtle Pond Water Service Area, including the costs of extending new 150Ø watermain, service connections within the public road right of way, and hydrants. The inclusion charge could be combined with other financing mechanisms as needed to suit specific cases:
  - a parcel tax on a specified area to debt finance the inclusion charge; or
  - a latecomer agreement front-ended by the first party in an area to be included, where the first party pays the full inclusion charge for the area.
2. It is recommended that the inclusion charge be adjusted for inflation annually using a construction cost index suitable for south coastal BC, and that the scope and cost estimates for the projects included in the rate calculation be reviewed every 5 years to further adjust the charge rate as needed. Municipal utility construction costs have historically inflated at a significantly higher rate than CPI.
3. It is recommended that stakeholders (e.g., owners of lots adjacent to the service area, and particularly in the Centennial Drive and Pebble Beach/Traffe Roads areas) be consulted in advance of adopting the inclusion charge. It is further recommended that information about the process and criteria for including property in the Myrtle Pond water service area be provided to existing users (e.g., in a utility bill), and communicated to the owners of property near the service area (e.g., through local media and community associations). Requirements for the electoral assent process for creating or extending a local area service of a Regional District are set out in the *Local Government Act* and *Community Charter*.
4. It is recommended that the capital program timeframe for calculating inclusion charges be 20 years, and that the need and timing of projects be reviewed in 2027 and every 5 years thereafter.
5. It is recommended that the unit of development for inclusion charges is the single-family lot. For a subdividable lot, the charge should be based on the maximum potential number of single-family lots that could be created by subdivision under current zoning. For a non-residential or multi-family residential lot, the charge should be based on the equivalent number of single-family lots based on estimated maximum day water demand for the lot.



6. It is recommended that the following types of projects be included in the calculation of inclusion charges:

- modelling and master planning;
- acquisition of rights of way;
- facility oversizing (incremental cost between local and trunk requirements); and
- provision, construction, alteration, or expansion of:
  - mains;
  - pumping and pressure reducing stations;
  - tanks; and
  - treatment facilities.

Recoverable project costs include planning, public consultation, engineering design, land acquisition, legal and interim financing costs, contract administration, construction, and contingencies.

7. It is recommended that interest be included in project costs where out-of-sequence construction and debt financing cannot reasonably be avoided.
8. It is recommended that inclusion charges be payable upon approval of a bylaw to amend the service area boundary.
9. It is recommended that inclusion charge revenues be held in a dedicated reserve fund until they are utilized for the intended projects.



## 1. Introduction

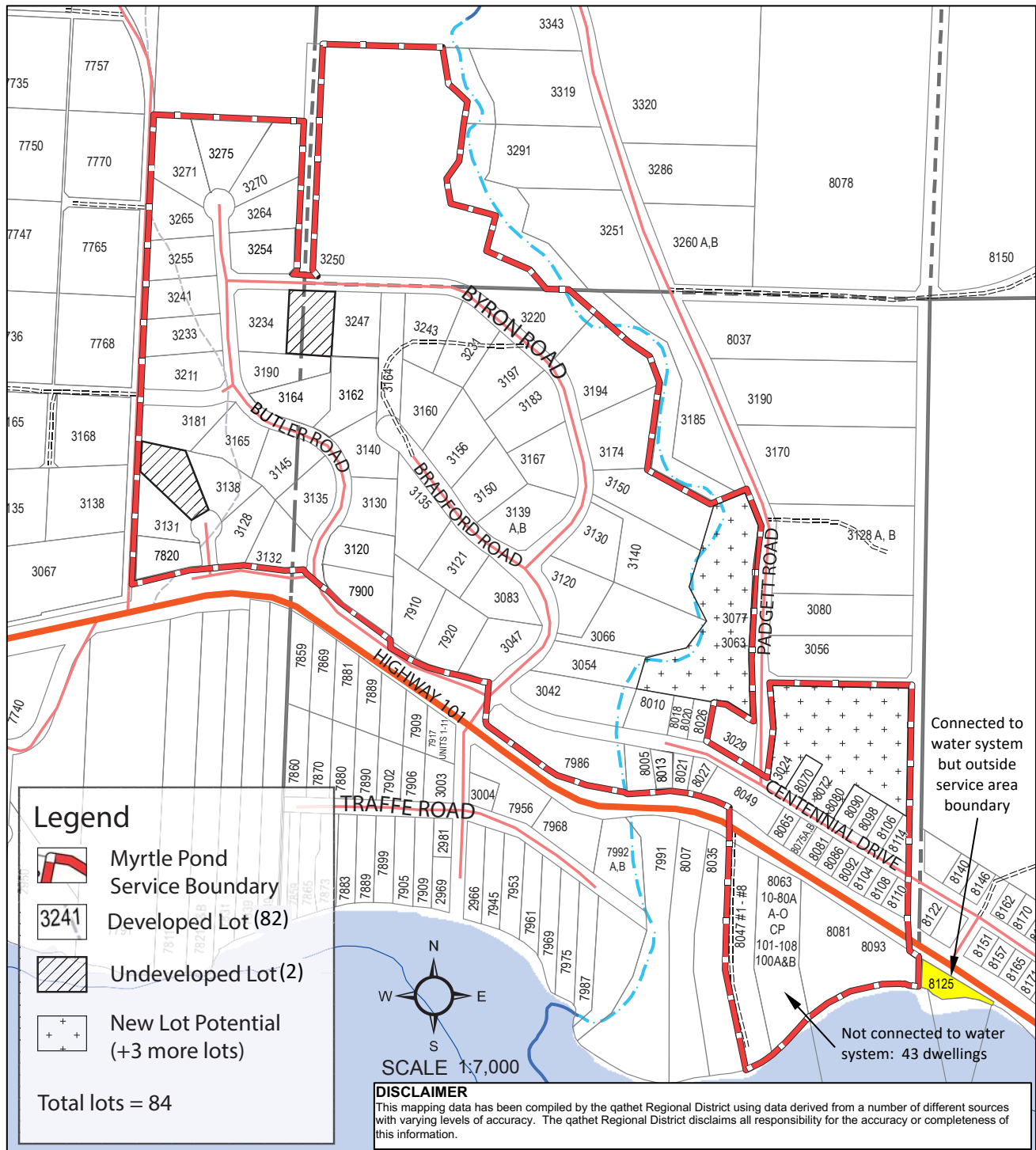
The qathet Regional District (qRD) retained Kerr Wood Leidal Associates Ltd. (KWL) to complete a review of options for recovering costs associated with development or expansion of the Myrtle Pond Water System in Electoral Area B. The project included a review of available infrastructure information to identify improvements needed to support forecasted community growth, a review of alternatives for financing infrastructure upgrades needed to service additional users, and a recommended development financing program.

The qRD Myrtle Pond water service area, located approximately 3 km southeast of Powell River on the Sunshine Coast Highway, includes 80 single-family residential lots and four lots with multi-family or commercial recreation zoning. Two existing lots have subdivision potential to create three additional single-family residential lots, and there is a large oceanfront lot at 8063 Highway 101 that is currently not connected to the water system but is zoned Commercial Recreation and contains 43 affordable housing units. There is also a single-family lot outside the service area at 8125 Highway 101 that is currently serviced by the Myrtle Pond water system (Figure 1-1).

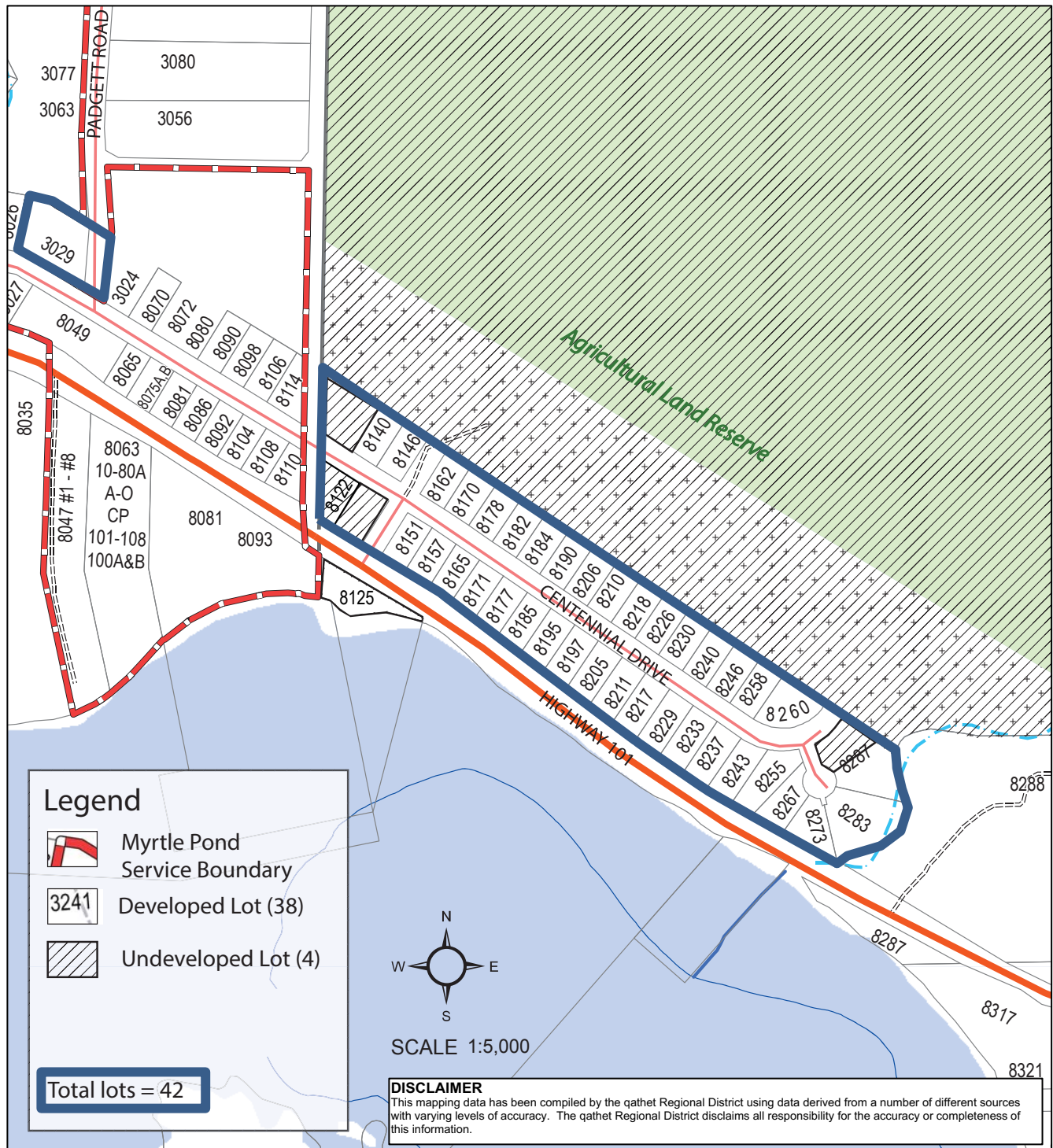
Over the past ten years, the service area has been expanded to include a 30-lot rural residential subdivision. As a condition of inclusion, the developer contributed funds for water supply and treatment upgrades, which were also funded through borrowing and grants. The capital upgrades resulted in major improvements in water supply capacity and quality for all users in the service area.

There is high potential demand for servicing lands adjacent to the Myrtle Pond Water Service Area, which include both existing homes at densities similar to those in the service area, and undeveloped land. It is estimated that 81 residential lots could readily be included in the service area with watermain extensions on Centennial Drive east of the service area (Figure 1-2), and on Pebble Beach and Traffic Roads south of the service area (Figure 1-3).

A draft Development Financing Options Study report was completed by KWL in July 2019. One of the recommendations was to complete a water system capacity assessment to confirm the system can supply peak flows and hydrant flows for existing and potential future users. This assessment would enable the qRD to establish suitable terms for inclusion of adjacent lands in the service area. A water system assessment was completed in 2021 by MSR Solutions Inc. This final report incorporates the findings of the assessment.



**Figure 1-1: Myrtle Pond Water Service Area**



**Figure 1-2: Potential Inclusion Area – Centennial Drive**



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## 2. Policy Considerations

### 2.1 Development Financing Options

The *Local Government Act* sets out the general requirements under which local governments may recover costs associated with land development servicing, or extension of a service area. A review of alternative means of funding growth in the service area and extension of the service to include additional lands was conducted based on the *Development Finance Choices Guide*<sup>1</sup>. The alternatives and their suitability for the Myrtle Pond water service are described in Table 2-1.

**Table 2-1: Comparison of Development Finance Options**

Option	Description	Considerations for Myrtle Pond Water
User Fees and Charges	<ul style="list-style-type: none"><li>• Fees or charges levied to municipal service users in order to recover municipal costs for operation, maintenance or extension of that service.</li><li>• Used as an alternative to property taxation, enabling costs to vary according to different factors: category of persons, property, business, and activity to reflect the different impacts on a service that different users may have.</li><li>• Charges must clearly reflect the cost of the specified service or growth-related infrastructure; interest can be included.</li><li>• A report showing how a fee or charge was determined must be made available to the public on request.</li><li>• There is no time horizon limiting cost recovery.</li><li>• Requires a bylaw but not public assent.</li></ul>	<ul style="list-style-type: none"><li>• Simple to administer.</li><li>• Well suited as a one-time charge for a service area boundary extension that would apply to parcels currently located outside the service area. Both existing dwellings currently on individual wells and new development are included.</li><li>• Does not recover costs for development of parcels already within the service area.</li><li>• No statute of limitations on cost recovery (costs are recovered from all landowners at the time of inclusion).</li></ul>
Development Cost Charges (DCCs)	<ul style="list-style-type: none"><li>• One-time charges (per unit area) levied against new developments for growth-related infrastructure.</li><li>• Trigger event for charge is subdivision or building permit.</li><li>• Rates vary according to land use categories; can be area specific.</li><li>• Interest costs can be recovered.</li><li>• There is no hard time horizon limiting cost recovery, however DCC programs are designed for a set timeframe or build-out scenario.</li><li>• Implemented by bylaw; does not require public assent however due process with consultation and approval by the Inspector of Municipalities is required.</li></ul>	<ul style="list-style-type: none"><li>• Myrtle Pond does not currently have DCCs.</li><li>• Most property in the service area is already subdivided, and qRD does not issue building permits.</li><li>• Most or all of the Myrtle Pond infrastructure has sufficient capacity to service full-build-out of the existing service area.</li><li>• Requires provincial approval of DCC background report and bylaw; can be time consuming and costly to implement, likely not practicable where development potential is very limited.</li></ul>

<sup>1</sup> Ministry of Municipal Affairs, Province of British Columbia, 2000.



Option	Description	Considerations for Myrtle Pond Water
<b>Local Improvements (Frontage, Parcel Tax, Specified Area Charge)</b>	<ul style="list-style-type: none"> <li>Infrastructure cost recovery through parcel or frontage taxes charged to property owners (community-wide or area specific).</li> <li>Parcel or frontage taxes are designed to assist municipalities in adding services to established areas.</li> <li>Specified area charges are designed to assist municipalities in financing growth-related infrastructure.</li> <li>Can be applied within a neighbourhood or area of the community.</li> <li>Interest costs can be recovered.</li> <li>There is no time horizon limiting cost recovery.</li> <li>Requires a bylaw and public assent.</li> </ul>	<ul style="list-style-type: none"> <li>Myrtle Pond currently has parcel tax as part of its cost recovery structure for delivering service to existing users.</li> <li>Taxes within a service area cannot be selectively applied to new development (i.e., not suitable for development in the existing service area).</li> <li>A parcel or frontage tax could be used to recover inclusion and extension costs from a benefiting area such as Centennial Drive or Traffe Road. It is common practice to establish a service area for a water or sewer system extension, debenture the project costs over 15 to 25 years, recover debt costs with a parcel tax, and retire the service area when the debt is retired.</li> <li>Requires a bylaw and electoral assent in the benefiting area, which may not be supported by a majority of the electors.</li> <li>No statute of limitations on cost recovery.</li> </ul>
<b>Latecomer Charges</b>	<ul style="list-style-type: none"> <li>One-time charges to property owners and/or new developers for connection to excess or extended on- or off-site services.</li> <li>Restricted to road, water, sewer, and drainage works.</li> <li>Costs are generally front ended by a developer, and paid back as new development is connected; however, legislation allows local governments to be responsible for service extensions as well.</li> <li>Interest costs can be included.</li> <li>Maximum 15-year horizon for recovering costs.</li> <li>Requires neither a bylaw nor public assent (except for automatic application).</li> </ul>	<ul style="list-style-type: none"> <li>Effective tool for financing growth-related infrastructure (better suited to bare land areas than subdivided and developed land).</li> <li>Typically used for building on greenfield sites that are not contiguous to existing urban development.</li> <li>Well suited to service areas with limited growth potential, where development or expansion occurs from time to time.</li> <li>15-year time limit to recover latecomer costs imposes a large financial risk on the party that front-ends the servicing costs.</li> </ul>
<b>Development Works Agreement</b>	<ul style="list-style-type: none"> <li>An agreement under which a developer or pays the local government a negotiated price or in-kind contribution of municipal infrastructure as a condition of development approval.</li> <li>Typically used where the developer front-ends the works.</li> <li>Restricted to road, water, sewer and drainage works, as well as parkland improvements.</li> <li>There is no time horizon limiting cost recovery.</li> <li>Requires a bylaw and assent of electors in the benefiting area.</li> </ul>	<ul style="list-style-type: none"> <li>Previously successfully used in 30-lot expansion of Myrtle Pond service area.</li> <li>Suitable where a single owner wishes to include a large parcel in the service area for subdivision and development.</li> <li>Not well suited to areas that are already subdivided and largely built out (i.e. Centennial and Traffe); difficult to negotiate as there would be many individual parties to the agreement.</li> <li>Requires a bylaw and electoral assent in the benefiting area, which may not be supported by a majority of the electors.</li> <li>No statute of limitations on cost recovery.</li> </ul>





Option	Description	Considerations for Myrtle Pond Water
Comprehensive development agreements	<ul style="list-style-type: none"><li>• The developer, in exchange for development approval, provides specific on-site or off-site works and/or amenities for the broader community.</li><li>• Works and amenities provided through the agreement are beyond the services that would be secured through development works agreements, DCCs and other finance tools.</li><li>• The costs of the works and amenities provided are not recoverable from future development that might benefit from the services.</li><li>• Negotiated on a case-by-case basis.</li><li>• Typically, part of the zoning approval process.</li></ul>	<ul style="list-style-type: none"><li>• Normally considered for large redevelopment re-development projects involving multiple services; not practicable or cost-effective for Myrtle Pond.</li></ul>

**A user charge per single-family lot for including land in the service area is recommended.** Other complementary mechanisms such as latecomer agreements front-ended by a developer, establishing local service areas for inclusion and extension cost debenture repayment, or negotiating development works agreements, could be utilized where well suited to the specific circumstances for inclusion. Costs payable for inclusion in any case should be aligned with the established unit rate(s).

## 2.2 Development Financing Best Practices

The *DCC Best Practices Guide*<sup>2</sup> was referenced in completing this project, and the guiding principles outlined in the Guide have been duly considered. Although a DCC program is not recommended for Myrtle Pond, most of the best practices are directly applicable to other development financing mechanisms.

### Public Process

Most development financing mechanisms require some degree of public process such as the assent of the electors in a benefiting area. Existing users should be informed about the process and conditions for including new users in the Myrtle Pond water service area.

In order to include an area in the service area that has more than one landowner, an assent process (referendum, petition or alternative approval, in accordance with the *Local Government Act* and *Community Charter*) must be completed with an affirmative result. Electors must be provided with complete and accurate information regarding the conditions of inclusion in the service area and extension of the distribution system, including estimates of the full costs.

**It is recommended that stakeholders (e.g., owners of lots adjacent to the service area, and particularly in the Centennial Drive and Traffe Road areas) be consulted in advance of adopting the inclusion charge. It is further recommended that information about the process and criteria for including property in the Myrtle Pond water service area be provided to existing users (e.g., in a utility bill), and communicated to the owners of property near the service area (e.g., through local media and community associations).**

<sup>2</sup> Third Edition, Ministry of Community Services, Province of British Columbia, 2005.



## Reference Documents

This report is based on information obtained from the following plans, studies, and datasets, in addition to interviews with qRD staff.

1. *Capacity study for existing and potential future users at Myrtle Pond Water System*. MSR Solutions Inc., 2021.
2. *Myrtle Pond Local Area Water System Rates and Regulations Amendment Bylaw No. 117.18, 2018*. Powell River Regional District.
3. *Myrtle Pond Zoning Bylaw No. 426, 2011*. Consolidated for Convenience Only May 17, 2018. Powell River Regional District.
4. *Request for Decision Report: Myrtle Pond Zoning and Covenant Enforcement, 3130 Butler Road, Area B*. Report to Planning Committee, Powell River Regional District, June 2016.
5. *2018-2022 Financial Plan*. Powell River Regional District.
6. *Myrtle Pond Water System Water Source Yield Assessment*. Enterprise Geoscience Services, 2014.
7. Tender documents and construction reports for new Myrtle Pond reservoir. KWL records, 2012.
8. *Assessment of Deepened Myrtle Creek Well 2-08*. Hodge, 2010.
9. *Design Brief for Myrtle Pond Water Treatment Upgrade*. McElhanney, 2008.
10. *Powell River Regional District Growth & Development Analysis*. Vann Struth Consulting, 2008
11. *Myrtle Creek Well 1-05 Assessment*. Pacific Hydrology Consultants, 2005.
12. *Myrtle Pond Water System Study*. KWL. 2005.

## 2.3 Area of Application

The qRD has no obligation to provide water service to land outside the Myrtle Pond Water Service Area. The qRD may negotiate applicable charges as a condition of inclusion in the service area and may create or extend a water service area for extension of the water system to land located outside the service area after obtaining assent of the electors in the benefiting areas. An inclusion charge would apply to any land that is to be included in the service area.

For the purpose of this Study, the area of application includes the current Myrtle Pond Water Service Area, and the two potential extension areas shown in Figure 1-2 and Figure 1-3.

## 2.4 Program Timeframe

It is typical practice for a development finance program or policy to be reviewed on a five-year cycle with a 20-year planning horizon. The 20-year horizon is generally consistent with the timeframes of official community plans and utility master plans. Growth and infrastructure servicing requirements were reviewed for the period of 2022 to 2041. The approach taken for study is to estimate development, population, and water demand at full build-out of the existing service area and two adjacent areas, and to estimate timeframes for projects that would reasonably meet the anticipated demands for service.

**It is recommended that the capital program timeframe for calculating inclusion charges be 20 years, and that the need and timing of projects be reviewed in 2027 and every 5 years thereafter.**



## 2.5 Land Use Categories and Units

As best practice, a development financing structure should only be as complex as is necessary to fairly allocate costs, following a density gradient and recognizing major differences in relative impact. Residential base (indoor) water servicing needs per dwelling are likely to be similar regardless of the housing form; however, seasonal (outdoor) demands are dependent on housing form and lot size.

There is a wide range of potential demand on infrastructure by non-residential development, depending primarily on size of the development. However, non-residential, and multi-family residential development in the Myrtle Pond water service area is strictly limited to existing development on three lots; therefore, there is practically no potential for development or densification except through a change of zoning.

**The following land use categories and units are recommended.**

**Table 2-2: Land Use Categories and Units**

Land Use Category	Units
Single-Family Residential	Lot
Other	(based on equivalent SF residential lots)

## 2.6 Eligible Projects and Costs for Inclusion Charge Calculation

The following types of projects are typically included in DCC program costing. **It is recommended that these project types be incorporated in the determination of inclusion charges.**

- **Modelling and master planning;**
- **Acquisition of rights of way;**
- **Facility oversizing (incremental cost between local and trunk requirements); and**
- **Provision, construction, alteration, or expansion of:**
  - **Mains;**
  - **Pumping and pressure reducing stations;**
  - **Tanks; and**
  - **Treatment facilities.**

**Recoverable project costs include planning, public consultation, engineering design, land acquisition, legal and interim financing costs, contract administration, construction, and contingencies.**

### Interest

The construction of regional water and sanitary sewer infrastructure is often several years out of sequence with the development that necessitates it, and the associated developer contributions. Therefore, some local governments are including interest costs in DCCs and other development financing mechanisms for infrastructure projects that must be completed out of sequence with development.

**It is recommended that interest be included in project costs where out of sequence construction and debt financing cannot reasonably be avoided.**



## 2.7 Program Administration

### Timing of Payment of Inclusion Charges

**It is recommended that inclusion charges be payable upon approval of a bylaw to amend the service area boundary.** Where inclusion charges are to be recovered through debenture and parcel taxation, bylaws to authorize borrowing and to establish the local area and parcel tax for debt servicing should be approved concurrently with the boundary amendment.

### Inclusion Charge Reserve Funds

**It is recommended that inclusion charge revenues be held in a dedicated reserve fund until they are utilized for the intended projects.**



### **3. Development Forecast and Servicing Needs**

#### **3.1 Development Forecast**

There are 82 developed lots and 2 undeveloped lots in the Myrtle Pond Water Service Area. Four lots have multi-family zoning and development (2 or more dwelling units). One large lot (3244 and 3250 Byron Road) is zoned Agricultural. One lot (8063 Highway 101) is zoned Commercial Recreation and has 43 affordable rental housing units that are currently not connected to the water system. There are currently 101 serviced dwelling units in the service area, and 43 unserviced dwelling units. Assuming an average household size of 2.2, the serviced population in the service area is estimated to be 222 (MSR, 2021). There is also one single-family lot outside the service area at 8125 Highway 101 that is currently connected to the Myrtle Pond water system.

#### **Existing Service Area**

Two lots in the service area have potential for subdivision, creating up to three additional residential lots. There is also potential for commercial development and residential densification (e.g., secondary suites) within the service area; however, amendments to Myrtle Pond Zoning Bylaw No. 426, 2011 would be necessary to permit any densification. For a full build-out scenario it is assumed that secondary dwellings will at some time be permitted in the suburban residential (SR) zone, and that secondary dwellings will be developed on half of the lots in the service area and occupied at an average household size of 1.5.

Assuming full residential build-out and future connection of the 43 affordable housing units at 8063 Highway 101, the full build-out population and equivalent population of non-residential development in the current service area is estimated to be 326 (MSR, 2021).

It is assumed that the strict controls on land use in the water service area are intended to limit growth in demand on the Myrtle Pond water system; however, capacity for effective onsite wastewater management is likely of equal or even greater importance. Failing or malfunctioning onsite wastewater systems could adversely impact the groundwater sources for the Myrtle Pond water system, as well as adjacent individual wells.

#### **Lands Adjacent to Service Area**

There is high potential demand for servicing lands adjacent to the Myrtle Pond Water Service Area, which includes both existing homes at densities similar to those in the service area, and undeveloped land. It is estimated that 81 residential lots could be included in the service area with watermain extensions on Centennial Drive east of the service area, and on Pebble Beach and Traffe Roads south of the service area. Neither area is considered to have potential for further subdivision. The two areas would add an estimated 92 single-family equivalent dwelling units at full build-out (MSR, 2021). If the service area is expanded to include the Centennial Drive and Traffe Road areas, the full build-out population of the expanded service area is estimated to be approximately 520, on 174 lots.

#### **3.2 Infrastructure Capacity and Servicing Needs**

The Myrtle Pond water system consists of three wells, a small treatment plant, a 444 m<sup>3</sup> reservoir, distribution mains, a pressure reducing station, line valves, hydrants, and customer service connections



with pit meters. The supply and treatment system are designed for a maximum day demand of 286 m<sup>3</sup>.<sup>3</sup> The wells are estimated to have safe yields as follows:

- Well W-93 (Myrtle Pond Well #2; not currently in use): 155 m<sup>3</sup>/d;<sup>4</sup>
- Well 2-08: 436 m<sup>3</sup>/d;<sup>5</sup>
- Well 1-05: 60 m<sup>3</sup>/d.<sup>6</sup>

The maximum monthly demand (MMD) in four of the six years from 2013 to 2018 in the Myrtle Pond water system was less than 90 m<sup>3</sup>/day (Figure 3-1). In the other two years, higher MMDs resulted from large leaks either in the distribution system or on customer connections, which could likely have been mitigated through vigilant monitoring and prompt response and repair. However, MMD in 2019 exceeded 110 m<sup>3</sup>/day, and after the June 2021 heat dome, maximum month demand in July 2021 reached 131 m<sup>3</sup>/day after a maximum day demand of 193 m<sup>3</sup> on June 29. Although the 2021 heat dome was a weather outlier (1/1,000 year return period based on historical climate normals for south coastal BC), it underscores that climate change is expected to increase the frequency and intensity of extreme weather events.

MSR recommends a MDD of 235 m<sup>3</sup>/day for the existing service area, and 423 m<sup>3</sup>/day for the expanded service area at full build-out.

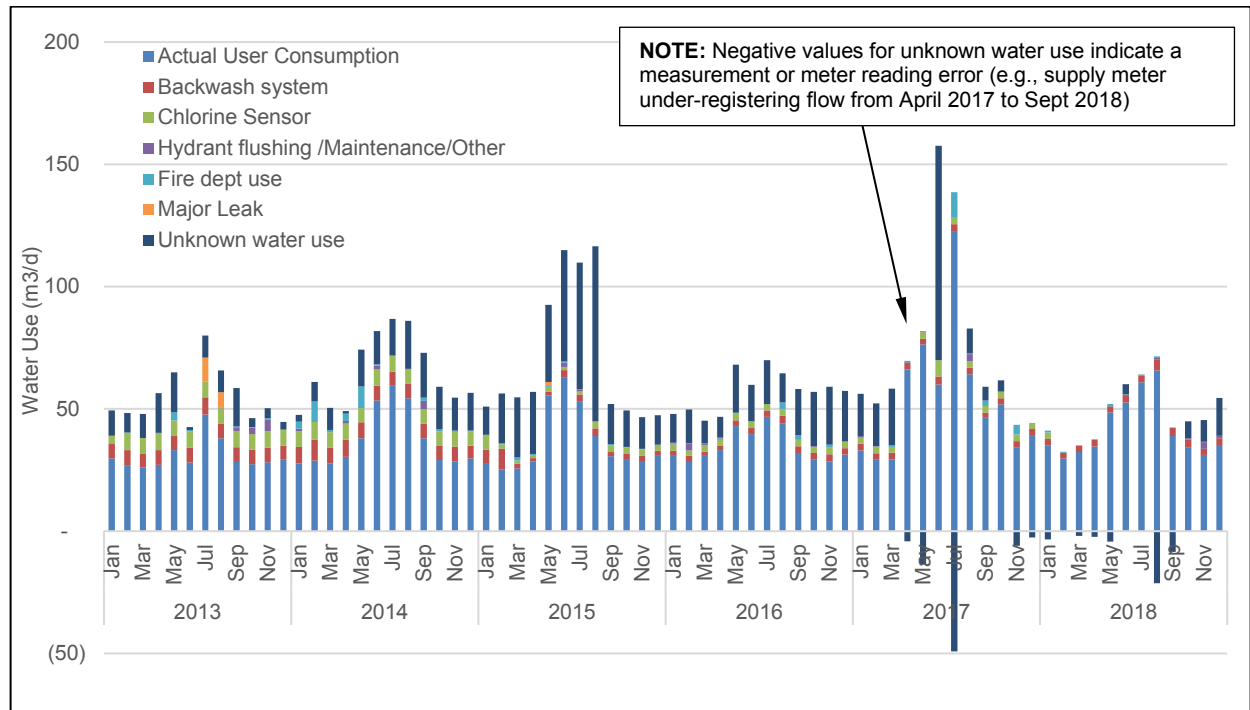
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<sup>3</sup> McElhanney, 2008

<sup>4</sup> KWL, 2005

<sup>5</sup> Enterprise Geosciences, 2014

<sup>6</sup> Pacific Hydrology Consultants, 2005



**Figure 3-1: Myrtle Pond Monthly Water Demands 2013-2018**

The combined capacity of the active wells is more than the estimated MDD for the expanded system.

Treatment system capacity is more than the estimated MDD at build-out for the existing service area, indicating that the system has sufficient capacity to serve all foreseeable densification within the current service area. There is no cost basis for imposing development charges on the owners of land in the service area. Therefore, **it is recommended that a development financing mechanism be based on the inclusion of land in the service area.**

The capacity assessment of the Myrtle Pond water distribution system completed by MSR in 2021 confirms that the watermain and storage reservoir can supply peak flows and hydrant flows for existing and potential future users in the current service area without significantly impacting water quality.

Expanding the service area and connecting several additional dwellings to the Myrtle Pond water system would necessitate upgrades to treatment capacity as a condition of including new lands in the service area. The estimated cost of doubling the flow capacity of the treatment system is \$700,000 plus a 50% contingency, or \$1.05 million (MSR, 2021). Extending the water distribution system into each of the expansion areas (Centennial Drive and Pebble Beach/Trafte Roads) is estimated to require 700 m of new 150Ø watermain with hydrants and service connections in the public right of way, at an estimated cost of \$350,000 plus 50% contingency (\$525,000) for each service area (MSR, 2021).



## **4. Eligible Projects and Costs**

Based on the development forecast and review of servicing needs, this section describes the projects recommended for an inclusion charge calculation.

### **4.1 Treatment Upgrade**

It is anticipated that a project to double the capacity of the water treatment plant will be needed to reliably and sustainably supply peak demands and fire flows to the existing service area and future extension areas, at an estimated cost of \$1,050,000 (MSR, 2021). Construction cost inflation has been high in the past year; therefore, an adjustment to 2022 based on the Statistics Canada Non-Residential Building Construction Price Index for Vancouver (8.8% from Q1 2021 to Q1 2022) is recommended. The adjusted estimate for the treatment upgrade is \$1,142,000.

Preliminary design for the purpose of developing a specific scope and indicative cost estimate for this project is beyond the scope of this study.

This project would be required strictly as a result of expanding the service area and is therefore entirely attributable to new users. It is hypothetically assumed that the project would be required in 2030; however, the project timing is dependent on the timing of inclusion and connection of occupied lots outside the service area.

It is anticipated that the existing treatment system could provide an acceptable level of service for a few years after one of the two expansion areas is connected to the system; however, demand management measures such as staged watering restrictions may be required to prevent water shortages during unusually hot weather.

### **4.2 Water Distribution System Extensions**

In order to supply water for peak demands and hydrant flows in the Centennial Drive and Pebble Beach/Traffe Roads area from the Myrtle Pond water system, the following projects would be required.

- Centennial Drive Extension Project, including decommissioning of the existing Centennial Drive Water Utilities pumphouse, tank and watermain, and construction of a new 700 m 150Ø PVC watermain, hydrants, and service connections within the road ROW, at an estimated cost of \$525,000 (MSR 2021).
- Pebble Beach/Traffe Roads Extension Project, including construction of a new 700 m 150Ø PVC watermain, hydrants, and service connections within the road ROW, at an estimated cost of \$525,000 (MSR (2021).

The inflation adjusted value of each project is \$571,000. These projects would benefit only new users outside the current service area and are, therefore, entirely attributable to new users.





### 4.3 Summary

Based on the foregoing, the projects recommended for an inclusion charge program are shown in the following table.

**Table 4-1: Inclusion Charge Eligible Projects Summary**

Project Name	Conceptual Year	Estimated Cost <sup>a</sup>	% Benefiting New Users	New Users Share	qathet Share
Centennial Drive Extension	2025	\$ 571,000	100%	\$ 571,000	\$0
Water Treatment Expansion	2030	\$ 1,142,000	100%	\$ 1,142,000	\$0
Pebble/Trafte Roads Extension	2035	\$ 571,000	100%	\$ 571,000	\$0
<b>TOTAL</b>		<b>\$ 2,284,000</b>		<b>\$ 2,284,000</b>	<b>\$0</b>

a. Cost estimates prepared by MSR Solutions Inc. (MSR, 2021). All costs are Class "D" and in 2021 constant dollars and include 50% contingency.



## 5. Inclusion Charges

The amount recoverable through an inclusion charge over a 20-year program timeframe (2022-2041) is \$2,100,000. The recommended Myrtle Pond water inclusion charge rate is summarized in Table 5-1.

**Table 5-1: Recommended Inclusion Charge**

Land Use Designation and Unit	Unit	Number of Units	New Users Share	Recommended Inclusion Charge
Residential	Single-Family Lot	81	\$2,284,000	<b>\$28,200</b>

For inclusion of a subdividable parcel of single-family residential zoned land, the inclusion charge should be based on the maximum potential number of single-family lots. A single-family residential lot is estimated to require 2 m<sup>3</sup>/d MDD (MSR, 2021). For all other land, the inclusion charge should be calculated based on the estimated MDD, at a rate of \$14,100 per m<sup>3</sup>/day of required capacity (\$28,200 per lot or 2 m<sup>3</sup>/day/lot).

If water distribution system extension is funded separately or is not required to service land outside the service area, the inclusion charge should be based only on the cost of the water treatment expansion: \$14,100 per single-family lot or \$7,050 per m<sup>3</sup>/day.

### 5.1 Recommendations

#### Basis for Development Cost Recovery

1. An inclusion charge of \$28,200 per single-family lot (2022 dollars) is recommended for including land in the Myrtle Pond Water Service Area, including the costs of extending new 150Ø watermain, service connections within the public road right of way, and hydrants. The inclusion charge could be combined with other financing mechanisms as needed to suit specific cases:
  - a parcel tax on a specified area to debt finance the inclusion charge; or
  - a latecomer agreement front-ended by the first party in an area to be included, where the first party pays the full inclusion charge for the area.
2. It is recommended that the inclusion charge be adjusted for inflation annually from 2022 using a construction cost index suitable for south coastal BC, and that the scope and cost estimates for the projects included in the rate calculation be reviewed every 5 years to further adjust the charge rate as needed. Municipal utility construction costs have historically inflated at a significantly higher rate than CPI.

#### Policy and Administration

The following is a summary of policy recommendations shown in bold text in previous sections of this report.

1. It is recommended that stakeholders (e.g., owners of lots adjacent to the service area, and particularly in the Centennial and Pebble Beach/Traffe Roads areas) be consulted in advance of adopting the inclusion charge. It is further recommended that information about the process and criteria for including property in the Myrtle Pond water service area be provided to existing users (e.g., in a utility bill), and communicated to the owners of property near the service area (e.g.,



through local media and community associations). Requirements for the electoral assent process for creating or extending a local area service of a Regional District are set out in the *Local Government Act* and *Community Charter*.

2. It is recommended that the capital program timeframe for calculating inclusion charges be 20 years, and that the need and timing of projects be reviewed in 2027 and every 5 years thereafter.
3. It is recommended that the unit of development for inclusion charges is the single-family lot. For a subdividable lot, the charge should be based on the maximum potential number of single-family lots that could be created by subdivision under current zoning. For a non-residential or multi-family residential lot, the charge should be based on the equivalent number of single-family lots based on estimated maximum day water demand for the lot.
4. It is recommended that the following types of projects be incorporated in the determination of inclusion charges:
  - Modelling and master planning;
  - Acquisition of rights of way;
  - Facility oversizing (incremental cost between local and trunk requirements); and
  - Provision, construction, alteration or expansion of:
    - Mains;
    - Pumping and pressure reducing stations;
    - Tanks; and
    - Treatment facilities.

Recoverable project costs include planning, public consultation, engineering design, land acquisition, legal and interim financing costs, contract administration, construction, and contingencies.

5. It is recommended that interest be included in project costs where out-of-sequence construction and debt financing cannot reasonably be avoided.
6. It is recommended that inclusion charges be payable upon approval of a bylaw to amend the service area boundary.
7. It is recommended that inclusion charge revenues be held in a dedicated reserve fund until they are utilized for the intended projects.



## 6. Report Submission

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## Revision History

Revision #	Date	Status	Revision	Author
0	July 5, 2022	FINAL	Revised based on client review	CPS
A	April 3, 2019	DRAFT	Draft for qRD review	CPS
B	May 21, 2019	DRAFT	Revisions per qRD review	CPS
C	July 3, 2019	DRAFT	Revisions per qRD review	CPS
D	April 11, 2022	DRAFT	Revised based on MSR, 2021 Capacity Study	CPS

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