



PEACE RIVER
REGIONAL DISTRICT

diverse. vast. abundant.

SUBDIVISION AND DEVELOPMENT SERVICING

BYLAW No. 2474, 2022

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PEACE RIVER REGIONAL DISTRICT
Bylaw No. 2474, 2022

A bylaw to regulate the provision of Works and Services
in respect of the Subdivision and Development of land

WHEREAS, the *Local Government Act* authorizes a local government to adopt a bylaw to regulate and impose requirements in respect of the Subdivision or Development of land and in respect of water and sewer systems operated by the Regional District;

AND WHEREAS, the Regional Board has provided one or more opportunities for consultation with persons, organizations and authorities it considers affected in the development of the bylaw;

NOW THEREFORE, the Regional Board of the Peace River Regional District, in open meeting assembled, enacts as follows:

SECTION 1 - GENERAL PROVISIONS

- 1.1. "Subdivision and Development Servicing Bylaw No. 783, 1992" is repealed.
- 1.2. This bylaw may be cited for all purposes as "Subdivision and Development Servicing Bylaw No. 2474, 2022".

SECTION 2 – DEFINITIONS

- 2.1. In this bylaw,

"Agriculture" means the use of land, buildings, or structures as defined in the applicable PRRD Zoning Bylaw;

"Applicant" means the owner or agent of the owner applying for the approval of a Subdivision or Development to which this bylaw applies;

"Approving Officer" means any person duly authorized by the Province of British Columbia to act as Approving Officer in relation to a Subdivision to which this bylaw applies;

"Board" means the Regional Board of the Peace River Regional District (PRRD);

"Chief Administrative Officer" means the Chief Administrative Officer of the Peace River Regional District appointed as such by the Regional Board, or designate;

"Community Sewer System" means a common sanitary sewer or a system of sewerage or sewage disposal that serves two (2) or more parcels and that is owned, operated and maintained by the Regional District;

"Community Water System" means a system of waterworks that serves two (2) or more parcels and that is owned, operated, and maintained by the Regional District;

"Development" means:

- a) The Subdivision of land; or
- b) Construction of, addition to, or alteration of a building or other structure, including, without limitation:
 - i) new building construction;
 - ii) building additions and alterations;
 - iii) construction of, addition to, or alteration of accessory buildings and structures and other structures which require a Building Permit;

"Drainage System" means a system of works designed and constructed to control the flow of storm water or ground water;

"Farm Building" means a building or part thereof which does not contain a residential occupancy and which is associated with and located on land devoted to the practice of farming, and used essentially for the housing of equipment or livestock, or the production, storage or processing of agricultural and horticultural produce or feeds;

"Fire Protection Area" means an area which has fire protection services within the Peace River Regional District;

"MMCD" means the current edition of the Master Municipal Construction Document published by the Master Municipal Construction Documents Association;

"MMCD Design Guidelines" means the current edition of the Municipal Infrastructure Design Guidelines prepared under the auspices of the Master Municipal Construction Document Association;

"Off-Site Works and Services" means those Works and Services located on or in streets adjacent to or external to the Subdivision or Development;

"On-Site Works and Services" means those Works and Services located on the parcel or lands being subdivided or developed;

"Owner's Engineer" means the Professional Engineer, engaged by the owner to design and prepare drawings and specifications for the construction of Works and Services in relation to a Subdivision or a building permit;

"Parcel" means any lot, block or other area in which land is held or Subdivided but does not include any portion of a highway;

"Parcel Line" means a legal boundary of a parcel as shown or described on the records of the Land Title Office;

"Potable Water" means water which is fit for drinking purposes;

"Preliminary Application" means the applicant's preliminary application to the PRRD for Works and Services, as required through this bylaw;

"Professional Engineer" means a person who is registered or duly licensed as such under the provisions of the Engineers and Geoscientists Act of British Columbia;

"Proven Source" means a source of potable water that is available and proven with respect to volume, delivery and continuity of supply from an on-site groundwater system, a surface water system, hauled water, or a Community Water System;

"Regional District" means the Peace River Regional District (PRRD);

"Sanitary Sewer System" means a system of pipes, manholes, treatment plants, pump stations, valves, discharges and appurtenances for the collection and disposal of sanitary sewage or effluent;

"Service Level" means the standard of municipal Works and services required in relation to a Subdivision or Development under this bylaw;

"Standard Drawings" means the standard drawings included in the Master Municipal Construction Documents (MMCD);

"Water Supply System" means a domestic water system, other than a domestic water system that serves only one single residence, as defined in the *Drinking Water Protection Act*;

"Watercourse" means any natural or man-made depression with well-defined banks and a bed 0.6 metres or more below the surrounding land that serves to give direction to a current of

water at least six months of the year or having a drainage area of two square kilometres or more upstream of the point of consideration;

"Works and Services" means the design and construction that is required or regulated under the provisions of this bylaw including, but not limited to, water distribution systems, sewage collection, treatment and disposal systems, storm-water management and drainage collection systems, and all appurtenances associated these systems; and

"Zone" means an area created by a Zoning Bylaw of the Peace River Regional District as amended both before and after the effective date of this bylaw.

SECTION 3 – INTERPRETATION

- 3.1 Any enactment referred to herein is a reference to an enactment of the Province of British Columbia and regulations thereto including any amendments, and any bylaw referred to herein is a reference to a bylaw of the Regional District including any amendments.
- 3.2 Nothing in this bylaw shall relieve the Applicant from the responsibility to comply with every enactment applicable to their undertaking.
- 3.3 Neither the granting of a permit nor the issuance or review of any plans, specifications or documents or any inspection made by any Regional District employee shall in any way relieve the Applicant from compliance with all enactments.
- 3.4 If any section, subsection, sentence, clause, phrase, or portion of this bylaw is for any reason deemed to be invalid by the decision of any court of competent jurisdiction, the invalid portion shall be severed and the decision that it is invalid shall not affect the validity of the remainder of this bylaw.
- 3.5 The headings used in this bylaw are for convenience only and do not form part of this bylaw, and are not to be used in the interpretation of this bylaw
- 3.6 Schedules "A" through "J" are attached to and form part of this bylaw.

SECTION 4 - APPLICABILITY OF THE BYLAW

4.1 This bylaw applies to all lands within Electoral Areas C and D only.

Compliance with Bylaw

4.2 No person shall Subdivide land or undertake Development of land in the Regional District except in compliance with the provisions of this bylaw.

Exceptions to Servicing Requirements**Where the Works and Services Already Exist**

4.3 Without limiting the generality of Section 4.2, the Applicant will not be required to provide a particular Work or Service where that particular Work or Service already exists in accordance with the standards required in Schedules “A” or “B” to this bylaw, or MMDC Standard Drawings or MMCD Design Guidelines.

Subdivisions for Specific Purpose

4.4 The Works and Services requirements of this bylaw do not apply to:

- a) A Subdivision the sole purpose of which is to dedicate or transfer land for Highway purposes;
- b) A Subdivision the sole purpose of which is to dedicate or transfer land for park land;
- c) A Subdivision the sole purpose of which is to create a parcel for the installation of public utilities and related structures and equipment;
- d) A consolidation or a lot line adjustment, in which the number of buildable lots is not increased; or
- e) Lands designated as agriculture in the respective Official Community Plan.

Development Exceptions

4.5 The Works and Services requirements of this bylaw do not apply where the Development that would otherwise result in those requirements is one or more of the following:

- a) construction and/or alteration that will result in no net additional floor area;

- b) an addition to an existing building or structure, where the floor area of the addition does not exceed 20m², and no new water or sanitary services are required;
- c) the construction or alteration of a residential accessory building that does not include the development of a secondary suite;
- d) interior construction/alteration of an existing building or structure, where no new water or sanitary services are required;
- e) the construction of an accessory building for the purposes of storage, where no new water or sanitary services are required;
- f) development is on lands with a Land Use Designation of "Agriculture;" or
- g) the alterations that are undertaken solely for one or more of the following purposes:
 - i) to improve access for disabled persons;
 - ii) to provide environmental protection, conservation or preservation;
 - iii) to provide installation of safety upgrades such as fire sprinklers, fire alarms, emergency lighting, exits and other similar safety improvements;
 - iv) to provide upgrades to improve energy efficiency solar panels, insulation, heating sources or similar improvements;
 - v) to provide seismic upgrades; or
 - vi) to provide building envelope upgrades and repairs.

Authorization to Enter on Lands Being Subdivided

4.6 Employees of the PRRD, or their designate, may enter, upon the lands for which an application to Subdivide or develop has been made, in order to establish whether the provisions of this bylaw are being met.

SECTION 5 - SUBDIVISION AND DEVELOPMENT REQUIREMENTS AND REGULATIONS**Park Land Dedication on Subdivision**

- 5.1 The Applicant shall satisfy the requirements of the PRRD with respect to the provision of park land in accordance with the requirements of the *Local Government Act* and the applicable PRRD Official Community Plan.
- 5.2 If it is determined that cash-in-lieu of park land dedication is exercised, the amount to be paid shall be equivalent to 5.0% of the average market value of all the gross developable land proposed for Subdivision in accordance with provisions of the *Local Government Act*.

Expense of Services to be borne by Owner

- 5.3 Unless otherwise provided in this bylaw, all Works and Services required in this bylaw shall be designed, constructed and installed at the expense of the Owner or Applicant, prior to the approval of such Subdivision by the Approving Officer or issuance of a building permit.

Security and Development Agreement Required

- 5.4 All Works and Services to be designed, constructed and installed to serve any Development or proposed Subdivision of any lands where this bylaw applies shall be designed, constructed and installed in accordance with the requirements prescribed in Schedules A and B, and MMCD Standard Drawings and MMCD Design Guidelines, as applicable, and to the satisfaction of the Regional District.
- 5.5 A plan of Subdivision may be given final approval by the Approving Officer and a building permit may be issued prior to the completion of the construction and installation of the required Works and Services where the Applicant:
 - a) deposits cash or a letter of credit with the Regional District in the amount of One Hundred and Twenty-Five Percent (125%) of the cost of installing and paying for all the Works and Services required as estimated by the Owner's Engineer and approved by the Chief Administrative Officer. Upon completion of the installation of the Works and Services, the Regional District shall retain a minimum of 10% of the original deposit for the Works and Services for the entirety of the maintenance period; and,
 - b) enters into an agreement with the Regional District to construct and install the required Works and Services by a date specified in the agreement or forfeit the security provided under this section.

5.6 Where the owner of land is required to construct and install Works and Services in accordance with the provisions of this bylaw, the Owner shall:

- a) operate and maintain the Works constructed and installed and correct any deficiencies in the Works not resulting from normal wear and tear for a period of one year of operation following the issuance of a certificate of completion;
- b) provide the Regional District, before the Subdivision is approved or the Building Permit is issued, with a non-refundable payment to cover the Regional District's cost of administering and inspecting the Works and Services, in the amount of 3% of the estimated construction cost of Works and Services under the jurisdiction of the Regional District, with a minimum of \$500 for each Subdivision application; and
- c) if proceeding with the installation of Works and Services prior to final Subdivision approval or the issuance of a building permit, enter into an Agreement with the Regional District and provide the Regional District with cash or a letter of credit in the amount of ten percent (10%) of the cost of installing and paying for all the Works and Services required as estimated by the Regional District. The cash or letter of credit shall be held as security against unsatisfactory operation of the Works and Services during the maintenance period and may be drawn down by the Regional District and used to correct any deficiency in the Works or Services that is discovered by the Regional District during the maintenance period.

5.7 The Regional District reserves the right to deny a Building Permit if Works and Services constructed or installed with that Building Permit have not been completed to the satisfaction of the Regional District.

Excess or Extended Services

5.8 Pursuant to the *Local Government Act*, the Regional District may require that the Applicant provide excess or extended services that provide access to or service land other than the land being subdivided or developed.

5.9 If the Regional District requires the Applicant to provide the excess or extended services, the cost of providing those services must be paid for:

- a) By the Regional District; or
- b) If the Regional District considers its costs to provide all or part of these services to be excessive, by the Owner of the land being subdivided or developed.

5.10 Where excess or extended services are provided, the Regional District will:

- a) Determine the portion of the cost of providing excess or extended services, that it considers excess or extended services; and
- b) Determine which part of excess or extended services will benefit each parcel served; and
- c) Impose, as a condition of an owner connecting to or using the excess or extended service, a charge related to the benefit under (b), all in accordance with the *Local Government Act*; and
- d) For the purpose of section 509(4) of the *Local Government Act*, the latecomer charge imposed under that section shall include interest at the Canadian Imperial Bank of Commerce prime rate that is applicable on the date the latecomer agreement relating to the charge is signed by the Owner.

Design and Field Review of Construction by a Professional Engineer

- 5.11 All engineering drawings required in this bylaw for Works and Services, shall be prepared by a Professional Engineer registered to practice in the Province of British Columbia.
- 5.12 The Applicant shall engage a Professional Engineer to carry out all necessary field reviews and inspections during the construction of Works and Services required as a condition of Subdivision or Development approval.
- 5.13 The Professional Engineer, at the Applicant's expense, shall provide full inspection services for all Works installed by the Applicant or their contractors and shall ensure that all Works and Services are constructed and installed in accordance with the standards and specifications contained in this bylaw.
- 5.14 The Professional Engineer shall submit a report certifying that the Works and Services have been carried out in compliance with this bylaw and the plans, drawings and supporting documents submitted in support of the Subdivision or Development application which were accepted by the Regional District within 90 days of completion of the Works and Services.
- 5.15 All applications for Subdivision or Development shall include a letter of commitment from the Applicant, that a Professional Engineer has been engaged to carry out all necessary design works and undertake all field services for the Subdivision or Development.

SECTION 6 - SERVICING WORKS AND SERVICES**General**

- 6.1 Unless otherwise approved by a Development Permit or a Development Variance Permit, issued by the Regional Board or a permitted delegate pursuant to the *Local Government Act*, servicing Works and Services shall be as set out in this bylaw and all design, construction and installation shall be carried out in conformity with requirements of this bylaw.
- 6.2 All works located within the Ministry of Transportation and Infrastructure right-of-way must also meet Ministry standards and be acceptable to the Ministry.

Water Distribution

- 6.3 The Owner of any lands which are proposed to be Subdivided or Developed shall provide each parcel of land within the proposed Subdivision or Development with the following, according to the established service level, as set out in this bylaw:
- a) Any new water distribution system or expansion of an existing system shall be constructed pursuant to this bylaw.
 - b) If a Subdivision is proposed within the geographic limits of the Community Water System area, as shown on Schedule "C" –North Peace Regional Airport Water Service Area, the Owner shall ensure that each parcel in the Subdivision is connected to the Community Water System, subject to capacity and availability, and shall obtain and demonstrate that all regulatory approvals related to that connection have been secured.
 - c) If a Subdivision is proposed in an area that is outside the geographic limits of a Community Water System area, the Owner shall ensure that each parcel in the Subdivision has a proven source of Potable Water.
 - d) Where a Development that requires a source of Potable Water is proposed within the geographic limits of the Community Water System shown on Schedule "C" – North Peace Regional Airport Water Service Area, and the land proposed for development is located adjacent to an existing serviced parcel, the Owner shall ensure that the Development is connected to the Community Water System, subject to capacity and availability, and shall obtain and demonstrate that all regulatory approvals related to that connection have been secured.

- e) Where a Development that requires a source of Potable Water is not connected to a Community Water System, and the service is not available adjacent to the land, the Owner shall ensure that the Development is provided with a source of Potable Water.
- f) If the land being Subdivided or Developed is in a Fire Protection Area, and the new parcels or the Development are not required to be connected to a Community Water System under this bylaw, the Owner shall ensure that each new parcel in the Subdivision or the Development is provided with a source of water that the Regional District considers adequate for firefighting purposes.
- g) In any area outside of a Fire Protection Area, requirements for fire protection are not required.

Sewerage System

6.4 The Owner of any lands which are proposed to be Subdivided or Developed shall provide each Parcel of land within the proposed Subdivision or Development with the following, according to the established service level, as set out in this bylaw:

- a) Any new Community Sewer System or expansion of an existing system including the standard service connection, shall be constructed pursuant to this bylaw.
- b) If a Subdivision is proposed within the geographic limits of a Community Sewer System area shown on Schedules “D” through “J” inclusive, the Owner shall ensure that each parcel in the Subdivision is connected to the Community Sewer System and shall obtain and demonstrate that all regulatory approvals related to that connection have been secured.
- c) If a Subdivision is proposed in an area that is outside the geographic limits of a Community Sewer System area shown on Schedules “D” through “J” inclusive, the Owner shall ensure that each parcel in the Subdivision is capable of being served by an alternative system for the collection and disposal of sanitary sewage or effluent in accordance with all applicable enactments.
- d) Where a Development that includes facilities for the disposal of sanitary sewage is proposed within the geographical limits of a Community Sewer System area as shown on Schedules “D” through “J” and the land proposed for development is located adjacent to an existing serviced parcel, the Owner shall ensure that the Development is connected to the Community Sewer System and shall obtain and demonstrate that all regulatory approvals related to that connection have been secured.

- e) Where a Development that includes facilities for the disposal of sanitary sewage is not connected to a Community Sewer System, and a Community Sewer System is not available adjacent to the land, the owner shall ensure that the Development is served by an alternative system for the collection and disposal of sanitary sewage or effluent in accordance with all applicable enactments.

Storm Drainage Collection System

- 6.5 Where private on-site or shared community or strata owned drainage systems including retention/detention ponds and associated apparatus are required at the discretion of the Approving Officer as part of Subdivision approval, those systems shall be designed and constructed in accordance with the requirements of the Provincial Ministry of Transportation and Infrastructure.

Power, Communication, Gas and other Third Party Utilities

- 6.6 Power, communication, gas and other third-party utilities shall be constructed from the tie-in point to the termination of the last parcel in accordance with the standards set by each utility provider. The location of shallow third party utilities shall be shown on the design drawings.

Statutory Rights-of-Way

- 6.7 For the purpose of constructing and installing or maintaining Works and Services, statutory rights-of-way in the form of the Regional District's standard agreements and plans, shall be provided by the Owner, at the Owner's cost where Works and Services are not located in Highways.
- 6.8 The statutory rights-of-way shall be registered in the Land Title Office, and shall run with the land.
- 6.9 It is the responsibility of the Applicant to negotiate and secure any statutory rights of ways, easements or covenants necessary for the application, and to process the legal documentation and registration in the Land Title Office, and pay all direct or indirect costs including:
 - a) B.C. Land Surveyor costs;
 - b) Legal fees;
 - c) Registration costs and fees including Land Titles Office fees.

- 6.10 The Applicant shall provide a lawyer's or notary's undertaking satisfactory to the Regional District's solicitor to ensure registration of these documents is completed.

SECTION 7 – OFFENCE

Violation

- 7.1 Every person who:

- a) causes or permits any act or thing to be done in contravention or violation of any of the provisions of this bylaw;
- b) neglects or omits to do anything required under this bylaw;
- c) carries out, causes or permits to be carried out any Development in a manner prohibited by or contrary to any of the provisions of this bylaw;
- d) fails to comply with an order, direction or notice given under this bylaw; or
- e) prevents or obstructs or attempts to prevent or obstruct the authorized entry of an officer on property under Section 4.6;

shall be deemed to be guilty upon summary conviction of an offence under this bylaw.

Penalty

- 7.2 Any person who violates any of the provisions of this bylaw shall, on summary conviction, be liable to a penalty not less than \$5,000 plus the cost of prosecution for each offence.

Offence

- 7.3 Each day's continuance of an offence under Section 7.1 constitutes a new and distinct offence.

READ A FIRST TIME THIS 21st day of April, 2022.

READ A SECOND TIME THIS 21st day of April, 2022.

READ A THIRD TIME THIS 21st day of April, 2022.

MINISTRY OF TRANSPORTATION

APPROVAL RECEIVED THIS (pursuant to
section 41(3) of the Community Charter).

30th day of May, 2022.

ADOPTED THIS 9th day of June, 2022.

Original signed by

Brad Sperling, Chair

(Corporate Seal has been affixed to the original
bylaw)

Original signed by

Tyra Henderson, Corporate Officer

(Schedules A - J attached)

I hereby certify this to be a true and correct copy of "Subdivision and
Development Servicing Bylaw No. 2474, 2022," as adopted by the Peace
River Regional District Board on June 9, 2022.

Original signed by

Tyra Henderson, Corporate Officer

SCHEDULE A – Service Level & Design

SECTION 1 - GENERAL INFORMATION

Introduction

- 1.1 Schedule A to Subdivision and Development Servicing Bylaw identifies the General Information about the service level required by the Peace River Regional District from an Applicant when applying to subdivide or develop lands within the Regional District.

Scope and Use of Schedule A

Schedule A must be used by an Applicant for Subdivision or an Owner who is undertaking a development in the design of engineering servicing facilities and systems to be incorporated in the utilities infrastructure of the Peace River Regional District.

The service level information provides a minimum design criteria and standards for proposed works. The onus is on the Subdivision Applicant or the Owner of land being developed to ensure that their designs meet accepted engineering principles and best practices and are adequate for the site conditions and their accepted uses.

The provisions of this bylaw are to be applied in conjunction with the MMCD, which otherwise apply to all Works and Services constructed under the jurisdiction of the Peace River Regional District.

Where the provisions of this bylaw are in conflict with the MMCD, the provisions of this bylaw take precedence.

SECTION 2 - GENERAL REQUIREMENTS**Introduction**

- 2.1 The purpose of this section is to outline the information that is or may be required of Subdivision Applicants or Owners who are required by this bylaw to construct Works and Services in connection with a Subdivision or Development of land in the Regional District and to set out minimum standards and requirements in respect of the design and installation of such Works and Services.
- 2.2 Without limiting this bylaw, the Regional District's Chief Administrative Officer may require that an Applicant or Owner who has applied to Subdivide land or who proposes to undertake a Development to which this bylaw applies provide the Regional District with such information as the Chief Administrative Officer considers necessary to ensure that any Works and Services required to be provided under this bylaw are installed in accordance with this bylaw and good engineering practice and in a manner that does not cause damage to property or interfere with existing or proposed infrastructure in any highway or other property within which the Works and Services will be installed.
- 2.3 Incomplete or substandard design submissions will be returned to the applicant.

Preliminary Application for Subdivision

- 2.4 An Applicant for Subdivision shall provide the Regional District and the Ministry of Transportation and Infrastructure, as required by the Approving Officer, with the following information as part of their preliminary application:
- a) Proof that the owner is the owner of the lands proposed for Subdivision or development, or the owner's duly authorized agent;
 - b) A current State of Title Certificate (Title Search) AND copies of any charges and notices on title;
 - c) A statement in writing of the intended use of each parcel to be created;
 - d) A preliminary plan (3 copies, 1:2000 scale) showing:
 - i) the location of the proposed Subdivision or Development and the adjacent properties;
 - ii) Proposed parcel arrangement;
 - iii) Legal Description of Parcels and all property lines, easements, rights-of-way;

- iv) Adjacent residences and fixed improvements;
 - v) the location of Works and Services within the area, including storm and sanitary sewers, watermains, roads, other utilities, buildings/structures;
 - vi) Watercourses;
 - vii) Any proposed phasing;
 - viii) Adjacent highways and the connections of proposed new highways thereto;
 - ix) Adjacent sidewalks and pedestrian paths; and
 - x) a general outline/concept of the proposed Subdivision or Development; and
- e) copies of any available reports pertinent to the proposed Subdivision or Development.

Detailed Application

2.5 Should the Applicant wish to proceed with the application for Subdivision subsequent to making the Preliminary Application, a detailed submission must be made.

2.6 All detailed submissions shall reflect and comply with the following:

- a) All applicable requirements of this bylaw.
- b) All applicable requirements of the Regional District, including but not limited to:
 - i) The Official Community Plan;
 - ii) The current Zoning Bylaw(s); and
 - iii) The current Building Bylaw.
- c) All applicable requirements of the Provincial Ministry of Transportation and Infrastructure, and other applicable authorities.
- d) Be designated and dimensioned in Standard Metric units.

2.7 All engineering and technical submissions are subject to an independent peer review.

Geotechnical and Hydrogeological Design Considerations

- 2.8 The Owner's Engineer shall incorporate geotechnical and hydrogeological input into their design, if required, such that an appropriate level of geotechnical and hydrotechnical investigations, calculations and recommendations are performed to confirm that the Works and Services will perform as intended for the duration of the design life of them.

Environmental Considerations

- 2.9 An Applicant for Subdivision or an Owner of land being developed may be required to provide information and reports regarding any environmental issues or concerns related to the Development.

Off-Site Utilities Impact Considerations

- 2.10 An Applicant for Subdivision or an Owner of land being Developed may be required to provide an off-site utilities impact analysis for utilities that may include sewer, water, storm drainage or third part (shallow) utilities to determine the impact of utilities needed to service the proposed Development on the existing utility network, and to identify any required upgrades to the utility network as a result of the development.

Survey Information

- 2.11 An Applicant for Subdivision or an Owner of land being Developed must provide Survey information in accordance with the following requirements:
- a) All surveys shall be to elevation and coordinates derived from the Geodetic Datum, Geodetic Survey of Canada and NAD83;
 - b) A topographic contour plan to 1.0 m intervals shall be provided. Elevations shall be relative to Geodetic Datum. The horizontal coordinates shall be referenced to the NAD83 UTM coordinate system. A minimum of two reference points with coordinates shall be shown on each design drawing. A minimum of one reference bench mark or GPS control point with elevation shall be shown on each design drawing;
 - c) Originating benchmarks and integrated survey monuments shall be noted on all plans as well as those to be established during the work;
 - d) Copies of legible field notes shall be made available to the Regional District upon request;
 - e) Centre lines (or offset lines) or base lines are to be marked and referenced in the field and all chainages and coordinated layout points shall be keyed to the legal posting;

- f) All existing items such as manholes, catch basins, valves, fire hydrants, poles, existing buildings, structures, fences, trees, hedges, watercourses and setbacks, and unusual ground conditions shall be noted;
- g) Where applicable, roadway cross sections and other pertinent features are required. The section shall include centreline, edge of pavement or gutter line, edge of shoulder, ditch invert, top of ditch, property line, and an existing ground elevation inside property line; and
- h) Show topographical features such as, rock outcroppings, streams, etc.

Design Drawing Submission

2.12 All drawings submitted to the Regional District shall be prepared in accordance with the following requirements:

- a) All measurements must be shown in metric units, on standard A1 sheets/scales and a full set of drawings must be provided in digital as well as paper;
- b) All drawings shall be signed and sealed by a Professional Engineer registered in the Province of British Columbia;
- c) The Owner's Engineer's seal and signature shall confirm that the Works and Services as proposed are technically sound and comply with the applicable design criteria of this bylaw, and good engineering practice;
- d) All drawings shall be based on digital coordinates that derive from the project survey information.
- e) Design submissions that originate purely from baseline offsets, either physical or otherwise, will not be accepted by the Regional District; and
- f) All engineered designs shall be based on digital coordinates that derive from the project survey information.
- g) A complete set of Engineering Design drawings shall include, in the following sequence:
 - i) Cover Sheet - The Cover Sheet shall note the Owner's Engineer's name, the Applicant's name, the Regional District project number, the legal description of the lands involved, a site plan at a 1:5,000 scale, and an index of plans, with revision numbers and general notes.

- ii) Site Plan - The site plan shall note all proposed roads and the proposed Subdivision or Development layout. The cover sheet may be utilized to show the drainage catchment area.
- iii) Key Plan - The key plan shall be at a 1:500 scale and shall note all proposed services, including street lighting and shallow utilities. If more than one sheet is required, the westerly or southerly portion should be noted first and identified as Key Plan "A" with additional plans noting "B" and "C", etc.
- iv) Storm Water Management Plan - Plan and profile drawings shall be in accordance with the requirements of the Ministry of Transportation and Infrastructure.
- v) Water – Plan and profile drawings shall show all grades, invers, curves, radii, valves, hydrants, bends, and other features. All tie-in connections shall be fully detailed with dimensioned spool lengths, restraints, valves, fittings, thrust blocks and all other construction details. The scale shall be 1:500 for plans and 1:50 for profile. The full pipe shall be shown for the watermain on the profile. All cross-over points, and separation from, sewers shall be noted and the watermain shall be protected in accordance with Ministry of Health (Northern Health) requirements
- vi) Storm Sewers – Plan and profile drawings shall be in accordance with the requirements of the Ministry of Transportation and Infrastructure
- vii) Sanitary Sewers -Plan and profile drawings shall show grades, inverts, manholes, and other features. The scale shall be 1:500 for Plan and 1:50 for profile. Symbols to denote the service connection elevation at the property line shall be shown on the profile/plan. The full pipe shall be shown on the profile
- viii) Roads O Plan and profile drawings shall be in accordance with the requirements of the Ministry of Transportation and Infrastructure and must show alignments, grades, and all driveways at a scale of 1:500 for plans and 1:50 for profiles.
- ix) Road Cross Sections -Road cross-sections shall be in accordance with the requirements of the Ministry of Transportation and Infrastructure and at a scale of 1:100 horizontal and 1:50 vertical and shall note the existing ground elevation, the proposed elevations of the road centreline, the curb and gutter (or road edge) and property lines. Cross-sections are required at 20.0 m intervals. Additional sections may be required where excessive cuts or fills are involved.
- x) Construction Details - Construction Details shall show details not covered or specifically identified in the Regional District Standards and Specifications or in MMCD documents. Where there is a Regional District Standard, refer to the

associated Drawing Number. It is not necessary to include or provide drawings for work(s) for which there is an MMCD or a Regional District Standard Drawing.

- xi) Lot Grading Plan - Lot Grading Plans shall meet all requirements set out in the Standard Drawings. Lot Grading Plans shall be at 1:250 scale and shall generally illustrate post-development contour lines at a maximum of 1.0 m intervals, which shall match the pre-development contour lines at the development boundary, or as designed by the Owner's Engineer and approved by the Regional District. The topographic information shall extend a minimum of 30.0 m outside of the development boundary. All existing lot corner elevations must be illustrated (not circled) and all proposed lot corner elevations must be illustrated (circled). The Plan must illustrate the proposed building envelop(s) with the Minimum Building Elevation(s) (MBE) noted. Proposed lot slopes and any retaining structures, significant grade breaks and surface drainage infrastructure must be illustrated.
- xii) Erosion and Sediment Control Plan - Erosion and Sediment Control Plan shall be shown at 1:500 scale and shall illustrate the extents of tree clearing, grubbing and stripping locations, onsite and offsite sediment and erosion control features such as silt fencing, sediment basins, construction vehicle wash facilities and maintenance stockpile storage locations. Drawings shall provide details and notes describing the installation and maintenance of all features and shall provide protection of sensitive areas, watercourses and all other environmental features. Plan shall identify any Works and Services required in accordance with the requirements of other approval authorities.
- xiii) Landscape and Streetscape Design - Landscape and Streetscape Design Plan shall be provided where boulevard plantings or street furniture are proposed. The drawings shall include a planting schedule and details of any proposed street furniture.

2.13 Notwithstanding the previously detailed requirements, the following additional information is to be noted in design submissions to the Peace River Regional District:

- a) The size, grade, inverts, and type of material on profiles, based on the same chainage as indicated on the plan drawings;
- b) The locations, off-sets, curvatures, size and identification of the mains noted on the Plans, including:
 - i) the clearance between mains at cross-over points;

- ii) all existing buildings and structures, including houses, sheds, fences, wells, septic tanks and fields, with a notation indicating their fate (i.e. to be removed, filled, etc.); and
- iii) in rural Subdivisions, with an open ditch drainage system, the size of (future) driveway required culverts to conform to the design.

2.14 All design submissions shall be submitted together, as one complete package, with all supporting information from the Owner's Engineer and other consultants, including a PDF copy and electronic AutoCAD Drawings.

- a) The first complete detailed design submission shall consist of:
 - i) Two complete sets of drawings under seal of the Owner's Engineer;
 - ii) Geotechnical and soils investigation report under seal of the Owner's Engineer;
 - iii) Traffic Impact Study, if specifically required by the Approving Officer;
 - iv) Off-Site Utilities Impact Analysis, if specifically required by the Regional District or the Approving Officer;
 - v) All applicable utility hydraulic calculations and structural calculations (water, sanitary, storm sewer, etc.);
 - vi) Any additional design briefs identified as necessary by the Regional District; and
 - vii) Construction and installation cost estimate (under seal of the Owner's Engineer).
- b) Subsequent design submissions requiring changes to the previous submission shall consist of:
 - i) Two complete sets of drawings;
 - ii) A complete construction cost estimate;
 - iii) all changes made to the first submission shall be highlighted, including any changes made by the Owner's Engineer which are in addition to "Red Line" changes required by the Regional District; and
 - iv) Items "Red Lined" by the Regional District must be addressed by the Owner's Engineer. Failure to do so will result in the submission being returned to the Applicant.

- c) The final submission for acceptance shall consist of four complete sets of drawings (one of which will be returned to the Owner's Engineer), a digital set of drawings and all supporting documents.

2.15 All design and record drawings must be submitted based on MMCD standards.

- a) Digital drawing submissions shall follow the latest MMCD standard for AutoCAD symbols, layers & line types, with drawing creation using MMCD AutoCAD templates.

Construction Cost Estimate Calculations

2.16 The construction cost estimate shall be broken down in the format defined in MMCD.

2.17 Hydro, gas, cable and telephone cost estimates are required and the estimated costs are to be included in the security deposit required under the Subdivision servicing agreement. These items and costs will be reviewed and amended by the Regional District where necessary.

Service Connection Cards

2.18 The Owner's Engineer will provide service connection cards for each development. Service connection cards are considered part of the Record submission and shall be provided in paper copy and electronically in PDF and AutoCAD (latest version) formats. Each Service Connection Card is to indicate clearly and accurately the following information:

- a) The location, depth, size and material of construction of each Regional District utility connection;
- b) The Regional District project number;
- c) Legal plan number and/or lot number; and
- d) Civic address (if established).

Record Submissions and Asset Management Schedule

2.19 The following procedures are required in the delivery of Record Submissions and Asset Management Schedules to the Regional District:

- a) The Owner's Engineer shall submit two complete sets of paper prints of the revised design drawings reflecting the as-constructed Works and Services, including hydro,

telephone and cable records, and a complete set of Service Connection Cards for Regional District review.

- b) One marked-up set of the Record paper prints will be returned to the Owner's Engineer for revision. If there are minor changes, it may be requested that the prints with the revisions noted, be submitted for Regional District acceptance. If there are numerous amendments, the Owner's Engineer will be required to resubmit two sets of revised paper prints for a second review.

2.20 The Owner's Engineer will be required to submit the following:

- a) A digital copy of the CAD files containing the final Record drawings.
- b) A digital .pdf file containing final Record drawings signed and sealed by the Owner's Professional Engineer.
- c) Two sets of paper prints with the signature and seal by the Professional Engineer who supervised the required works.
- d) Service Connection Cards for each development, including a paper copy and electronically in PDF and AutoCAD (latest version) formats

2.21 Receipt of all Record information, acceptable to the Regional District, is required prior to issuance of Substantial Performance for the project, including:

- a) A Schedule for use in the Regional District's Asset Management Database including quantities and actual unit prices of all works/infrastructure constructed or altered as part of the development, to be owned by the Regional District. Works and Services shall be grouped by road segment between intersections. Where assets overlap at intersections, the asset is to be assigned to the primary road. The information is to be provided electronically in Excel and PDF format as prescribed by the Regional District;
- b) A copy of the final Geotechnical Report signed and sealed by the Owner's Engineer must be provided;
- c) A copy of the final Traffic Impact Study signed and sealed by the Owner's Engineer must be provided; and
- d) A copy of the final Off-Site Utilities Impact Analysis signed and sealed by the Owner's Engineer must be provided.

SCHEDULE B - DESIGN CRITERIA

SECTION 1 GENERAL DESIGN CONSIDERATIONS

The purpose of the design criteria is to supplement and clarify items as described in the latest edition of the MMCD Design Guidelines, and the requirements of the Ministry of Transportation and Infrastructure. The Owner's Engineer must comply with all requirements included in reference documents unless otherwise noted herein or specifically pre-approved in writing otherwise by the PRRD.

Sustainability and Asset Management

- 1.1 The principles of sustainability and asset management shall be based on MMCD methodology as described in the current edition of the MMCD Design Guidelines. Should any conflicts arise between this Bylaw and the current edition of the MMCD Design Guidelines, the written content of this bylaw shall govern.
- 1.2 Engineers retained by the Owner shall consult the Regional District to determine the appropriate balance of sustainability and asset management principles.

Independent Utilities

- 1.3 Independent utilities such as electrical power, communications and gas are not supplied by the Regional District and are not included in this design criteria.
- 1.4 Engineers retained by the Owner Applicant shall design infrastructure to avoid conflicts with independent utilities.

Utility Right-of-Way

- 1.5 Utility right-of-way requirements shall follow MMCD Design Guidelines.
- 1.6 Minimum utility Right-of-Way width is 6.0 m.

Utility Separation

- 1.7 Utility separation shall follow MMCD Design Guidelines and BC provincial regulations.

Trenchless Technologies

- 1.8 The use of trenchless technology shall follow MMCD Design Guidelines.

SECTION 2 WATER DISTRIBUTION

The purpose of this section is to supplement and clarify existing design guidelines as described in MMCD Design Guidelines. The Owner's Engineer must comply with all requirements included in reference documents and described herein.

General

- 2.1 The water system design is to be completed using a calibrated water model acceptable to the Regional District unless the system's design, as determined by the Regional District, does not warrant that approach.
- 2.2 Approval from Ministry of Health (Northern Health) is required prior to construction, installation, alteration or extension of a community water system.

Metering

- 2.3 Water meters are required for any connections to a Community Water System in accordance with the requirements specified for that system (Regional District systems or adjacent Municipal Systems).
- 2.4 Strata lots, including bare-land strata lots, shall provide the meter at the property line, or as directed by the Chief Administrative Officer. All meter chambers shall be protected against freezing.
- 2.5 All meters, where required, shall be supplied and installed by the Owner under the direct supervision of Regional District staff.
- 2.6 Where developments require water meters to be installed outside of buildings, the outside meter chambers, vaults or enclosures shall include the same requirements as listed in MMCD Design Guidelines under valve chambers with the following additional requirements:
 - a) watertight structures;
 - b) drainage and ventilation;
 - c) protection against freezing;
 - d) adequate access and interior space for maintenance and equipment removal with minimum headroom of 2.0 m;
 - e) full open access to avoid confined space restrictions;

- f) permanent ladder to WorkSafeBC regulations;
- g) piping primed and painted with a rust-inhibiting paint;
- h) meter bypass;
- i) remote radio reading capability; and
- j) additional requirements as identified by the Chief Administrative Officer.

Per Capita Demand

- 2.7 Design populations used in calculating water demand shall be computed in accordance with the Peace River Regional District's population projections or with the planned development in the area to be served, whichever is larger.
- 2.8 The design criteria noted in Table 2.3.1 must be used. Where the flow characteristics of the development area are substantially different, the criteria may be modified with written approval from the Chief Administrative Officer.

Table 2.3.1 – Per Capita Demand	
Average daily demand, domestic flow	600 litres/capita/day
Maximum daily demand, domestic flow	2x average day demand
Peak hour demand, domestic flow	3x average day demand

Non-Residential Demand

- 2.9 Non-residential demand shall be as indicated by MMCD Design Guidelines.

Fire Flows

- 2.10 Fire flow demands are as defined in MMCD Design Guidelines.
- 2.11 Where a difference arises between MMCD Design Guidelines minimum requirements and the National Fire Protection Association (NFPA) requirements, the more stringent requirements shall take precedence.

Design Flows

- 2.12 Design for water supply systems shall be based on MMCD Design Guidelines.

Water Pressure

- 2.13 Water pressures shall be based on MMCD Design Guidelines.

Hydraulic Design

- 2.14 Hydraulic design shall follow MMCD Design Guidelines.
- 2.15 Where the existing water supply system network is inadequate to provide minimum flow and pressure to a property, installation of supplementary mains may be required and may necessitate the provision of rights-of-way in favour of the Regional District.
- 2.16 Minimum watermain size shall be the more stringent of requirements stated in MMCD Design Guidelines or as demonstrated by a comprehensive hydraulic network analysis.

Minimum Pipe Diameter

- 2.17 Minimum pipe diameters are to be as specified by MMCD Design Guidelines.

Dead Ends

- 2.18 Where dead ends are unavoidable, and approved by the Regional District, sizes for blow-offs and blow-downs are to be as indicated by MMCD Design Guidelines with additional provisions for erosion control and protection of receiving environments.
- 2.19 In no instance shall a permanent dead end exceed 200 m in length.

Minimum Depth of Cover

- 2.20 Minimum depth of cover shall be 2.75 meters, in addition to meeting all other requirements specified in MMCD, unless otherwise specified in a signed and sealed Geotechnical Report.

Grade

- 2.21 Criteria for pipe grades shall be as specified by MMCD Design Guideline requirements.

Corrosion Protection

- 2.22 Corrosion protection and assessment of corrosive soils shall be as indicated in MMCD Design Guidelines.

Valves

- 2.23 In addition to the location of valves specified by MMCD Design Guidelines, valves are required as follows:
- a) **4** valves at “X” intersection;
 - b) **3** valves at “T” intersection, including hydrant branch tees;
 - c) At both ends of a utility Right-of-Way, water course boundary line, Provincial Highway or rail Right-of-Way;
 - d) It must be possible to isolate a section of water main by operating no more than 4 valves; and
 - e) Additional valving may be required due to phasing of Subdivision Development, as determined by the Chief Administrative Officer.
- 2.24 Resilient seat gate valves are required on mains smaller than 450 mm diameter.

Hydrants

- 2.25 The Owner’s Engineer must consider the existing and intended use in the area, and ensure that adequate spacing is provided in accordance with MMCD Design Guideline requirements.
- 2.26 Hydrants shall be located as specified by MMCD Design Guidelines in addition to being not more than 90 m apart in commercial, industrial and institutional areas.
- 2.27 The location of the hydrants shall be a minimum 1.5 m clear of existing or proposed utilities and features such as street lights, power poles, open channels, transformers or driveways.
- 2.28 Hydrant access provisions may be required and placed strategically and shall be reviewed and approved by the Chief Administrative Officer. Where the road cross- section provides ditched drainage, a culvert crossing shall be provided to permit unobstructed access up to the fire hydrant. Culverts shall be installed per MMCD Design Guideline standard drawings.
- 2.29 For cul-de-sac roads, hydrants shall be located at the last lot before the cul-de-sac bulb.
- 2.30 Where engineering studies have determined that the use of a dry Hydrant(s) is the most feasible for fire protection, they shall conform with the specific requirements of the Peace River Regional District.

- 231 The design of Dry Hydrant installations shall generally be in conformity with NFPA 1142.

Blow-Offs and Blow-Downs

- 232 Blow-offs and blow-downs are to be provided as specified by MMCD Design Guidelines.

Test Points

- 233 Test Points shall be installed on all watermains as specified by MMCD Design Guidelines at strategic locations approved by the Chief Administrative Officer.
- 234 Install test point assemblies as per manufacturers' recommendations.

Air Valves

- 235 Air valves must be installed under conditions as indicated by MMCD Design Guidelines.

Thrust Restraints

- 236 Thrust restraint shall be provided as specified by MMCD Design Guidelines.
- 237 If mechanical joint restraints are used, the design drawings shall indicate the number of joint restraints required to resist the thrust at the fittings.
- 238 Thrust block design calculations and soil bearing pressures must be shown on the design drawings.
- 239 Mechanical joint restraints shall be used on all water main joints designated by the Chief Administrative Officer as "lifeline service mains in case of disaster". The decision as to which mains are to be so designated is at the sole discretion of the Chief Administrative Officer.

Chambers

- 240 Chambers shall be designed in accordance with MMCD Design Guideline requirements.

Service Connections

- 241 Service connection size shall be as indicated by MMCD Design Guidelines.
- 242 All water connections for industrial, commercial and institutional land use shall have a double check valve installed on the private system.
- 243 Corporation stops must be staggered and not less than 2.0 m apart, along the main line.

- 244 Services and curb stops must have a minimum cover of 2.75 m.
- 245 Each unit of a duplex must be serviced individually. A carriage house shall be serviced from the main service connection or through the main residence.
- 246 All meters, where required, shall be supplied and installed by the Applicant under the direct supervision of Regional District staff.
- 247 Outside meter chambers, vaults, or enclosures shall include provisions as stipulated under PRV stations.
- 248 A corporation stop and a curb stop shall be installed for each connection 50 mm diameter in size or smaller.

Alignment and Corridors

- 249 Curved mains will not be permitted. Joint deflections shall be as per MMCD Design Guideline requirements.
- 250 Water main extensions shall extend to and terminate at the furthest property line of the last lot it services complete with blow-off as per standard drawing.
- 251 Tracer wire or metallic warning tape is required on all PVC watermains and shall be installed per the manufacturer's specification.
- 252 When the utility is required to cross private land(s), the Right-of-Way must be surfaced and graded accordingly to allow access for Regional District maintenance vehicles and equipment to repair or replace the utility line and be a minimum of 6.0m wide, or at the discretion of the Chief Administrative Officer. The Right-of- Way shall be registered on title.

Reservoirs

- 253 The pre-design and detailed design of a reservoir must incorporate all requirements specified by MMCD Design Guidelines and the following:
 - a) approval from Northern Health prior to construction;
 - b) a Programmable Logic Controller (PLC) control system connected to the Peace River Regional District SCADA system;
 - c) cleaned and disinfected to AWWA requirements prior to potable water use; and
 - d) manuals to be provided as per "Manuals" Sections 2.56 below.

Pump Stations

- 254 The pre-design and detailed design of pump stations must incorporate all requirements specified by MMCD Design Guidelines and the following;
- a) Manuals to be provided as per “Manuals” Sections 2.56 below; and
 - b) A Programmable Logic Controller (PLC) control system connected to the Peace River Regional District SCADA system.

Pressure Reducing Valve (PRV) Stations

- 255 The predesign and detailed design of a PRV station must incorporate all requirements specified by MMCD Design Guidelines and the following:
- a) Stations shall be above ground unless otherwise approved by the Chief Administrative Officer;
 - b) Manuals to be provided as per “Manuals” Sections 2.56 below; and
 - c) A Programmable Logic Controller (PLC) control system connected to the Regional District SCADA system.

Manuals

- 256 The Owner must supply three (3) copies of operating and maintenance manuals to the Regional District in the following format:
- a) Bind contents in a three-ring, hard covered, plastic jacketed binder with the facility name embossed onto the binder cover and spine;
 - b) Each section shall be separated from the preceding section with a plasticized cardboard divider with a tab denoting contents of the section; and
 - c) Digital copies of all reports are also required.
- 257 Contents of the manuals are to include:
- a) Title sheet, labeled “Operation and Maintenance Instructions”, and containing project name and date;
 - b) Table of contents;
 - c) Reviewed shop drawings of all equipment;
 - d) Equipment list showing all model and serial numbers;

- e) All equipment manufacturers' manuals;
- f) Record drawings of all mechanical, electrical, control and alarm installations, including in digital PDF and AutoCAD (latest version) formats;
- g) Full description of system operation including: design points, designed pump and system curves, ultimate capacity, area served and any design criteria relevant to the operation of the system;
- h) Full description of entire mechanical, electrical and alarm system operation;
- i) Names, addresses, email addresses and telephone numbers of all major sub-contractors and suppliers;
- j) Commissioning report showing pressures and flows for all possible operating conditions; and
- k) All SCADA programming shall be provided to the Regional District in digital format.

Facility Access

- 258 All-weather vehicular access must be provided to all reservoirs, PRV's and pump stations. The minimum standard must be as required for an emergency access road with curbing and drainage provisions as may be required. The maximum facility access grade shall not exceed 12%.

Cross Connection Control

- 259 Cross Connection Control for all developments shall conform to the requirements of Northern Health and their most recent version of *"Public Health Engineering Guidelines"*.

SECTION 3 - SANITARY SEWERS

The purpose of this section is to supplement and clarify existing design guidelines as described in MMCD Design Guidelines. The Owner's Engineer must comply with all requirements included in reference documents and described herein.

General

- 3.1 The sanitary sewer system is to be designed using a calibrated sanitary sewer model acceptable to the Chief Administrative Officer, unless the Chief Administrative Officer determines the system does not warrant that approach.
- 3.2 The downstream capacity of the sanitary sewer system must be confirmed. This may require modelling of the existing system. The Developer is responsible for all costs to confirm, design, and construct sufficient downstream capacity for the subject property without eliminating or restricting capacity for other properties.
- 3.3 The sanitary sewer system on any parcel shall be constructed and connected to the Community Sewer System in accordance with the requirements of this bylaw and the Regional District's requirements outlined in Schedule B for specific sewer service areas.

Per Capital Flow

- 3.4 Per capita flows shall be as specified in MMCD Design Guidelines except for the following:
 - a) Residential Average Dry Weather Flow Rate = 350 L/d/c.

Non-Residential Flows

- 3.5 Non-residential flow shall be as specified in MMCD Design Guidelines.

Peaking Factor

- 3.6 The peaking factor shall be established based on MMCD Design Guidelines methodology.

Infiltration

- 3.7 Infiltration allowance shall be established based on MMCD Design Guidelines methodology.

Design Flow

- 3.8 The sanitary sewer system must be designed based on MMCD Design Guidelines methodology.

Pipe Flow Formulas

- 3.9 Design for gravity sewers and forcemains shall be calculated using MMCD Design Guidelines methodology.

Flow Velocities

- 3.10 The minimum velocity shall be as indicated by MMCD Design Guidelines.

Alignment

- 3.11 Alignment of sewers shall follow MMCD Design Guidelines methodology.

Minimum Pipe Diameter

- 3.12 The minimum permitted size of pipe shall be as indicated by MMCD Design Guidelines.

Minimum Grade

- 3.13 The minimum grade of any sewer is governed by MMCD Design Guidelines requirements except:
- a) The upstream or terminal section of a residential sewer servicing a design population of 25 or less shall have a minimum grade of 1.0%.

Curved Sewers

- 3.14 Curved sewers shall only be considered in exceptional situations, upon review and approval of the Chief Administrative Officer, to the maximum indicated in MMCD Design Guidelines, provided a functioning tracer wire is installed over the curved section between manholes.

Depth

- 3.15 The depth of sewers shall follow all MMCD Design Guidelines requirements except that:
- a) Minimum cover without concrete encasement is 2.4m unless otherwise specified in a signed and sealed Geotechnical Report.

Manholes**3.16 Locations**

- a) Manholes are required as indicated by MMCD Design Guidelines.
- b) Manholes are required for all service connections that are 150mm diameter or greater.
- c) Sanitary manhole rim elevations in off-road areas must be designed to be a minimum of 150mm above the surrounding finished grade.
- d) Manholes located outside road right-of-ways must be identified with a steel marker post painted red with offset dimension noted on the post.

3.17 Hydraulic Details

- a) Hydraulic flow at manholes shall follow MMCD Design Guidelines requirements.

Odour Control

3.18 Odour controls shall follow MMCD Design Guidelines methodology.

Service Connections

- 3.19 Service connections shall meet all MMCD Design Guidelines requirements and shall include an inspection chamber with a concrete box and cast iron lid at the surface rated for vehicle loading.
- 3.20 Pump connections, if permitted, shall terminate at property line into a gravity sanitary sewer line service or to a manhole.
- 3.21 Minimum grade from property line to sanitary sewer main shall be as indicated in MMCD Design Guidelines except:
 - a) 100 mm diameter pipe slope to be at a minimum of 2.0% grade.

Locations and Corridors

- 3.22 The location of sanitary sewers shall follow the requirements specified in MMCD Design Guidelines.

- 3.23 Rights-of-Way or Easements shall be surfaced and graded accordingly to allow access for Regional District maintenance vehicles to repair or replace the utility, and shall be registered on title.
- 3.24 Sewer main extensions shall extend past the furthest property line of the last serviced lot with sufficient distance to eliminate future impact on developed lots and/or temporary cul-de-sacs.

Pump Stations

- 3.25 The pre-design and detailed design of a pump station must incorporate all requirements specified by MMCD Design Guidelines and the following:
- a) A Programmable Logic Controller (PLC) control system connected to the Peace River Regional District SCADA system;
 - b) Manuals to be supplied as per Section 2.56 in the water design criteria;
 - c) Minimum storage between the high level alarm and the start of overflow to be established under the more critical of:
 - i) Minimum 1 hour in wet well at average wet weather flow; OR
 - ii) Minimum 1 hour in wet well and influent pipes at peak wet weather flow.
 - d) Station to allow for removal of pumps using hoist truck with 1.8 m boom.

Low Pressure Sewers

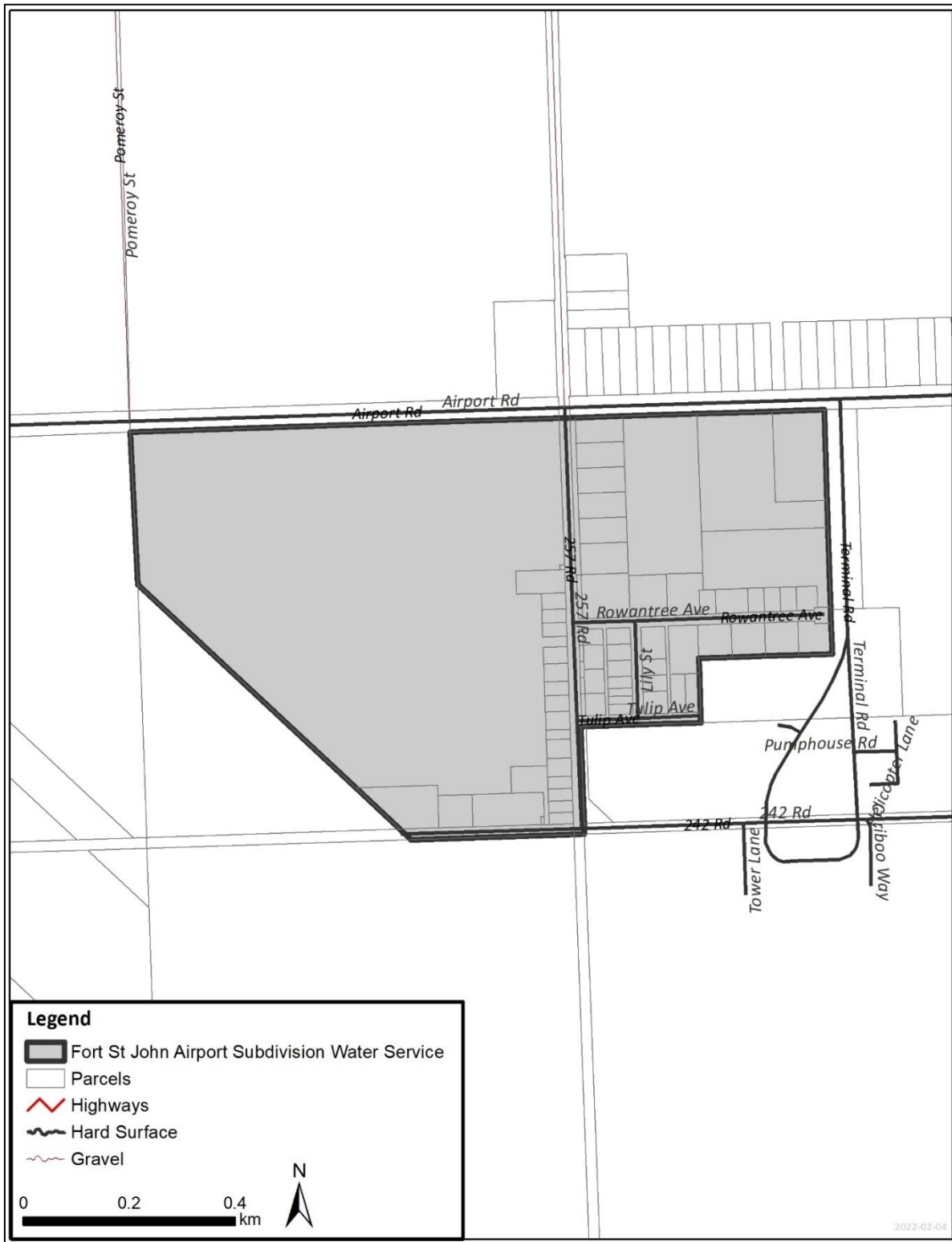
- 3.26 Low pressure sewers may be permitted by the Regional District under special circumstances.
- 3.27 Where permitted low pressure sewers must be designed in accordance with MMCD Design Guidelines requirements and the requirements in Schedule B.
- 3.28 The minimum cover for low pressure sewers is 2.75m.

Forcemain Design

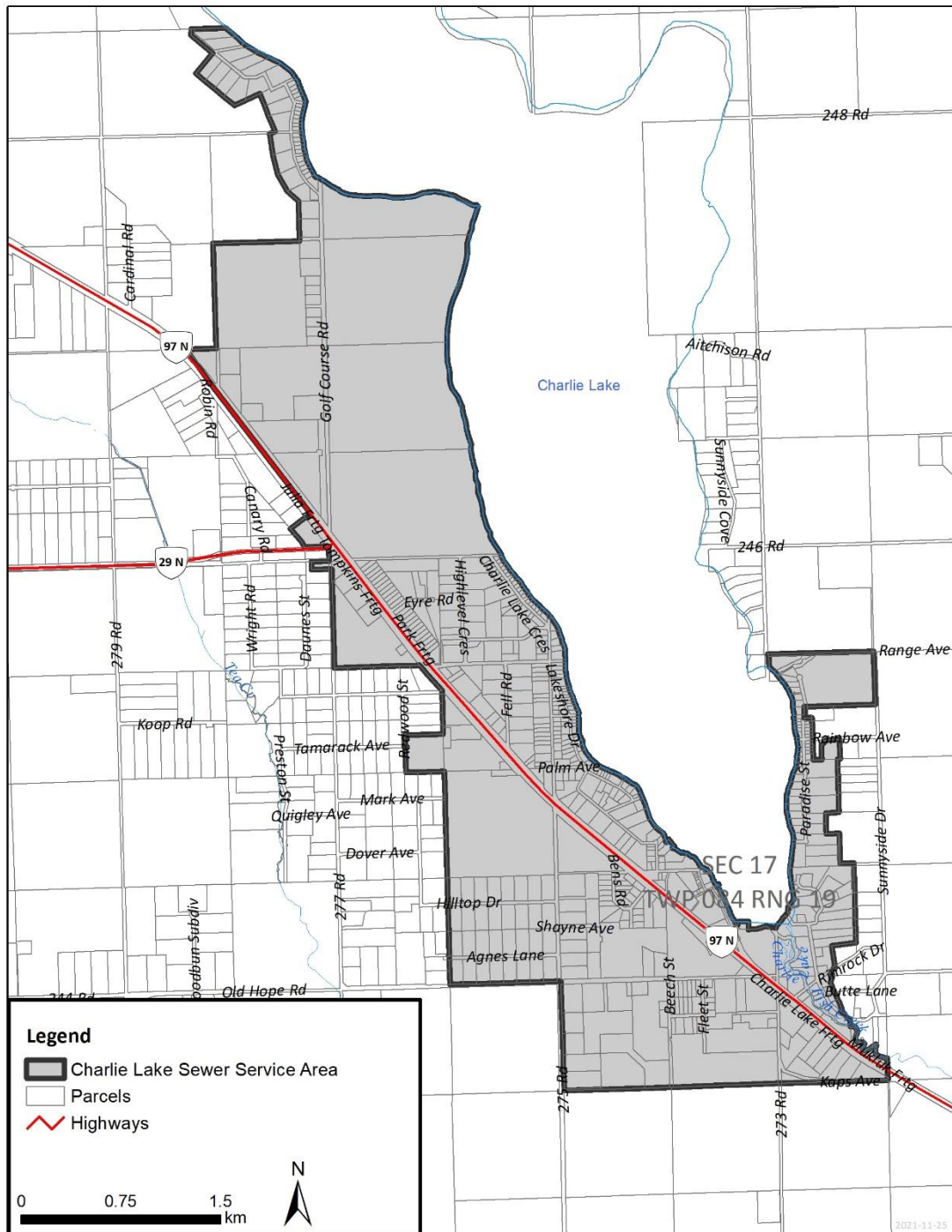
- 3.29 Design of force mains shall follow the methodology stated in other sections as well as the following additional considerations:
- a) An automatic air relief valve must be placed at high points in the force main to prevent air locking;

- b) Force mains should enter the gravity sewer system at a point not more than 600 mm above the flow line of the receiving manhole, otherwise outside drop piping must be incorporated;
 - c) With the exception of valves, the material selected for force mains must meet the standards specified for water mains and must be adapted to local conditions such as character of industrial wastes, soil characteristics, exceptionally heavy loadings, abrasion and similar issues/problems;
 - d) Valves used on force mains shall be plug valves sufficient for long term use in a corrosive environment;
 - e) All force mains must be designed to prevent damage from superimposed loads, or from water hammer or column separation phenomena; and
 - f) For non-metallic force mains, a tracing wire shall be installed for the purpose of locating the force main.
- 3.30 The minimum cover for forcemains is 2.75m unless specified otherwise in a signed and sealed Geotechnical Report.

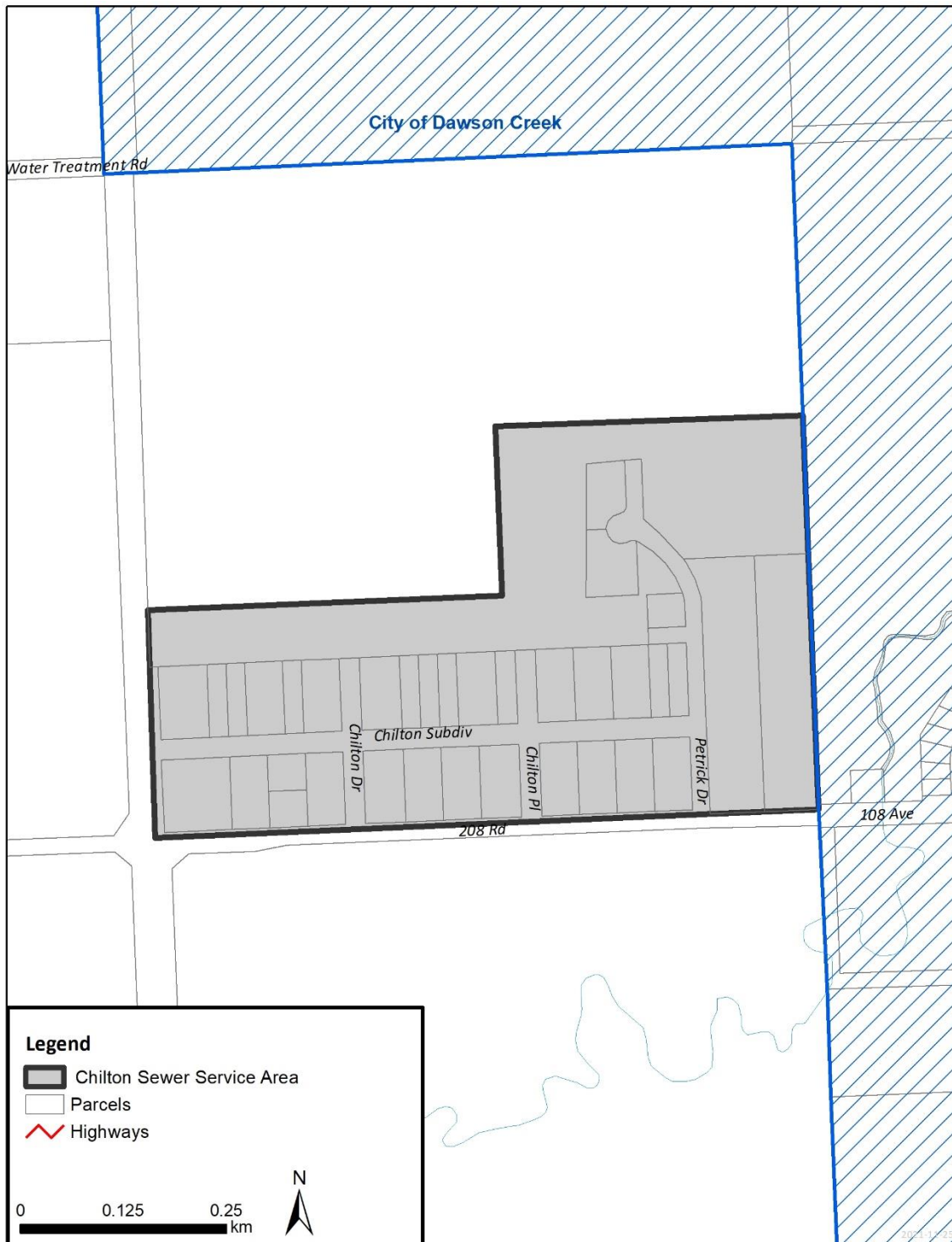
SCHEDULE C – NORTH PEACE REGIONAL AIRPORT WATER SERVICE AREA



SCHEDULE D – CHARLIE LAKE SEWER SERVICE AREA



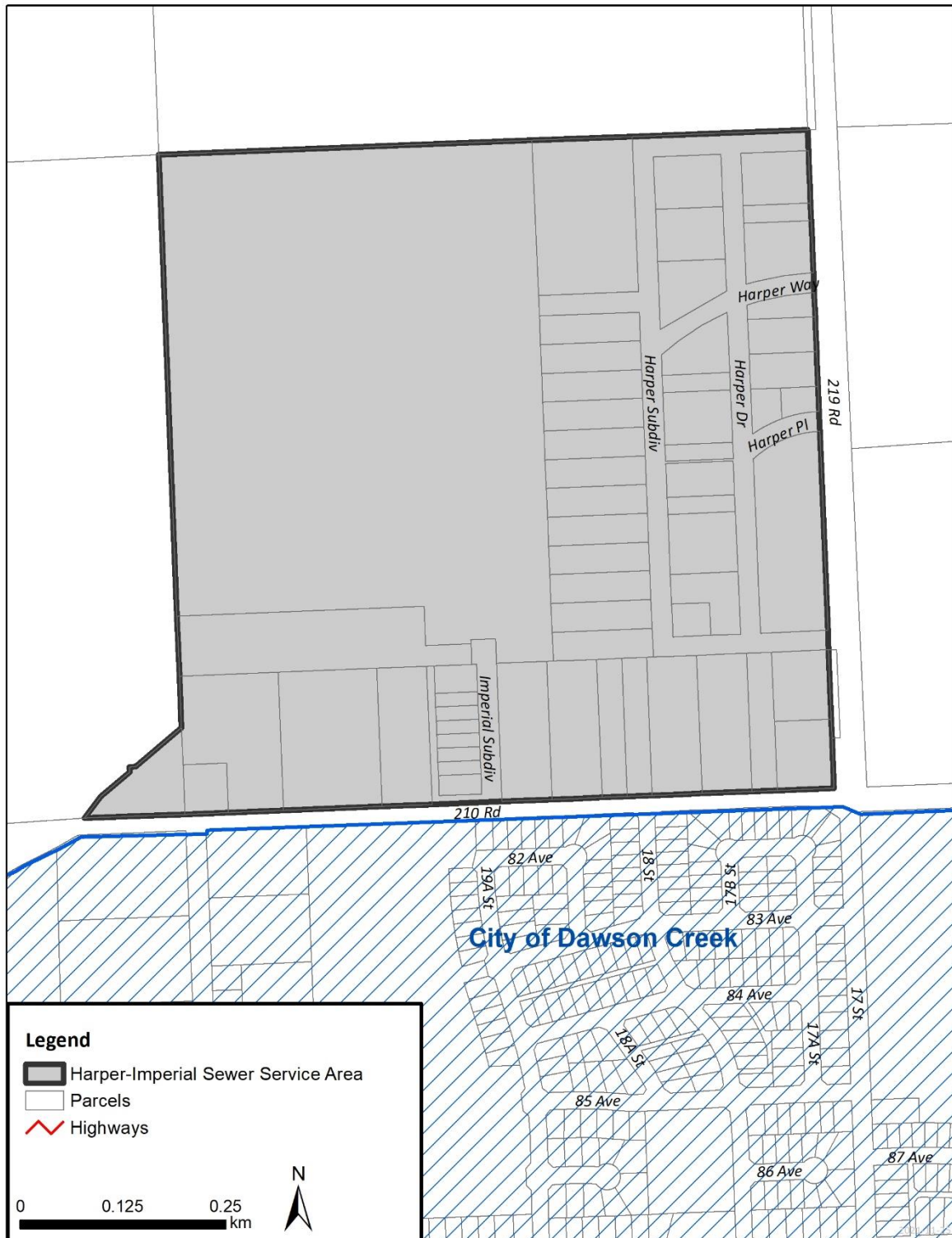
SCHEDULE E – CHILTON SEWER SERVICE AREA



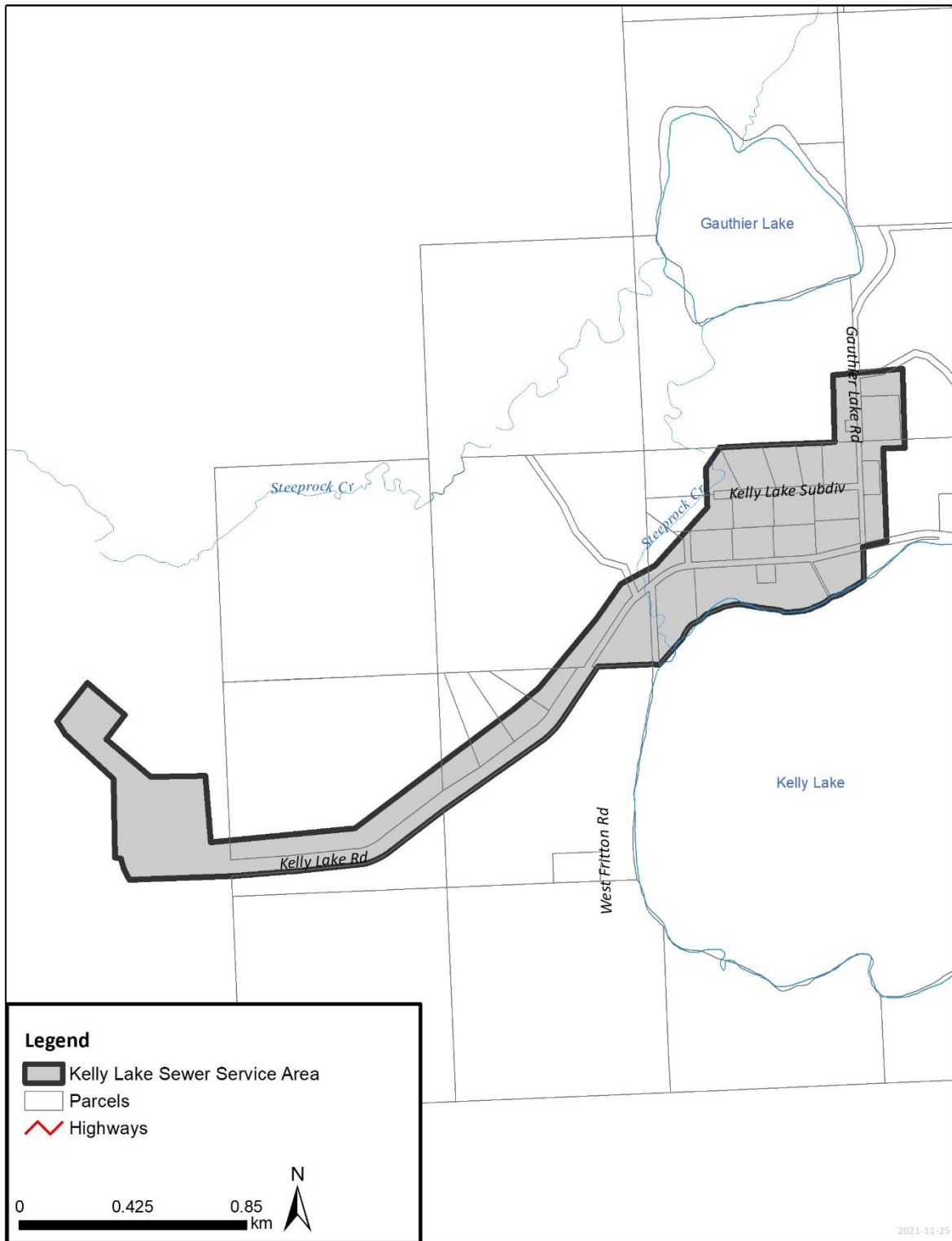
SCHEDULE F – FRIESEN SEWER AREA



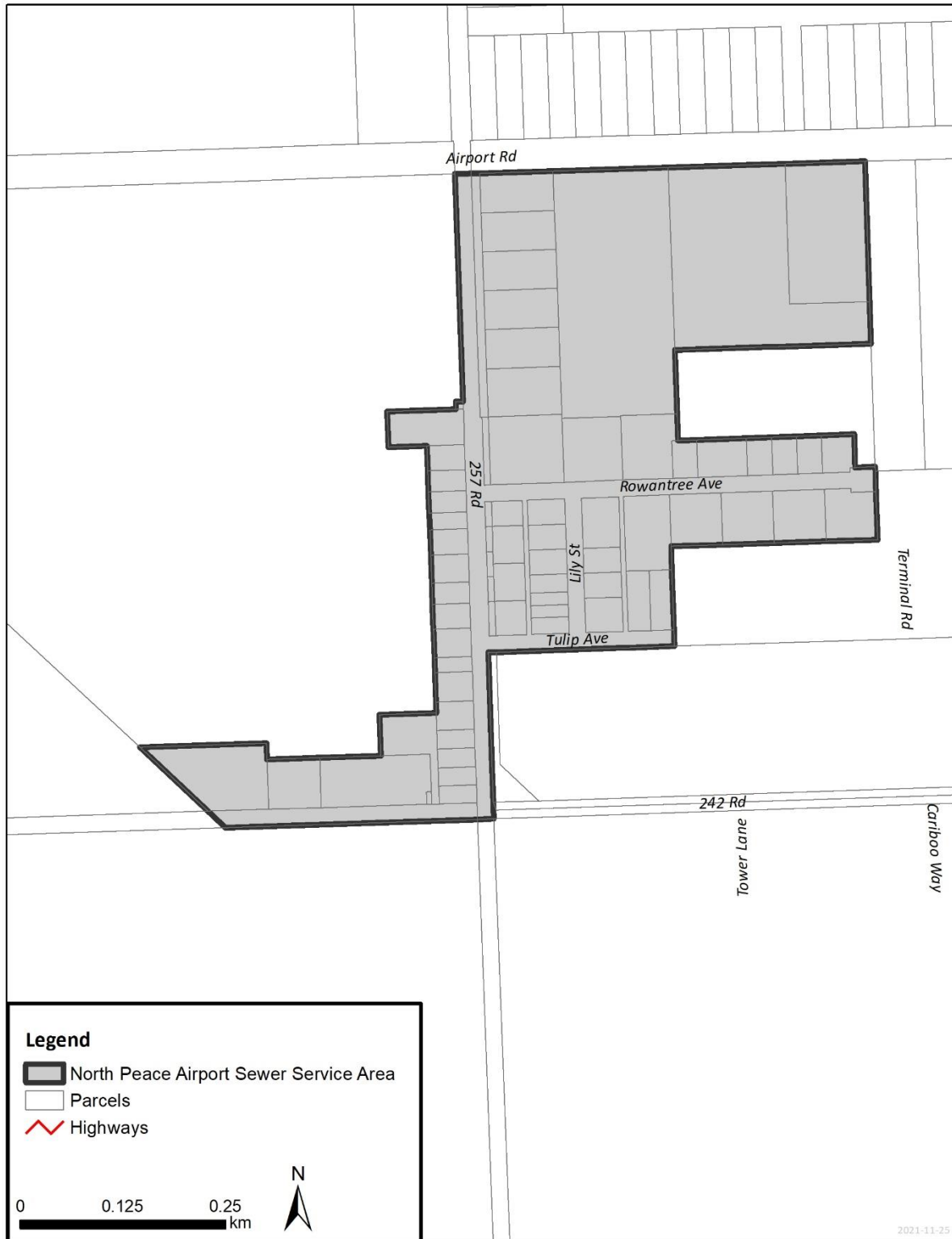
SCHEDULE G – HARPER IMPERIAL SEWER SERVICE AREA



SCHEDULE H – KELLY LAKE SEWER SERVICE AREA



SCHEDULE I – NORTH PEACE AIRPORT SEWER SERVICE AREA



SCHEDULE J – ROLLA SEWER SERVICE AREA

