TOWN OF PEACE RIVER, AB
ST. GERMAINE SERVICING SCENARIO'S

PROJECT SITE:

Existing Residential Land Parcels within St. Germaine ASP – Town of Peace River

PREPARED FOR:

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INTRODUCTION

The residential land owners (5 developed land parcels and 2 undeveloped parcel north of 97 Ave) located to the West of Highway 743 (figure 1.0) have made a request to connect to the Town of Peace River's existing water and sanitary services located within 73rd Street. Five of the land parcels are located in the subplan boundary #1 of the phasing concept of the St. Germaine – Area Structure Plan (ASP) and the remaining two parcels located north of 97 Ave and no longer form part of the ASP. The area is bounded on the east side by Highway 743 and by Highway 2 on the south. The area is transected by the St. Germaine Creek which runs from the northwest to the southeast crossing Highway 2 at 74th Street.

The objective of the analysis is to the understand what the risk to the Town would be in taking over and managing infrastructure based on varying scenarios along with the potential implications to the ASP. The Town has also confirmed that the landowners would pay the cost for the initial installation of servicing plan that meets the needs of the existing 7 residential dwellings. The focus of the analysis for alternative scenarios has been based on creating an effective servicing option designed to provide for the six existing residential dwellings. Should additional dwellings be permitted on the vacant lots the alternative scenarios would need to be upgraded to provide services for these dwellings.

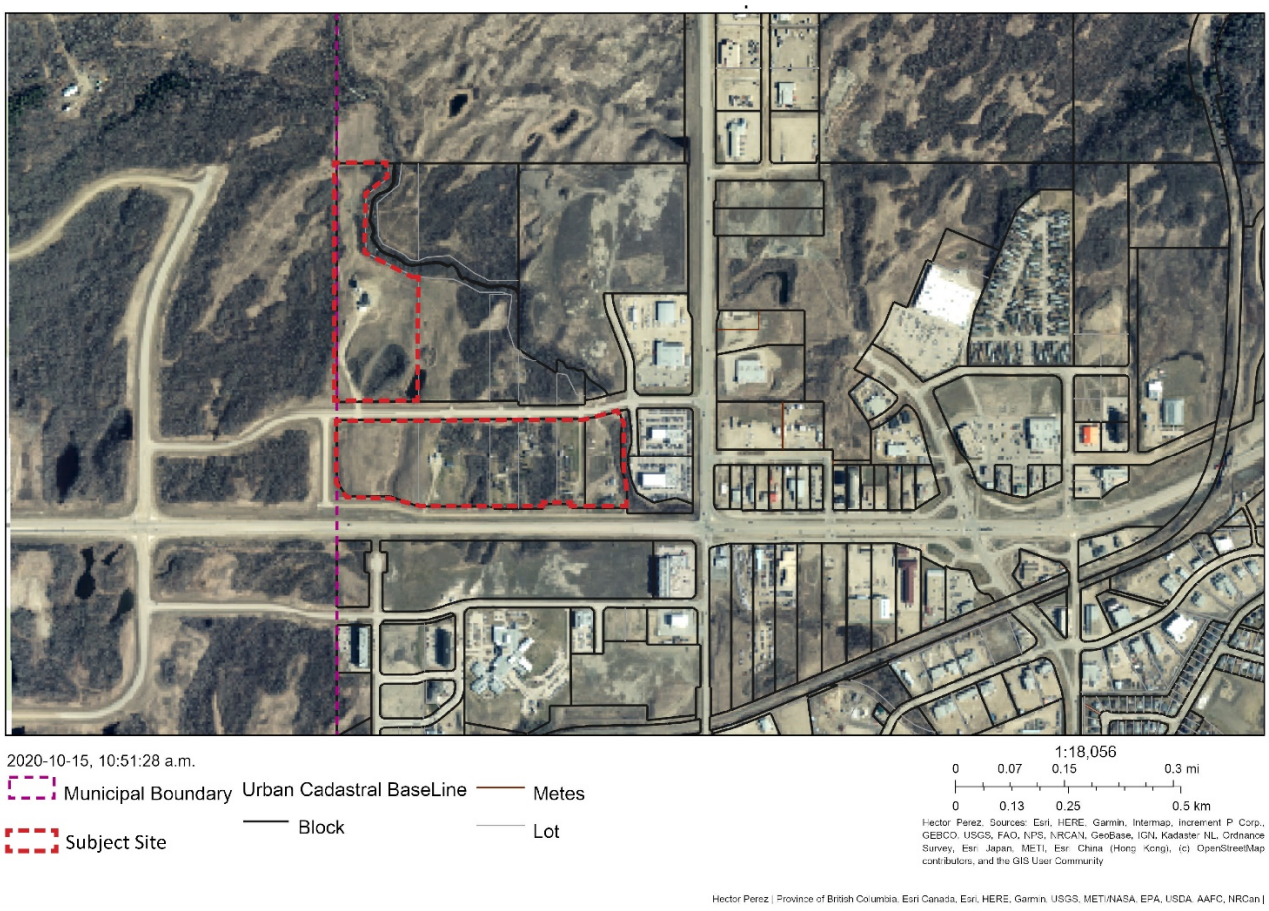

Figure 1.0 Existing Residential Parcels West of Highway 743 (Source: Town of Peace River Webmap)

PURPOSE

The purpose of this report is to outline and explore the following:

1. To understand the risks to the Town related to each option over the long term and in context to the approved St. Germaine Creek - Area Structure Plan,
2. To outline the estimated costs (high level) to the different options that are realistic,
3. To understand high level anticipated lifecycle – this is important to understand when the Town would be responsible for replacement of the infrastructure and again its connection to enabling commercial development.

POLICY CONTEXT

St. Germaine Area Structure Plan provides the intermediate link between the Town's Municipal Development Plan (MDP) and Town's Land Use Bylaw. St. Germaine ASP provides an overall framework for the future development of the plan area which describes the proposed land uses, population densities and the general location of major transportation routes, public utilities and the sequence of development for the area of land within the Plan's boundaries.

Currently the six-land parcels located south of 97 Ave adjoining Highway 2 have been allocated as Highway Commercial District (Figure 2) within the ASP allowing for the development of larger format commercial opportunities requiring larger tracts of land. The same parcels are zoned as Highway Commercial and Commercial Shopping Centre under the Town's Land Use Bylaw (Consolidated 2018).

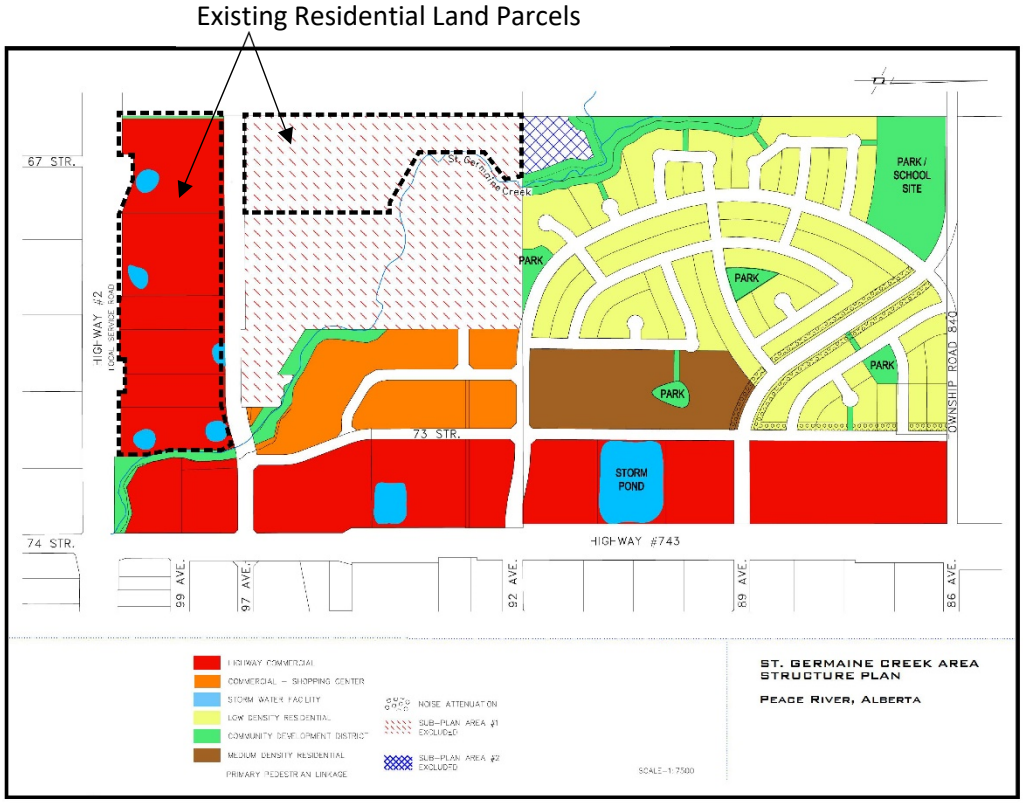

Figure 2.0 St. Germaine ASP – Development Concept Plan (Source: St. Germaine ASP)

SERVICING SCENARIOS CONFORMANCE WITH ST. GERMAINE AREA STRUCTURE PLAN POLICIES

The following table highlights some of the key policies relating to the varying servicing options.

St. Germaine Area Structure Plan Objective and/or Policy	Servicing Scenarios Policy Conformance
3.0 Plan Objectives:	
• To provide a servicing system based on the economical and efficient extension of municipal infrastructure and utilities;	• The analysis looked at 3 different servicing scenarios providing alterative options to enable economical and efficient extension of municipal infrastructure and utilities. Scenario 2 was identified as not being beneficial to the Town for the reasons mentioned in this report. It was also observed that the current servicing proposed in the amended ASP changed from the original ASP resulting in an inefficient proposed extension of the municipal infrastructure because it now no longer provides services on both side of a road.
• To integrate natural features into future urban development; and	• One of the main challenges is identifying whether the extension of services can be achieved through gravity without a lift station where they would be required to go below the St Germaine Creek. All servicing considered within this report is based on pressure systems only and have not considered whether lift stations are required. This would need to be determined following more detailed analysis.
• To ensure the provision of high-quality commercial development opportunities along Highway #2 and Highway # 743 that will further the Town's goals of being a service centre for the surrounding region.	• All servicing scenarios deliver services that meet the needs of the existing residential development while only two scenarios meet the needs of the future commercial developments. Should these options be pursued they would not be in alignment with this policy and therefore an amendment should be carried out.
4.3.3. Environmental Reserve	
• As such the top of valley bank will be used to allocate Environmental Reserve on either	• The servicing would need to be placed below the Creek level that could result in the

side of the creek in order to protect it from urban development.	requirement for lift station that would increase the capital and operating costs. The cost estimates provided have assumed a lift station would not be required. Further analysis would need to be undertaken to confirm this.
5.2 Sub-Plan Area #1—Servicing Concept 5.2.2 Water Distribution • Sub-Plan Area #1 will be provided servicing by connecting to the Town of Peace River's existing water distribution system. • A water system network analysis will be required at the design stage to confirm pipe sizing and appurtenance requirements. 5.2.3 Sanitary Sewer Collection • Sub-Plan Area #1 will be provided servicing by a single sanitary sewer connection to the existing 375mm diameter main at 99th Avenue and Highway 743. • A sanitary sewer network analysis will be required at the design stage to confirm pipe sizing requirements.	• None of the scenarios align with the ASP. Installation of a different servicing plan would require an amendment to the ASP because it would not be in alignment with the statutory plan. • The servicing scenario 1 and 2 provides servicing by a water main which connects to the existing 250mm diameter main at 97th Avenue and 73rd Street intersection. Servicing Scenarios 1-3 provide an interim servicing design solution and connects to the existing sanitary sewer proposed sanitary sewer at 97th Avenue and 73rd Street intersection. Currently policy within the ASP does not provide for an alternative system and amendments would be required. • Should Council decide to proceed with one of the Scenarios a sanitary network analysis will be required based upon this policy.

POTENTIAL SERVICING SCENARIOS

The servicing scenarios described below, which have been requested by the client, discuss the servicing parameters and associated risks to service the existing residential lands, while taking into consideration plans for future commercial development. The three scenarios consider various installation methods for

the sanitary and water servicing as proposed by the Town of Peace River. Scenario one and two utilizes components of the ultimate water main design concept, as identified in the St. Germaine Creek ASP, while the remaining scenario supports demands of the existing residential lots only and follows an alignment different than what was proposed in the ASP. The Town of Peace River June 2009 General Municipal Servicing Standards was referenced during the compilation of our assessment.

Scenarios one and two include looping the proposed water main which will service the existing 7 residential lots, while taking into consideration the potential for future commercial development. Water modelling and analysis of these systems will be required during detailed design and has not been considered in the scope of this report. Temporary water servicing solutions for Scenario 3 do not strictly require watermain looping.

With respect to product life expectancy, it isn't uncommon for PVC products to last an extended period of time, however, life expectancy can be greatly compromised if the product installation does not adhere to manufacturers specifications. Water Finance and Management has recently published an article which states: "PVC pipe is assigned a 100-year service life based on 60 years of experience, extensive industry studies, dig-up field samples and historical data demonstrating low failure and water main break rates. A study of exhumed PVC sewer pipe estimated its service life between 100 and 300 years." All four scenarios assume the installation of new materials.

Comparative costs summaries of each servicing scenario have been provided below in the form of a Class D level Opinion of Probable Cost, which includes a 2.5% Material Testing, 10% Engineering, and 20% contingency allowance included in the overall price presented for each scenario. These costs are high level only and will require further analyses during detailed design. Costs have been determined using historical pricing that we have experienced in northern communities.

It is expected that the Town would be responsible for the ongoing operation and maintenance costs for the infrastructure installed within the Town's lands, that has been installed to facilitate future commercial development as well as the existing residential dwellings. In scenarios where servicing is proposed to be installed to accommodate the existing residential dwellings only, we understand that the landowners will be responsible for this installation cost. However, the landowners would have an additional cost that has not been included for extending the services from the property line to each individual house or the supply and installation of the required septic tanks and/or cisterns depending on scenario chosen.

SERVICING SCENARIO 1 - RISKS AND ESTIMATED COSTS

Servicing Scenario 1 considered the possibility of installing both the water and sanitary utilities by means of directional drilling. The proposed servicing alignment will parallel 97 Avenue, and does not follow the alignment identified in the ASP.

This installation method is a common practice for water mains and other pressurized systems; however, it is less common for gravity dependent systems such as sanitary and storm utilities. Directional drilling operations have difficulty maintaining consistent and precise elevation control, which can result in sections of ponding within the main and carries a significant risk of failure and / or significantly higher costs for maintenance. For this reason, it is not recommended that this technique be used for the installation of any gravity dependent system.

The installation of the proposed water main, as depicted in Figure 1, includes connecting to the existing infrastructure at the 97th Avenue and 73rd Street intersection, where it will extend west within the 97th avenue right-of-way. The water main will then be directed south across Highway II, where it will be looped by connecting to the existing infrastructure located in the 67th Street and 101 Avenue intersection. Installation of the water main utility will require a series of directionally drilling pits to be established along the utility's alignment, approximately every 250 meters and at service connections, which will require roadway restoration upon completion of the installation.

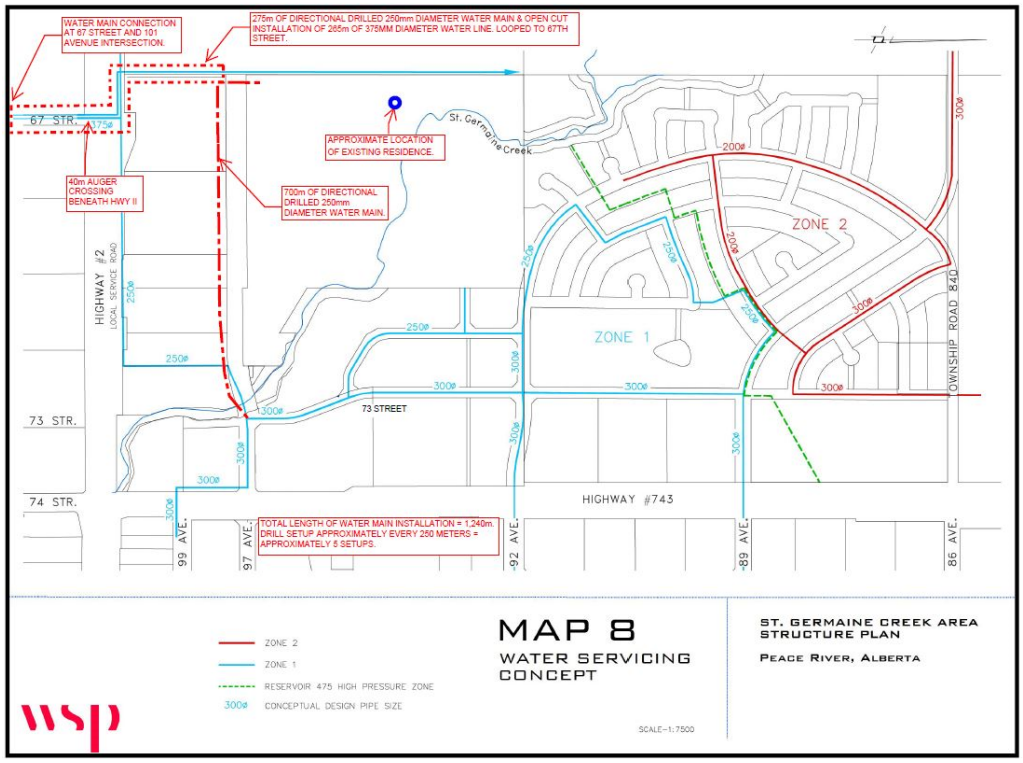

Figure 1: Water Servicing Concept (*Source: St. Germaine ASP)*

Sanitary Servicing for Scenario 1 (figure below) takes into consideration installation of the sanitary and utilities by means of directionally drilling directly to the 7 residential dwellings. As the sanitary main will be pressurized and only sized for the existing homes, the pipe size can be reduced significantly. It would then be the responsibility of each home owner to incur the cost to supply and install a Dual Chamber Effluent Pumping system, and connect this system to the existing residence. Preliminary estimates for each unit installation are approximately $15,000.00 and has been excluded from the totals as it has been assumed these units will be the responsibility of the homeowner and not the Town to own and operate. Landscaping & surface restoration costs for servicing Scenario 1 have been accounted for in the rehabilitation of the directional drilling pits.

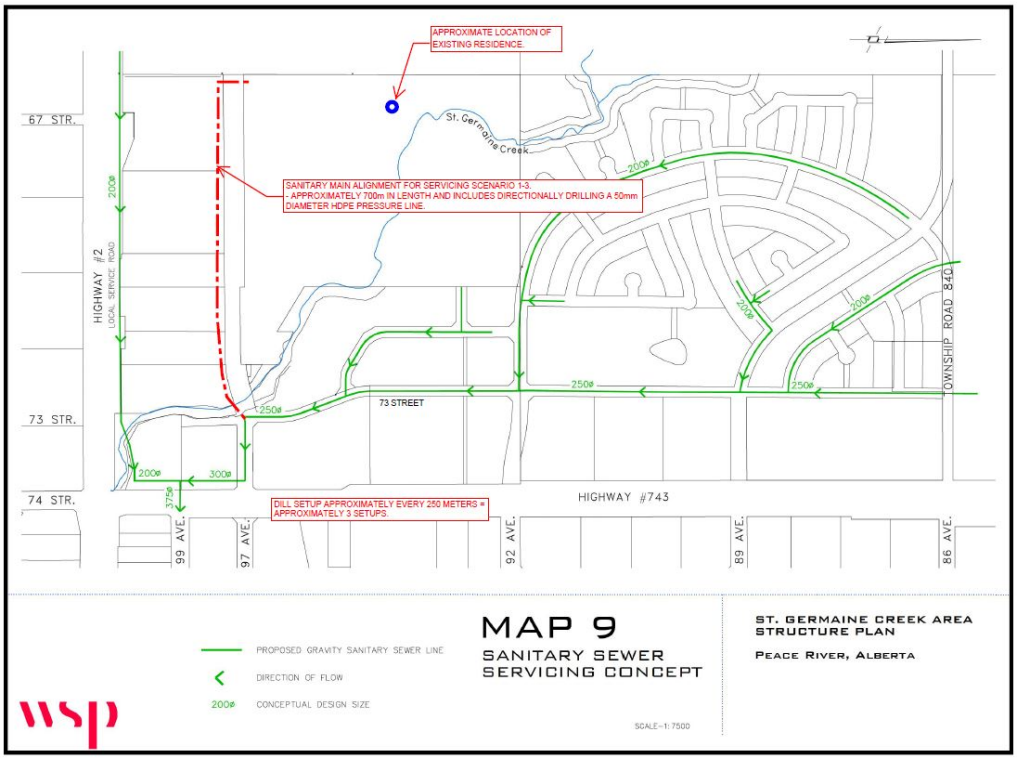

Figure 2: Sanitary Servicing Concept (*Source: St. Germaine ASP)*

SERVICING RISKS

Risks in proceeding with Scenario One include:

- Deviations or additions to the water main installation alignment as depicted in the St. Germaine Creek Area Structure Plan may require an amendment to this ASP.
- If there is uncertainty about the market's ability to develop the commercial lands within the next five years, we would not recommend moving forward with this design option for the water main because of the capital costs and the ongoing inherent costs of maintaining the system as the Town would not get a return on the investment. It is assumed that under this scenario the residential landowners would not pay the capital costs.
- Installation of the sanitary system may require an easement to be registered on each lot if the Town does not want to break up the existing asphalt to enable installation.
- Assuming the home owners would pay for the installation, it needs to be recognized that the proposed sanitary servicing option is specifically catered to provide services to seven residential dwellings. Any additional dwellings seeking connection would likely require replacement of the overall system.
- Sanitary system would require decommissioning and abandonment at the time of Commercial Development or additional residential development.

ESTIMATED COSTS

$875,000.00

SERVICING SCENARIO 2 - RISKS AND ESTIMATED COSTS

For the purpose of this investigation, Servicing Scenario 2 aligns closely with that of Servicing Scenario 1, with the exception that a section of the water main is to be installed alongside Highway II as per the ASP, where it will be looped with the water main to be installed within the 97th Avenue road right-of-way. This revised water main alignment is shown on Figure 3 below, while the sanitary servicing alignment is unchanged from Servicing Scenario 1 above.

It would be the responsibility of each home owner to incur the cost to supply and install a Dual Chamber Effluent Pumping system, and connect this system to the existing residence. Preliminary estimates for each unit installation are approximately $15,000.00 and has been excluded from the totals as it has been assumed these units will be the responsibility of the homeowner and not the Town to own and operate.

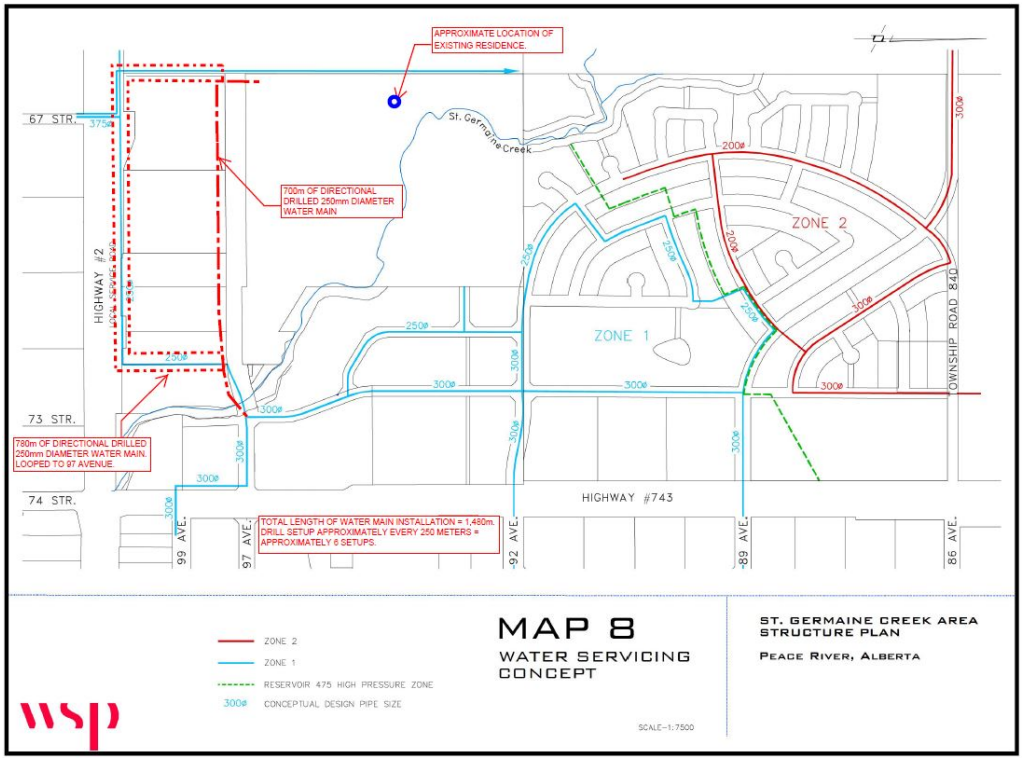

Figure 3: Water Servicing Concept (*Source: St. Germaine ASP)*

SERVICING RISKS

Risks in proceeding with Scenario Two include but are not limited to:

- Deviations or additions to the water main installation alignment as depicted in the St. Germaine Creek Area Structure Plan may require an amendment to this ASP.
- If there is uncertainty about the market's ability to develop the commercial lands within the next five years, we would not recommend moving forward with this design option of the water main because of the capital costs and the ongoing inherent costs of maintaining the system as the Town would not get a return on the investment. It is assumed that under this scenario the residential landowners would not pay the capital costs.

- Inadequate draw on the water system to effectively circulate the water main could lead to a reduction in water quality. Regular maintenance would be required until there is further development in the area, or until the water main is looped.
- Installation of the sanitary system may require an easement to be registered on each lot if the Town does not want to break up the existing asphalt to enable installation.
- Assuming the home owners would pay for the installation, it needs to be recognized that the proposed sanitary servicing option is specifically catered to provide services to seven residential dwellings. Any additional dwellings seeking connection would likely require replacement of the overall system.
- Sanitary system would require decommissioning and abandonment at the time of Commercial Development or additional residential development.

ESTIMATED COSTS

$770,000.00

SERVICING SCENARIO 3 - RISKS AND ESTIMATED COSTS

While the Town of Peace River GMSS identifies the minimum pipe diameter for distribution water main in a residential area to be 150mm, and in commercial areas or any runs of longer than 200m without connecting to other mains to be 200mm, this would be oversized for the limited servicing required. For this analysis, as it is a temporary servicing solution, a 50mm diameter water main trickle system and a 50mm diameter sewer main is anticipated to be of adequate size to facilitate demands from the 7 residential dwellings, (sizing to be confirmed during detailed design). To utilize this sizing, a variance from the GMSS would need to be accepted by the Town of Peace River.

It would be the responsibility of each home owner to incur the cost to supply and install a Dual Chamber Effluent Pumping System, install or retrofit existing water main cistern, and connect these systems to the existing residence. Preliminary estimates for each unit installation are $15,000.00 and $11,500.00 respectively. Costs have been excluded from the totals as it has been assumed to be a cost for the individual homeowner.

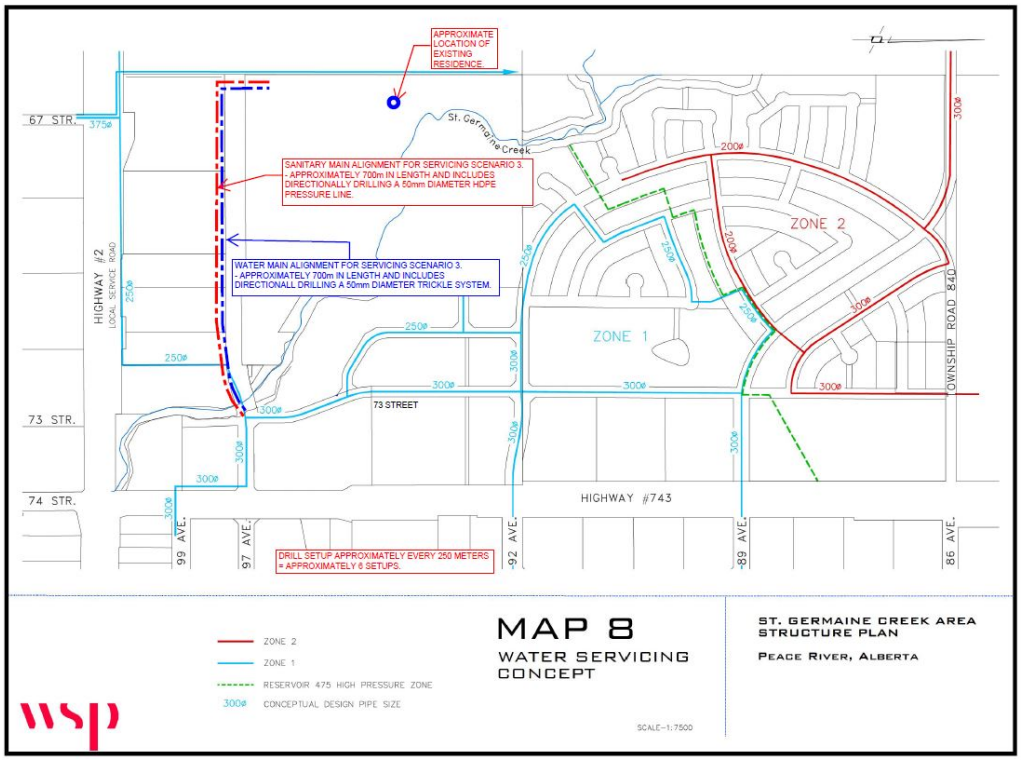

Figure 4: Water and Sanitary Servicing Concept (*Source: St. Germaine*

SERVICING RISKS

Risks in proceeding with Scenario Three include but are not limited to:

- May require an easement to be registered on each lot if the Town does not want to break up the existing asphalt to enable installation.
- Assuming the home owners would pay for the installation, it needs to be recognized that the design is specifically catered to provide services to seven dwellings. Any additional dwellings seeking connection would likely require replacement of the overall system.
- Would require decommissioning and abandonment at the time of Commercial Development or additional residential development.

ESTIMATED COSTS

$205,000.00

CONCLUSION

The challenge arising from this analysis is whether Council are comfortable with enabling the land owners to install a temporary water and sanitary system that connects into the Town's system that would not meet the requirements of the ASP. As indicated through the analysis, implementing systems that partially aligns with the ASP would be the most expensive and result in providing water servicing beyond the needs of the existing residential development. While the lands are well located for enabling commercial

development (adjoining Highway 2) the question arises as to whether there is a short supply of existing serviced lands to accommodate commercial development and what the potential economic outlook is to accommodate additional commercial development within a reasonable time frame (2 – 5 years) to recover the capital costs. Ultimately, commercial development would be preferred because of the non-residential tax value to the Town when compared to residential. By installing an alternative servicing system, over time could lead to the current or future land owners expectations that they may be able to develop more residential services placing greater pressure on the Council and Administration of the day. This could further perpetuate the challenges of shifting the land uses toward the intended commercial uses. The dis-incentive of this occurring would be the requirement for the landowners to carry out an amendment to the Area Structure Plan and recognizing the system has been designed purely for the existing six dwellings. Ultimately, should this occur it would be the decision of the Councillors' of the day to determine whether the change in land uses has merit.

It should be noted that the cost to install the preferred system is likely to also be a deterrent to future commercial development because of the outset costs for infrastructure that would be placed on the first commercial development. Another alternative approach would be for the Town to install the infrastructure and bare the full servicing costs and establish an on-site development levy. This option should only occur where there is a clear demand for commercial development over the next 2- 5 years. If this approach was taken, the existing residents would pay a contribution towards the services based on a proportion reflective of the scale of existing development. The remainder would be paid off over time by future commercial development of the lands.

Notwithstanding the above considerations, Servicing Option 3 appears to be the most viable interim solution for providing immediate water and sanitary services to the existing 7 residential dwellings, with the least amount of risk to the Town of Peace River from a cost perspective. This installation method will have low impacts to the existing infrastructure, minimal disruption to existing residents and businesses, and is a cost-effective solution for each home owner. Furthermore, these utilities can be abandoned in place when the ultimate sanitary and water main design have been finalized and when commercial development proceeds with the expectation that the developer would pay for the replacement costs required to service the new development. Should Council proceed with one of the alternative servicing scenarios the ASP should be amended to create policy to reflect the changes. This is viewed as minor amendment to the ASP. The amendment to the ASP is also important to provide a clear record of the reasons for the change and reaffirming the intended use of the lands to eventually become commercial.