

Permitting Case Study

HYDROGEN PROJECT

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Executive Summary

In July 2021, the Government of BC released the BC Hydrogen Strategy, identifying the sector as an opportunity to grow and diversify the provincial economy, support good jobs, all while mitigating climate impacts through decarbonizing sectors like transportation, heating, and manufacturing. The strategy looks to establish regional "hydrogen hubs" that create ecosystems made of the supply demand for hydrogen.

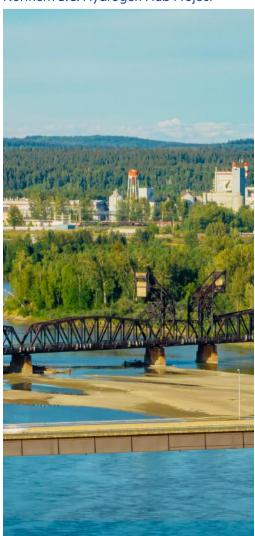
Prince George is an ideal community to kickstart the development of a Central BC Hydrogen Hub due to its central location, industrial activity and workforce, and transportation infrastructure connected to the Prince Rupert Port, as well as to Alberta and its Edmonton Region Hydrogen Hub. As a result, the City of Prince George (the City) entered an agreement with the Province to support the development of a hydrogen hub in a region that spans the width of the province from the Alberta border to the coast in Prince Rupert.

Based on feedback from companies in other countries and provinces, the permitting framework at a municipal level for project proponents can be vague, unclear, and potentially experimental feeling. A condition of the Central Hydrogen Hub agreement requires a hydrogen permitting case study (the Study) to help clarify and demystify the municipal permitting process for proponents. Although all local governments have regulatory frameworks (bylaws, permits, etc.) that are unique to the needs and interests of their residents and local economies, environments, and current, past, and projected events, they share many similarities. This document uses the City of Prince George's regulatory framework as a case study in permitting hydrogen production projects and can be used by other municipalities as a template that can be adapted to their own.

This document has involved consultation of many functions within the City of Prince George, including Planning, Building Inspection, Fire Inspection, Engineering, Utilities, and GIS. It gives a background to the relevant and influential bylaws of the community that will affect land use, both current and future, the different zones within the community, the permits required based on different triggers, the processes involved, as well as the costs and timelines with each process and permit. It is the intent of the document to support an understanding between proponents and municipalities and show stability and confidence in investing in British Columbia.



Northern B.C. Hydrogen Hub Project



Case Study Clarifications

Throughout this document, we have added simulated examples of projects to further clarify the regulatory framework and processes. By giving "real world" examples, the goal is to show the interpretation of things like rezoning processes, permit fees, and internal referrals so proponents can better understand each layer to the municipal regulations. The BC Regulatory Mapping Study runs each proxy project through all regulatory layers, but as there are too many variables within the municipal context, the same method would not be useful to proponents.

In British Columbian communities, bylaws are the laws of the community, enabled by the Community Charter and Local Government Act, and can be enforced by the community. Starting with the Official Community Plan (OCP), which sets community vision and direction, other bylaws are created. Refer to Table 1 for bylaws that are most likely to affect a hydrogen project, what the bylaws regulate, and what may cause them to come into effect.

A proponent will be required to take the steps to be issued their building permit and occupancy depending on current and future land use, where the site is located and whether it's in specified Development Permit Areas, and ultimately what is required in the building permit application process. If the site does not have M6 Special Heavy Industry zoning or Medium or Heavy Industrial Future Land Use as specified in the OCP, an amendment to the OCP and Zoning bylaws will both be required, which requires the City to engage the public and hold a public hearing as part of the land use and permitting process (Figure 1). This process runs concurrently with the Zoning Bylaw Amendment Application (rezoning) process.

Should the site not have M6 Special Heavy Industry zoning but is consistent with Future Land Use, the site will need to be rezoned via Zoning Bylaw Amendment application (Figure 2). This process still needs Council approval but does not trigger a public hearing. Rezoning requires an assessment of the site to determine if a change in the zone can be accommodated by the City as well as other agencies, like senior levels of government and/or utility providers. Referral to these agencies is a required step, and the feedback will be summarized with feedback for proponents to consider, revise, or refrain from doing in their project. Once the rezoning process is complete, the proponent can move to Development Permit (if required) and Building Permit applications. Development Permit Areas (DPAs) are set as schedules within the OCP bylaw, and if the site is within a DPA, the proponent will be required to submit the corresponding Development Permit application.

The City's bylaws give a high-level structure to the order of the community, and they enable the development of various permits, policies, and plans that are expected of the City (e.g. Transportation Master Plan, Sanitary Sewer Services Master Plan, etc.) or of the proponent (e.g. Development Permit, Erosion and Sediment Control Plan, Building Permit, etc.). Permits most relevant to hydrogen production projects, the permits' triggers, costs, and approximately how long they take the City to assess and issue are detailed in Table 3.

The City allows the option to follow a Professional Reliance Building Permit model for Part 3 buildings under the BC Building Code, which is typically relevant to industrial buildings. This document includes the high-level permit application process (Figure 3) as well as the required application elements and stages they are required (Table 2).

There are additions to the permitting process that the City recommends proponents consider. Although not required by bylaw, the risk of a project related to social license, environmental impacts, and project specific information can be reduced by early engagement with local indigenous groups and interest groups, a pre-application meeting with City staff, and steep slope and drainage management. The Study has also raised some considerations for the City and other municipalities regarding how new, cleaner industry is perceived and where it fits within bylaws and regulatory policy while the federal and provincial regulatory landscape continues to change.

Provincial Context

The BC Hydrogen Strategy includes a key objective to "remove roadblocks, harmonize regulations and permitting, and establish an effective regulatory regime for fast-tracking hydrogen deployment," leading to the commissioning of the BC Hydrogen Regulatory Mapping Study. The BC Centre for Innovation and Clean Energy (CICE) released the BC Hydrogen Regulatory Mapping Study that discusses the provincial framework for permitting projects in British Columbia. The report uses six proxy projects to investigate and clarify various paths proponents would follow depending on the site requirements, input, output, and byproducts of various hydrogen production methods. This document has assessed those same proxy projects; fortunately, all six project types fall within the same process. The proxy projects are as follows:

Electrolytic Hydrogen Produced

using On-Grid Electricity

Hydrogen Produced from Natural Gas

with Carbon Capture Utilization and Storage

Ammonia Produced

from Low-Carbon Hydrogen

Electrolytic Hydrogen Produced

using Off-Grid Electricity

Hydrogen Produced

from Methane Pyrolysis

Methanol Produced

from Low-Carbon Hydrogen

The report concludes with observations and recommendations that seek to evoke considerations to improve the regulatory process for projects. Observations include the layering of regulatory bodies like the BC Energy Regulator, Technical Safety BC, and any others. For example, the BC Energy Regulator has recently been legislated to regulate hydrogen as part of "energy resource activities" and is in the process of seeking feedback for how to adequately regulate these activities. As the landscape changes, municipalities and provincial regulators should work together to find efficiencies and concurrent processes that could optimize and streamline processes while still achieving safety objectives.

When City staff reviewed the six proxy projects, it was determined that all project types would follow the same regulatory process; differences in permitting processes and requirements for the proxy projects are not determined by project type but by project location (e.g. within Development Permit Areas, site-specific servicing requirements, etc.). However, project type may influence what factors a location may have on the permitting process (e.g. water usage, utility servicing).

Case Study Clarification: BC vs Municipal

Two different projects (Proxy Projects #1 and #3) are proposed for sites within Prince George's boundary. Both have the same space requirements and both require rezoning.

Proxy #1 uses a high volume of water consumption via electrolysis and will require a more detailed discussion with the Utilities division and the Water Meter Sizing Calculation would likely trigger a larger capacity water meter and lease, whereas Proxy #3's production pathway from natural gas would require a review of works and servicing connecting to the natural gas utility (FortisBC) and likely not as significant fees regarding water use. Both projects will have near identical rezoning fees.



Bylaws are the main source of guidance, purpose, and regulatory power the local governments have. With respect to industrial projects, the foundational bylaws that first influence development include the Official Community Plan, Zoning, and Subdivision and Development bylaws. Depending on various site-specific details, bylaws like the Clean Air and Sanitary Use bylaws may affect the site, and other bylaws like the Development Cost Charges and the Fees and Charges bylaws will determine the cost for permitting, developing, and servicing the site.

In certain key areas of community development, master plans like the Water Master Plan and Sanitary Sewer Services Master Plan further define how bylaws will be implemented and services will be carried out. The following bylaws contain influential factors in the permitting process.

Municipal Framework

Below is a table that gives a high-level overview of each bylaw typically relevant to hydrogen production projects, what triggers them, and what they regulate. They are further described in the sections that follow.

Bylaw	Influential Factors	Triggers	
ОСР	Future land use	Inconsistency with policy and objectives of the OCP triggers OCP amendment application	
Zoning	Current land use	Non-permitted use requires rezoning application	
Subdivision and Development Servicing	Subdividing land Works and services and infrastructure requirements and standards	Dependent on location of site within a designated area (Downtown, Urban, Semi-Urban, Rural)	
Fees and Charges	Costs associated with applications and licenses	 Dependent on applications required: Building, demo, moving, plumbing; Business license; Development procedures (e.g. rezoning); Highways; Sanitary sewer; Soil removal and deposit; Storm sewer; Subdivision control; Water regulation and rates Refer to Schedule A for fee calculations. 	
DCCs	Cost to support new development	Dependent on location within DCC area (Areas A-D)	
Sanitary Use	Connection to and use of sanitary sewer system	Level and type of byproduct discharge to sewer system Septage hauling	
Clean Air	Requirements to control dust	Dust control needed during construction and operation	
Highways	Activity and traffic on municipal rights-of-way	Potential for mud tracking to City roads Work on roads Traffic control needs or disruptions	

Table 1. City of Prince George bylaws relevant to hydrogen projects.



Official Community Plan Bylaw

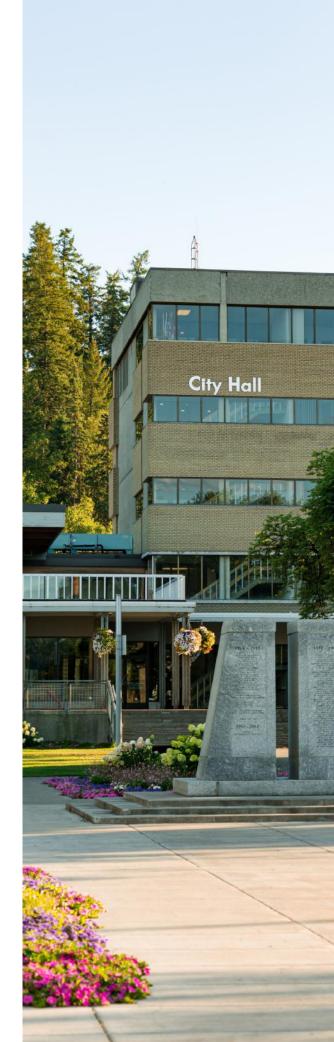
The Official Community Plan (OCP) may be the most influential guidance document for a municipal government. The OCP is built on extensive community engagement and input from residents, research and statistical analysis on economic, population, and social trends in the region and community, and it sets long-term, visionary goals for the municipality. OCPs can set high-level goals for service levels, infrastructure management, economic development, and omissions targets, and they lead to more in depth strategies for each goal to lay out the short- and mid-term steps to achieve the long-term goals. As a general rule, it can be reviewed and considered for revision every five to 10 years.

Although the OCP does not commit or authorize the City of Prince George to proceed with any project specified in the plan and does not have an immediate effect on property rights (e.g. existing zoning regulations will continue to apply), the OCP can have consequences that may increase or decrease the regulatory burden of developing a property (e.g. designation of development permit areas).

The foundational regulatory influence on hydrogen project development within the municipal framework is land use. If a use is not permitted on the proposed site, the project will not progress; if it is, other layers of regulation will then be activated. The current permitted primary and secondary land uses are defined in the Zoning bylaw, and encouraged use of the land is set out in the Future Land Use schedule of the OCP bylaw. Should a site's proposed use be within the current Zoning bylaw, the proponent can move to permitting and other due processes; if not, a bylaw amendment process is required.

Where the proposed Hydrogen Production facility is proposed outside of the M6: Special Heavy Industrial zone, a Land Use Application will be required to facilitate an "Industry, Special Heavy" use. Where the City's Official Community Plan (OCP) designates a property as "Medium Industrial or "Heavy Industrial" in Schedule B-6: Future Land Use, OCP Policy may support a "Industry, Special Heavy" use. Per the City's Development Procedures Bylaw No. 9423, 2023, where the Authorized Person has determined that a Zoning Bylaw Amendment application is consistent with the Official Community Plan, a public hearing is not required.

Any other OCP designations in Schedule B-6: Future Land Use will require an OCP amendment to facilitate a Zoning Bylaw Amendment application for a "Industry, Special Heavy" use. Where an OCP amendment is required, a Medium Industrial designation in Schedule B-6: Future Land Use would be most suited to a Land Use Application. Per the City's Development Procedures Bylaw No. 9423, 2023, where an OCP amendment is required both public consultation and a public hearing will be required to provide opportunities for appropriate consultation with persons, organizations and authorities that may be affected by an amendment.



Schedule B-6:

Future Land Use - **Medium Industrial**

The Medium Industrial designation in Schedule B-6: Future Land Use of the OCP is intended to accommodate medium to heavy industrial uses which have low to moderate noise and air emissions based on Provincial Offsetting Guidelines. Medium Industrial uses may have an impact beyond site boundaries and may include, but are not limited to, modern (low emission) sawmills, cement processing, manufacturing, major truck or rail terminals, wrecking yards. OCP Policy encourages a wide range of Medium Industrial uses in designated areas of which these uses typically have an area, intensity and land use impacts with a greater magnitude and significance than light industry, but do not have significant air emissions (OCP Policy 8.3.103). Medium Industrial lands currently exist between First Avenue and River Road, and some areas within the BCR and Danson Industrial subdivision. New or expanded Medium Industrial uses are encouraged to locate outside of the First Avenue and River Road area and the northeast industrial areas (pulp mills) or be required to produce higher offsets to improve local air quality as per the Provincial Guidance Document for Industrial Development in the Prince George Airshed Provincial offsetting guidelines (OCP Policy 8.3.105).

Medium Industrial designation offers policy support for a zoning bylaw amendment to M6 to facilitate an "Industry, Special Heavy" use such as hydrogen production.

Schedule B-6:

Future Land Use - **Heavy Industrial**

The Heavy Industrial designation in Schedule B-6: Future Land Use of the OCP is intended to accommodate high impact, large scale industrial uses with a high level of noise and air emissions based on Provincial Offsetting Guidelines. Heavy Industrial uses may include mining and extraction uses, primary metal manufacturing, petroleum refineries, asphalt and roofing material production, pulp mills, and extensive manufacturing. Areas within the City include for example the pulp mill lands. OCP Policy encourages new industrial operations with significant noise and other impacts, such as pulp mills, large processing and manufacturing plants, and ancillary uses outside the Prince George air shed (OCP Policy 8.3.107). Since hydrogen production tends to have low to moderate noise and air emissions, concern for the Prince George air shed would be limited.

Heavy Industrial designation offers policy support for a zoning bylaw amendment to M6 to facilitate an "Industry, Special Heavy" use such as hydrogen production.

Industrial Form & Character Development Permit Area

Properties within the Carter Light Industrial area, Queensway East, Airport Light Industrial area, and any Industrial designated or zoned lands within 50 m of a Major Road (including Highways) shown on Schedule B-10: 15-year Road Network of the OCP are designated an Industrial Development Permit Area. Exemptions to this designation are those industrial designated or zoned properties within 50 m of the following Major Roads: Industrial Way, Northwood Pulpmill Road, PG Pulpmill Road, Sintich Road, and Willow Cale Road.

An approved Development Permit is required to obtain a Building Permit. Through the Development Permit process, the City may consider the following criteria to determine proposed land use suitability: location; lot size; site access; the volume of site usage and traffic; parking; landscaping and screening; development size, massing, and quality of design (OCP Policy 8.3.7).

Groundwater Protection Development Permit Area

The lands shown on Schedule D-1: Groundwater Protection Development Permit Areas is hereby designated as ground-water protection development permit areas. Boundary lines depicting groundwater protection development areas are approximate and further analysis may refine their location. The City wishes to protect well heads and aquifers from incompatible development that may lead to contamination of the City's potable water supply. By regulating development within capture zones, the City may reduce the potential risk of contamination.

Development including the alteration of land, or construction of, addition to, or alteration of buildings or structures for any use that involve the manufacture, processing, sale, storage, or distribution of wood waste, agricultural waste, petroleum products, allied petroleum products, and waste or effluent as defined under the Environmental Management Act, or snow storage, waste management, wrecking yard, composting or burial of livestock, poultry or aquaculture products requires a Groundwater Protection Development Permit Area. As required, an approved Development Permit is required to obtain a Building Permit.

Riparian Protection Development Permit Area

The lands shown on Schedule D-2: Riparian Protection Development Permit Areas are hereby designated as riparian protection development permit area. Riparian areas are areas of land and vegetation adjacent to watercourses that provides a range of important functions, including fish and wildlife habitat, erosion and sediment control, flood protection, and overall stream bank stability. Riparian areas need to remain in an undisturbed state to provide these functions.

Watercourses and water bodies shall have a 30.0 m leave strip from the top of bank for industrial developments, except 50.0 m leave strips are required from the Fraser and Nechako Rivers where the leave strip area is devoid of trees and there is evidence of active bank erosion. A lesser leave strip shall be considered where the setback is determined by a qualified professional in respect of a development proposal. An approved Development Permit is required to obtain a Building Permit.

Wildfire Hazard Development Permit Area

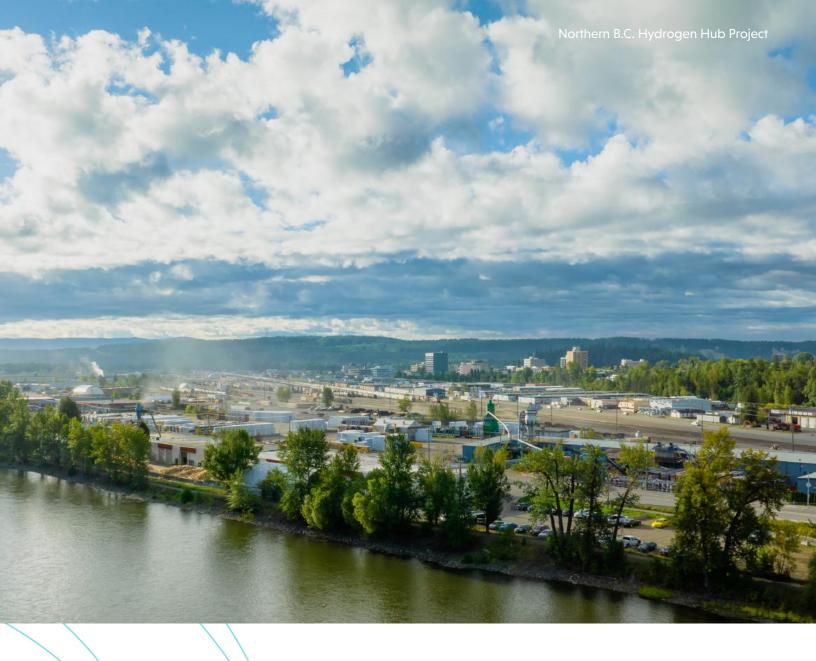
The land shown on Schedule D-3: Wildfire Hazard Development Permit Areas are hereby designated as a wildfire hazard development permit area. Wildfire Hazard Areas are areas of land identified as having a high risk of interface wildfire. By following the appropriate guidelines, landowners may reduce the risk of being negatively impacted by wildfire.

New developments proposed in the Wildfire Hazard Development Permit Areas must address the interface wildfire risk through the removal of forest fuel and the use of appropriate building materials as defined in the Home Owners FireSmart Manual (British Columbia Edition). An approved Development Permit is required to obtain a Building Permit.

Flood Hazard Development Permit Area / Flood Plain Bylaw No. 8285, 2010

The lands shown on Schedule D-4: Flood Hazard Development Permit Area are hereby designated as the flood hazard development permit area. The objectives for establishing the flood hazard development permit area are to promote settlement patterns that minimize the risk associated with hazardous flood conditions. These areas are regulated by the Flood Plain Bylaw No. 8285, 2010.

The Flood Plain Bylaw establishes the Flood Construction Levels (FCLs) and setbacks for development within the flood plain. An exemption to the FCL and setbacks shall be considered where the construction level and setback is determined by a qualified professional in respect of a development proposal. If the minimum setback and FCL is not met, an approved Development Permit is required to obtain a Building Permit.



Zoning

The Zoning Bylaw defines the permitted use of land in the City, and currently the zone that permits production of hydrogen is M6: Special Heavy Industrial. Proponents will often find some parcels with mixed zoning, and this can mean there was a previous zoning amendment (rezoning) application approved to change the permitted use of part of the site, or there is an existing section of the parcel that requires a different zoning. The former happens quite a bit as part of the City's development approval processes and a rezoning application could happen to fit the use for the site; the latter may include sites with a riparian buffer, significant slopes, or overhead utility, and this would likely remain.

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The City's Zoning Bylaw No. 7850, 2007, permits the production of chemical elements such as hydrogen within the M6: Special Heavy Industrial. The M6 zone permits an "Industry, Special Heavy" use, defined below.

Industry, Special Heavy is defined as any offensive trade including **processing or manufacturing** uses such as an oil refinery; chemical, **explosive**, **or fertilizer plant**; pulp and paper mill; particleboard plant; cement or structural clay products manufacturing; smelter, basic iron and steel manufacturing; and tannery. This use may include accessory office; technical and administrative support; the retail sale of goods processed, manufactured, fabricated, or assembled on the same site; major vehicle repair or washing; warehousing; wholesale; and commercial education. The combined floor area devoted to accessory office, technical, administrative support, or retail sale operations shall not exceed 25% of the gross floor area of the building(s) devoted to the heavy industrial use on the same site.

The M6 zone also permits onsite power generation as a "Utility, Major" use, defined below.

Utility, Major is defined as sewage treatment plants, water treatment plants, major pumphouses, water towers or tanks, sewage lagoons, sludge disposal beds, garbage transfer and compacting stations, power terminal and distributing stations, **power generating stations**, cooling plants, utilities and services, district heating plants, and may include accessory vehicle, equipment, and material storage. This use does not include waste management sites.

Where the proposed Hydrogen Production facility is proposed outside of the M6: Special Heavy Industrial zone, a Land Use Application will be required to facilitate an "Industry, Special Heavy" use.

All proponents have the right to submit a Zoning Bylaw Amendment application to change the zoning of any parcel, provided they are the landowner or landowner's agent. Staff will likely advise on risks to the application should an application not receive staff support (despite the applications being brought to Council, staff may recommend not approving them based on existing policy), lack of Council support due to various influences (e.g. Council priority, community sentiment, etc.). Staff may also recommend tactics to mitigate risks, like open houses to educate the community of the project.

Subdivision and Development Servicing

Where a proposed subdivision meets the zoning regulations, an application for subdivision can be submitted to the City of Prince George's Approving Officer.

The following developments will require an application:

- Adjusting or realigning an existing boundary between parcels although no new parcels are being created.
- Creating new lots from one or more parcels.
- Creating lots in a bare land strata development.
- Creating a phased strata development.
- Converting a Strata.
- Subdividing air space parcels.

The following developments will require an application:

- Application Fees.
- Servicing costs for connections or extensions of water, sanitary sewer and storm sewer, and off-site works requirements
- Consulting fees (may include surveyors, professional engineers, and qualified environmental professionals).
- · Legal and survey costs.
- Parkland provision requirements.
- Development Permit application fees.
- Development cost charges.

When developing a new subdivision, some factors to consider include:

- Off-site works
- Civic addressing
- · Lot grading and drainage
- Soil removal and deposit permits
- Fill requests
- Access to properties
- Road right-of-ways

Fees and Charges

The fees and charges bylaw is updated periodically and as-needed to set the cost of the fees and charges throughout City operations, from cemetery use to garbage pickup. Relevant fees and charges to a hydrogen project include, but are not limited to building, demo, moving, plumbing permits, business licenses, and other fees and charges. Many are detailed in this document; however the bylaw is a good reference for all potential fees and charges related to hydrogen production projects.

Development Cost Charges

Development cost charges may be imposed to assist the City in paying the capital cost of new developments that increase demands such as added sewage, water, drainage, roads, and associated costs. Depending on which area the development is in (Areas A through D), there is a cost to industrial developments calculated by hectare of gross developed area.

Sanitary Use

This bylaw requires and regulates the use of the City of Prince George sanitary sewer system and regulates the source, type, quantity, and quality of wastes discharged, either directly or indirectly, into the sanitary sewer system. Proponents' waste discharge is regulated by this bylaw, including septage hauling, contaminants that are prohibited or restricted by concentration, as well as storage and containment, spill response plans, and other related mitigations.

Clean Air

Prince George has made a commitment to air quality for its residents through the Clean Air Bylaw which includes regulations for open burning and dust control. Open burning is not permitted within City boundaries, and dust must be controlled in regard to site or street sweeping, sand and gravel pits, demolition sites, construction sites, and road maintenance.

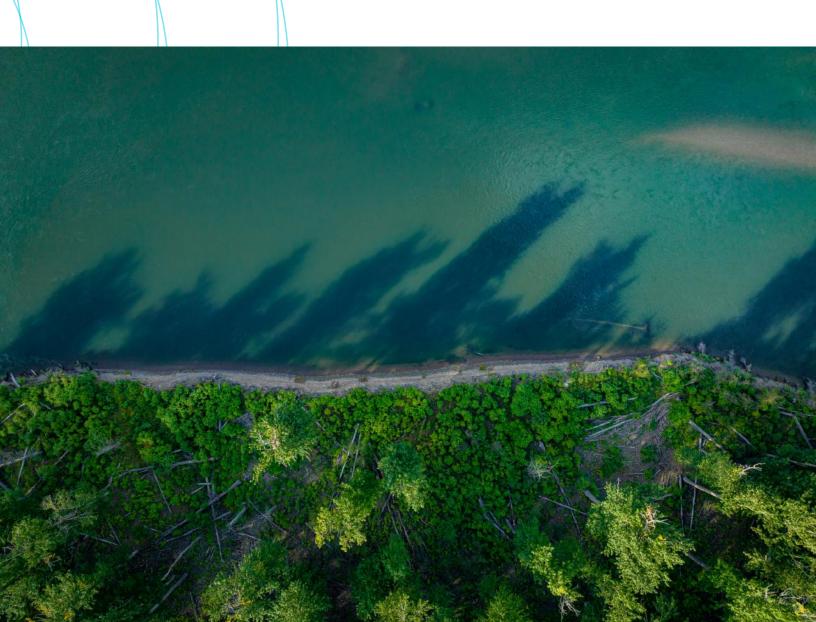
Highways

The term "highways" in this case pertains to City roads (not Provincial arterial highways), and the bylaw regulates works and events in the road dedication and overweight and/or oversize vehicles driving on City roadways and sets out when permits are required.

Permits and Other Requirements:

Steps, Timelines and Costs

The end goal of the proponent in the permitting process is to have a building permit approved and to gain occupancy of that building. The local government has a duty to ensure that the community's safety and collective decisions around land use are given due consideration. Therefore, there are three main checkpoints involved with the permitting process: alignment with the OCP and future land use, alignment with permitted use in the zone, and meeting requirements of the development and/or building permits.



Professional Reliance Building Permit

To build any building (outside of some exceptions), a Building Permit (BP) is required. This allows for the City to ensure the building conforms to the BC Building Code and other best practice engineering and construction. If the proposed project site falls within the correct zoning, the Zoning Amendment and/or OCP Bylaw Amendment processes are not necessary.

The City regulates industrial buildings (Part 3) under the Professional Reliance Building Permit. This is the acceptance and reliance on information provided by qualified professionals who accept responsibility for a project. This application stream has a coordinating registered professional (CRP) that facilitates all aspects of the development project. The City will rely solely on the information provided by the coordinating registered professional (CRP) and qualified professionals and does not require any inspections by City officials. The applicant will be required to provide letters of assurance, monitoring and engineered field reports, and as-built drawings. For reference, an application checklist can be found in Appendix E. The stages of the building application process are detailed below, including what's required at the initial submission of the building permit application, what's required before the City issues the building permit, and finally what's required for the release of securities and occupancy for the building.

Required Elements	Details
 Civil Design Drawings Issued for Building Permit Must be sealed by the Engineer of Record Drawings should include, but not limited Existing Site Plan, Overall Site Plan, Grading Plan, Servicing Plan. A Water Tie-in detail must be included project requires a new or upgraded service connection. 	
Design Brief for the project	Address Water supply: Will require water modelling from CoPG Process for Water Modelling and Submission Criteria document attached. Fire flow design, Sewer collection, including downstream capacities of the sanitary main, Stormwater management, including recharge chamber design (if applicable), The locations and sizing of existing and proposed connections, Traffic considerations (Trip distribution and/or traffic impact study) and Street signage
Geotechnical Report	Contains: • Site investigation, • Subsurface conditions, • Slope Stability, • Recommendations for: • Site preparation, • Foundation type, • On-site drainage, • Pavement Structures.
	Civil Design Drawings Issued for Building Permit Design Brief for the project

Building Permitting Stage	Required Elements	Details	
Permit Application Submission	Street Lighting Analysis	Street lighting analysis for fronting roads • By electrical engineer, • Analysis should be holistic (analyzing the entire street), • The applicant would only be required to upgrade streetlights in front of the property. If analysis determines that street lighting upgrades are required, a Street Lighting Design and cost estimate should also be provided.	
	Engineers Cost Estimate for Offsite Works	 Sealed by Civil Engineer, Must include all works outside of the property line, 20% contingency is required. Offsite Works are determined by the servicing designation of the property and Table 1 (as per Subdivision and Development Servicing Bylaw No.8618 schedule B and page 11)	
	Erosion and Sediment Control Plan	Sealed by qualified professional,Comprehensive site plan and maps,Best management practices.	
Prior to Building Permit Issuance (if required)	Form B Works and Services Agreement for offsite infrastructure improvements	 Scope of offsite infrastructure improvements to be determined through City consultation and Subdivision Bylaw No. 8618. The security deposit will be equal to the engineer's offsite works cost estimate (120% of estimated construction costs) and must be made in the form of a cash deposit or irrevocable line of credit. The agreement will also require a 2% inspection fee and a \$100 administration fee. 	
	Form C Works and Services Agreement for City scope of work for water service tie-in	 Only required if a water service installation or upgrade is required for development. Deposit is from cost estimate from City personnel. Agreement stipulates that the developer will be invoiced for overruns and returned underruns. The agreement will also require a \$100 administration fee. 	
Requirements at Construction Closeout	Signed and sealed Civil Engineers Construction Completion Certificate	 A sealed letter stating that the offsite works have been installed to the standards and specifications set out in the Subdivision and Development Servicing Bylaw No.8618, 2014. 	
	Record Drawings	Preference is to have record drawings sealed by the engineer of record.	
	Applicable offsite material testing results	May include:Compaction testing,Concrete testing,Asphalt Testing.	
	Updated Lot History Card	Lot History Card instructions and template provided.	
	Exported CAD Base at UTM Zone 10		

Building Permitting Stage	Required Elements	Details
Closeout Process; Offsite	Required closeout documents	
Works Security Release	Inspection work orders are created for concerned City departments	 Inspections occur, and the provided documents are reviewed, Inspections are weather-dependent, and inspections cannot occur during winter conditions, Inspections called for in winter or late fall may have to wait until the following spring. The City releases a Notice of Construction Completion (NCC) 15% of the securities on file plus any additional funds for found deficiencies are kept on file for the 1 year Performance Test Period (PTP) period. The PTP start date commences as of the NCC issuance date. The City reinspects and issues the Notice of Final Acceptance (NFA) if no deficiencies are noted.
	Remaining securities are released	

Table 2. Building permit stages and required elements.

The overall process takes the City approximately 4 weeks, excluding 3rd party timelines and delays.

Development Permit Application

Local governments have the authority to designate development permit areas. These areas identify locations that need special treatment for certain purposes including the protection of development from hazards, establishing objectives for form and character in specified circumstances, or revitalization of a commercial use area.

Depending on site location, the types of development permits required may include:

- Industrial form and character
- Environmental or Hazardous Conditions Development Permits
 - Flood Protection
 - Groundwater Protection
 - Riparian Protection
 - Wildfire

This both allows the City to prevent a project from developing on a site unfit for the use, as well as mitigate any known risks to the project or community.

The issuance of a Development Permit, if required, requires that all Zoning and OCP alignment is confirmed beforehand, and is necessary before issuing a Building Permit (Figure 1). In some instances, the City and proponent may be able to start the building permitting process at or near the same time as the development permitting process, but approvals must occur in order.

The Development Permit process, if required, takes approximately 2-3 months in addition to building permitting timelines, exclusive of 3rd party timelines and delays.

Figure 1. Development and Building Permit application process.



Zoning Bylaw Amendment

Should the proposed site not include "Industry, Special Heavy" as a permitted use in its current zoning, the proponent can apply to have that zoning changed through a Zoning Bylaw Amendment application (Figure 2). The most typical option available to proponents is to rezone all or part of the site to M6: Special Heavy Industrial, depending on size of the site and uses on the parcel.

For example, if an electrolysis project requires a substation on the site, the M6 zone permits the operation of a Major Utility in addition to the manufacturing plant for hydrogen (and/or ammonia).

The rezoning process includes a referral stage, which involves referring to internal divisions, like Engineering, Roads and Transportation, Utilities, and others, and external agencies, like Provincial ministries (e.g. Ministry of Transportation and Infrastructure), utility providers (e.g. BC Hydro, FortisBC, Telus, etc.), and health authorities (e.g. Northern Health). Referrals allow for a high-level screening of the site to ensure safety and servicing requirements for the site can be met. Internal referrals typically take 4 weeks to complete. The timeframes for external referrals range greatly as they are specific to the proposed site and may impact the priorities of various agencies; the referral may be quick and have limited feedback if the change is simple in nature or may involve requests for more information, adding time to the process.

If the site and zoning is aligned with Future Land Use outlined in the OCP Bylaw, the process will not include a public hearing. The Zoning Bylaw Amendment application process, provided the site is aligned with Future Land Use, will typically take 8 months inclusive of Development and Building permit timelines and exclusive of 3rd party timelines.



Figure 2. Zoning Bylaw Amendment application process. **Zoning Bylaw** Council Consideration Council Consideration **Council Consideration** Amendment of First and Second of Third Reading of Final Reading and **Application** Reading Adoption Internal and External Minimum 2 weeks Summary Letter Construction Satisfied Referrals (Internal: 4 City to prepare between Council weeks) (External: Project with requirements Council meetings meetings and Site dependant) 4-6 weeks 5 weeks 4 months Release of **Building Permit** Development Development Occupancy **Permit** Permit Issued Issued Application Professional Reliance Building Permit Construction to Completion 2-3 months 4 weeks 3-4 months

Case Study Clarification: Zoning Bylaw Amendment ("Rezoning")

The proponent is proposing an electrolysis production facility that requires 2 acres of space on a theoretical site that is 3 acres in area, currently zoned M4 (Transition Industrial), and the remaining available space will be used by an office building. Future land use is Medium Industrial.

In this case, the office falls within permitted use on the site; the land on which the facility will sit needs to be rezoned to M6 (Special Heavy Industrial). The hydrogen production falls within Medium Industrial future land use and therefore does not require an OCP Amendment.

OCP Amendment

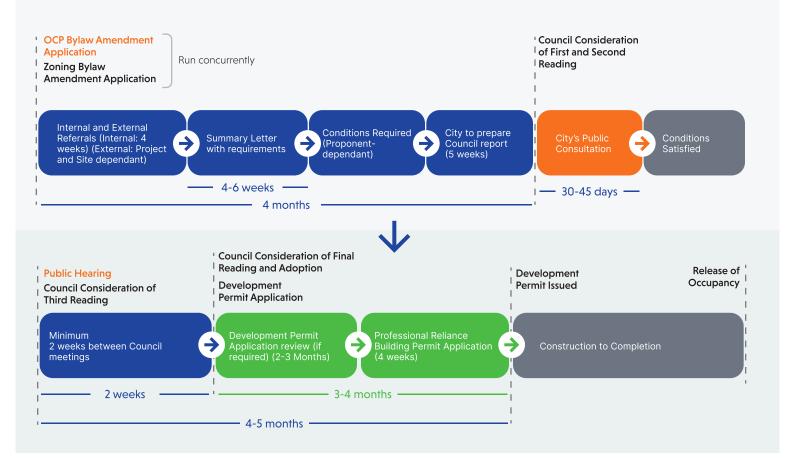
Should the proposed site not have appropriate zoning and is not aligned with Future Land Use, an amendment to the OCP will be required. This will concurrently amend the future land use of the site to an aligned use (Medium Industrial or Heavy Industrial), while rezoning the land to facilitate next steps for the project (Development Permit and/or Building Permit).

This process is quite similar to the rezoning process above. The main difference is the requirement to engage with the public – the OCP was created with extensive public consultation, and therefore requires adequate consultation to alter it. The City will run a public engagement process for 30-45 days after Council approves the first and second readings of the amendment. This will garner feedback and input from the community that informs Council of concerns or support for the project.

Following this, the proponent will satisfy the requirements set out in the Summary Letter, a Public Hearing will be scheduled for the next available Council Meeting. After the public hearing, no new public information can affect Council's decision.

This process adds 2 months to the existing timeframes for a Zoning Bylaw Amendment, development permitting (if required), and building permitting, totalling 10 months, exclusive of 3rd party timelines

Figure 3. OCP and Zoning Bylaw Amendment joint process.



Case Study Clarifications

The proponent is proposing a hydrogen and ammonia production facility that uses natural gas to produce hydrogen. The facility requires 35 acres of space on a theoretical site that is 50 acres in area, currently zoned M2 (General Industrial), and the remaining available space will be used by office space (does not exceed 25% of gross floor area of the development), outdoor storage, and other outbuildings. Future land use is Light Industrial.

In this case, the land on which the facility and outdoor storage will sit needs to be rezoned to M6 (Special Heavy Industrial), and the office space can be included in the M6 rezoning. The hydrogen and ammonia production does not fall within Light Industrial future land use and will therefore require an OCP Amendment.

The proponent will submit their OCP Amendment and Rezoning applications jointly, and will go through the process shown in Figure 3 and given in greater detail in Appendix D.

Costs and Timeframes

Below are the costs for the most typical applications associated with hydrogen production projects, effective January 1, 2024, as a result of a bylaw amendment to the Fees and Charges bylaw, and the table below outlines what triggers each permit, the cost, and the associated timeline.

Permit	Trigger	Cost	Timeline
OCP Amendment Application	Project is not within zoning/permitted use of the site nor aligned with Future Land Use	\$2,100 + \$50/100m2 area + Notification costs	6-8 months (inclusive of Rezoning, Development Permits, Building Permits)
Rezoning (Zoning Bylaw) Application	Project is not within zoning/permitted use of the site	\$2,100 + \$50/100m2 area + Notification costs	4-6 months (inclusive of Development Permit and Building Permit)
Development Permit	Site located in a development permit area	\$150 processing fee + fees indicated in Development Permit Area, Subdivision, or other related fees	
Environmental or Hazardous Condition Development Permit	Site located within: Riparian Protection development permit area Groundwater Protection development permit area Flood Protection development permit area Wildfire development permit area	\$1000 (for any applicable permits; not a per-DPA cost)	2-3 months (Included in Development Permit Application Process) Included within overall Development Permit Application
Industrial Form and Character	Site is not within 50m of Industrial Way, Northwood Pulpmill Road, PG Pulpmill Road, Sintich road, or Willow Cale Road	\$1,400 + \$50/100m2 additional or altered gross floor area (GFA) + Notification costs	
Subdivision	Subdivision of parcel	\$100 processing fee + \$950 (2024) \$1150 (2025) \$1350 (2026) \$1550 (2027) +2% construction value for Subdivision inspection fee	
Building Permit	When constructing a building, accessory building, retaining wall, or relocating or demolishing an existing building	Calculated based on value of construction: \$100 + \$200 if under \$10,000 construction value OR \$100 + \$6.50/\$1,000 if the construction value exceeds \$10,000	4 Weeks
Completion Permit	When building is substantially complete	Greater of \$500 or 10% of original permit (max \$1,000) Subtract 2.5% if using Professional Reliance Building Permit process	Minimal
Access Permit	New development needing access via new or widened driveway.	\$50	Reviewed in conjunction with Building Permit

Permit	Trigger	Cost	Timeline
Waste Discharge Permit	Discharge from site	\$100+ \$1,000/year/permit	
Highway Right-of- Way Occupancy	Works that occupy the road dedication.	\$50 + variable security deposit	Minimal: online payment and staff review of application and plans. Requires Traffic Management Plan
Work on Highway Right-of-Way	Works involving excavation or infrastructure changes within road dedication.	\$250 + variable security deposit	Minimal: online payment and staff review of application and plans. Requires Traffic Management Plan
Extraordinary Vehicle	Driving an oversize and/or overweight vehicle on City roadways	Greater of: \$50 or \$0.10/km to a max of \$200 (year)	Minimal: online payment
Plumbing	Building requires plumbing	\$170 + \$8/plumbing fixture +\$70 (external storm, sanitary sewer and water service – install, alter, or repair)	Reviewed in conjunction with Building Permit
Moving	Moving a building	\$175	Minimal
Demolition	Demolishing a building	\$175 + \$2,000 security	Minimal
Public Notice or Notice of Public Hearing	OCP or Bylaw Amendment process	\$850 (2024) \$900 (2025) \$950 (2026) \$1000 (2027)	Minimal

Table 3. Relevant permits, costs, and timelines.

Case Study Clarification: Fees and Timelines

An example of the fees a proponent may be required to pay is as follows:

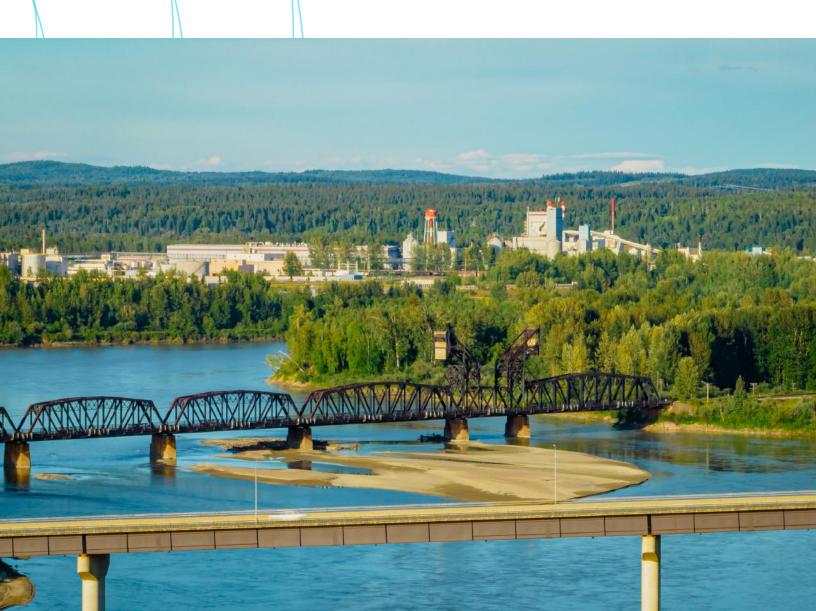
The site is 10 acres in size, currently zoned M2, it requires 5 acres to be rezoned to M6, it is aligned with Future Land Use (Medium Industrial), it is within 50m of Sintich Road, and it falls within the Riparian and Groundwater Protection development permit areas. The construction value of the site will be \$30M. The fees to pay are as follows:

- Rezoning Application: \$12,217.15
- Industrial Development Permit: \$11,517.15
- Groundwater Protection and Riparian Protection Development Permits: \$1,000
- Building Permit: \$195,100Completion Permit: \$1,000
- Public Notice: \$850

The process will take a total of approximately 8 months and cost \$221,684.30.

Considerations

These are some things that require some thought, for either the City of Prince George and other municipalities, for proponents, or both.



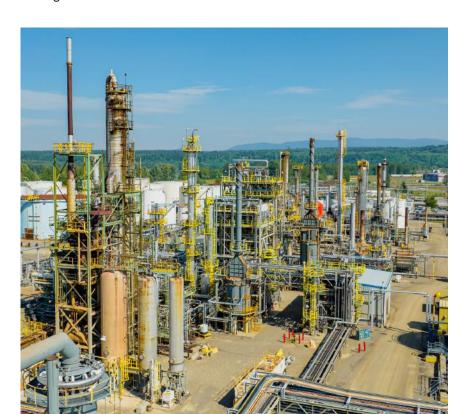
Municipal Considerations

Municipalities serve a diverse range of demographics, organizations, and groups in their communities in a time when things like climate change, housing, and other major impacts on resident health and well-being. This puts a strain on capacity and leads to "putting out fires", impacting a government's ability to consider long-term and multi-faceted impacts to ignoring something that may seem benign, like industrial development. Below are considerations for municipalities that may want to address having a stable tax base and support sustainable development in a proactive manner through changing how they look at industry and adjust policy accordingly.

Re-imagining Zoning Definitions with New Technologies

Typically, the "weight" of industrial zones (e.g. light, medium, heavy industrial) varies by the intensity of activity and level of emissions (e.g. noise, dust, greenhouse gas emissions, etc.). In the case of Prince George, hydrogen is currently categorized as an "offensive trade" and has been lumped in with oil refineries, cement manufacturing, steel manufacturing, and other high-emission operations.

Currently, most or all hydrogen production methods in the proxies falls within medium industrial future land use activity as defined within the Official Community Plan Bylaw policy 8.3.103, as having "greater magnitude and significance than light industry but do not have significant air emissions," however the Zoning bylaw does not have a "Industry, Medium" definition nor zone. With only 6 properties in the City having appropriate zoning for the current interpretation and definitions of the Zoning Bylaw, most or all proposed projects will be required to go through a Zoning Bylaw Amendment process, at minimum. This adds approximately 4 months to the development permitting process, and in Prince George where construction windows are limited, this could delay a project into the following calendar and/or fiscal year. This can cause risk to projects and financiers and limit prospects for Prince George.





Potential options for the City include the following, with associated implications:

- Create a new, "Medium Industrial" zone that reflects the spirit of the definition in the OCP.
 - Rezoning processes would still be required to rezone the land to the Medium Industrial land use, making no short-term temporal benefit to the permitting process. Therefore, a meaningful up-front change through this avenue would be a blanket rezoning of appropriate parcels that reflect the goals of the OCP. This new zone would include Light Industry uses as primary permitted use to avoid any further changes by existing land use or cause non-conforming uses.
 - This would be significant in administrative and engagement activities to achieve an acceptable change.
- Add a definition for Medium Industry that includes hydrogen production to the Zoning Bylaw and add that permitted use to zones above the magnitude and significance than light industry. This could be done in isolation or in addition to option 1.
 - This could mean allowing hydrogen production within land zoned M5 and M5n (Heavy Industrial), creating more opportunities for developments that don't require a rezoning process, reducing timelines for these projects.

Both options would require an amendment to the Zoning Bylaw that will involve engagement with the public and various groups; the former would require a greater involvement from more divisions within the City as well as additional consultation with the public but could create a greater reduction to the number of potential sites that require rezoning, and the latter could be less intensive but also create a smaller reduction

This consideration can be adapted to other municipalities that may also need to better align their OCP goals with their current land use regulations, their interpretation and understanding of new, lower emission industry, and the potential to reduce unnecessary steps from OCP-compliant applications and increase the opportunity for proponents to develop a project in their community.

Keep Permitting Practices Adaptable

The City's option for the professional reliance building permitting process for industrial developments recognizes that qualified professionals have been hired as experts of new technologies and will have in-depth knowledge about the design and construction of a project above and beyond the BC Building Code.

Municipalities can consider making a change to existing systems should other opportunities to reduce duplication of efforts and safely simplify regulatory processes arise. At the same time, should municipalities seek to stiffly regulate development of projects with new technologies at the same time of rapidly changing regulations at Federal and Provincial levels, they may be adding limiting or administratively burdensome regulations that may need to be retracted later. It's likely more effective to remain flexible and adjustable, while aligning with senior levels of government.

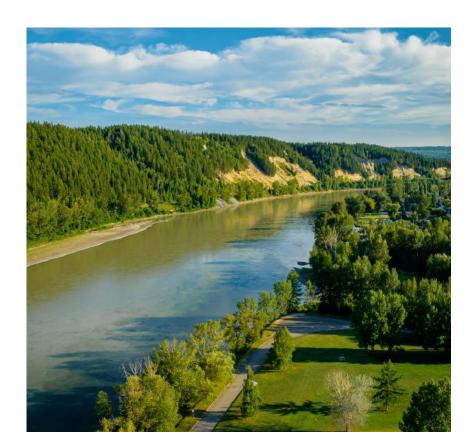
Proponent Considerations

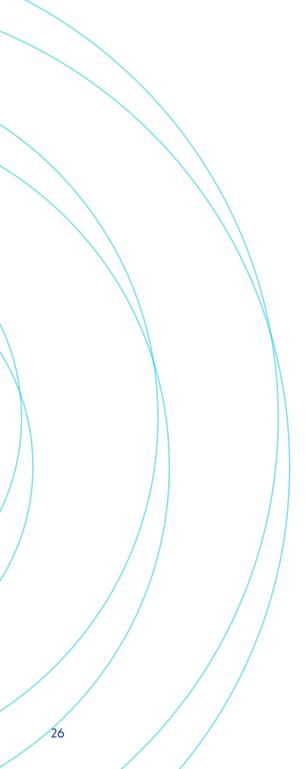
The City of Prince George is very supportive of clean technology development and seeks to support proponents with their goal to invest in the community. As such, although the following aren't requirements on the path towards issuance of permits, they should be considered by proponents to ensure the long-term success of the project.

Early, Informal Indigenous Engagement

The BC Regulatory Mapping Study includes a section referring to various regulatory bodies (Environmental Assessment, BC Energy Regulator) that require proponents to consult with indigenous groups prior to and throughout the permitting process. Indigenous groups are also residents of municipalities; this means their concerns, input, and feedback are also included during the municipal permitting process. The City of Prince George also has a Memorandum of Understanding on Cooperation and Communication with the Lheidli T'enneh, which includes several statements of agreement around communication, information sharing, and decision-making collaboration. Therefore, although not a required step of the municipal permitting process, the City recommends early engagement with the Lheidli T'enneh and any other relevant indigenous groups because the City greatly values their input.

Some practices for proponents to consider is to engage with the local indigenous group(s) before decisions have been made on the site, and project details, let alone before a project description has been submitted to any provincial or municipal regulator. Establishing trust and understanding with the local indigenous group early on can be a way for both parties to retain their relationship through any negotiations or discussions around project concerns that may arise. Proponents should also do this in good faith – just "going through the motions" is not a substitute for a genuine intent to develop the project in partnership with local indigenous communities.





Pre-Application Meeting with City Divisions

This document makes a concerted effort to address what the City will investigate as part of the due diligence performed throughout the OCP amendment, Zoning amendment, development permitting, and building permitting processes. What it cannot do, as stated in the Executive Summary, is fully vet all potential avenues based on all the variable details of each project – this is where scheduling a preapplication meeting with the City can help. For a fee of \$250/hour, the proponent can gather the relevant divisions that review applications at various stages, and these staff members will be able to address many proponent questions and clarifications and raise any of the City's initial concerns in another method to add predictability and understanding of the process. This will also give City staff a preliminary understanding of the proposed project early on, adding to their familiarity of the overall project when they are referred at applications.

Concurrent Applications

The processes listed in this document are the most common pathway to a successful result and therefore predictable timelines for proponents of emerging technologies. There does exist potential to reduce timelines past the posted times in the figures of this document by running applications concurrently. Although there is a requirement for certain applications be approved/permitted in a particular order, the initiation of an application process doesn't need to follow that same order. In addition to the OCP Amendment and Bylaw Amendment application processes that are done together as part of City policy, a combination of the Zoning Bylaw Amendment, Development Permit, and Building Permit can be run at the same time in a "hurry up and wait" fashion to have each process substantially complete in anticipation of required approvals.

This commits funds, human resources, and time towards additional steps that must be followed in order and be decided upon by Council (OCP, Zoning Bylaw) or approving staff (subdivision, DPs, etc.). To reduce risk, the above considerations (a pre-application meeting with staff, engagement with local indigenous groups) and any other ways to provide education to and/or perform a temperature check of the community for the site and proposed project could indicate the probability of approvals, although not guaranteed.

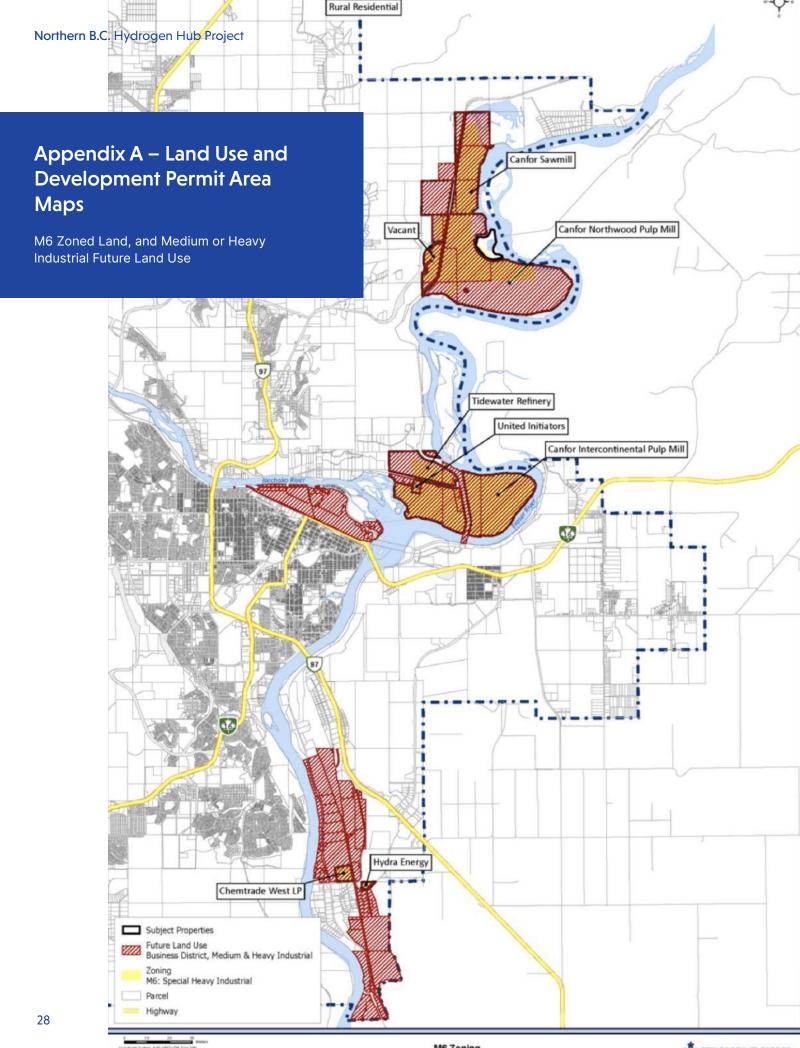
Engaging and Educating Interest Groups

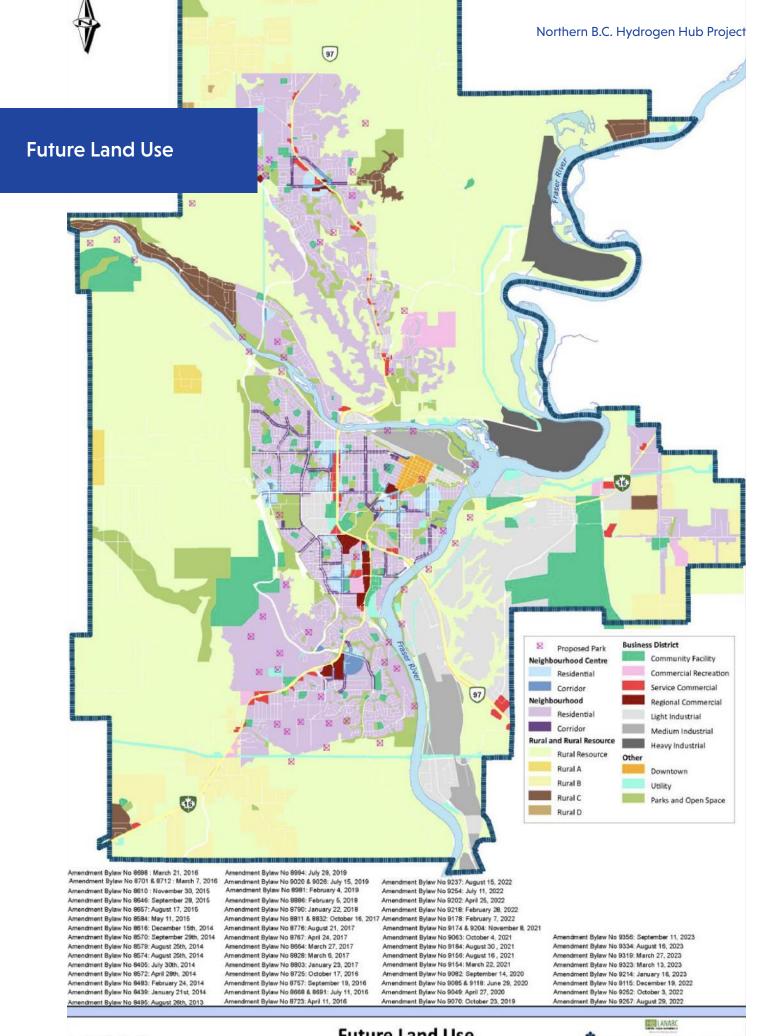
Many communities have non-profit organizations and ad hoc groups that represent the residents concerned with various elements of the community, such as the environment, specific neighbourhoods, and other priorities. In some communities there may be groups that act as antagonists to projects of various types, and some that are quite collaborative in nature.

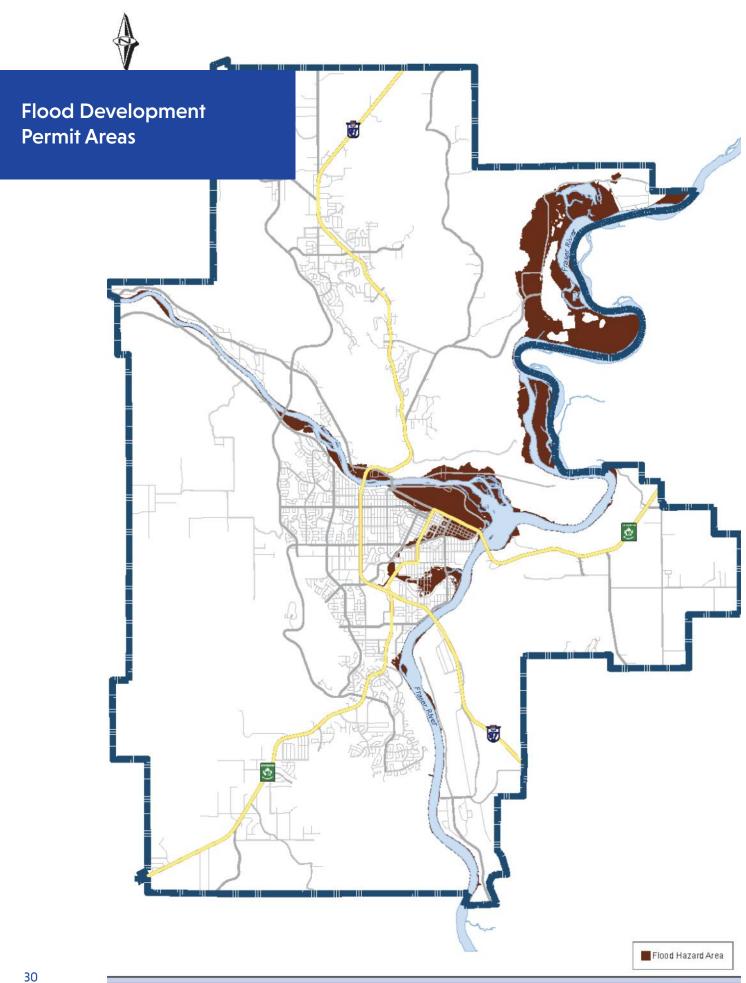
For example, the City of Prince George collaborates with and partly funds the Prince George Air Improvement Roundtable (PGAIR) to monitor and improve air quality in the community. A new energy project like hydrogen could raise questions of air quality and particulate matter, as well as safety and it's recommended that proponents seek to fill gaps in understanding of these groups and the community so that community feedback (e.g. in the case of a public hearing) can be more informed.

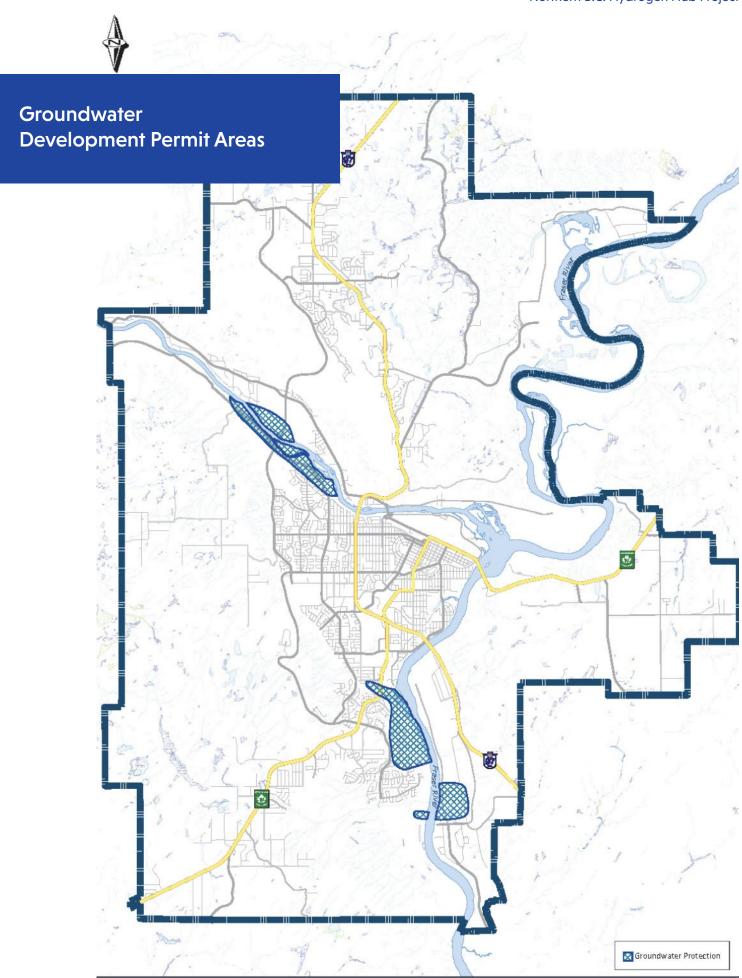
Title Search

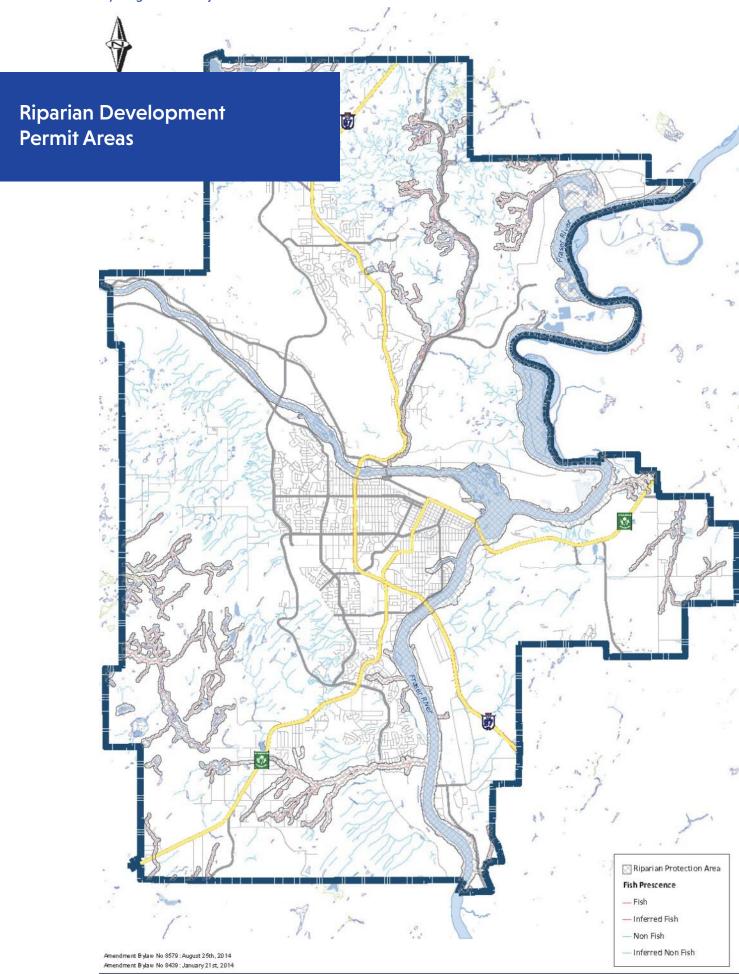
Although not required, we recommend an early-stage title search done by the proponent during the site-selection process. The City will perform a title search as part of the permitting process, but depending on the type of process the proponent will follow for their permits, information discovered as a result of the title search may impact the feasibility of the project on the site.

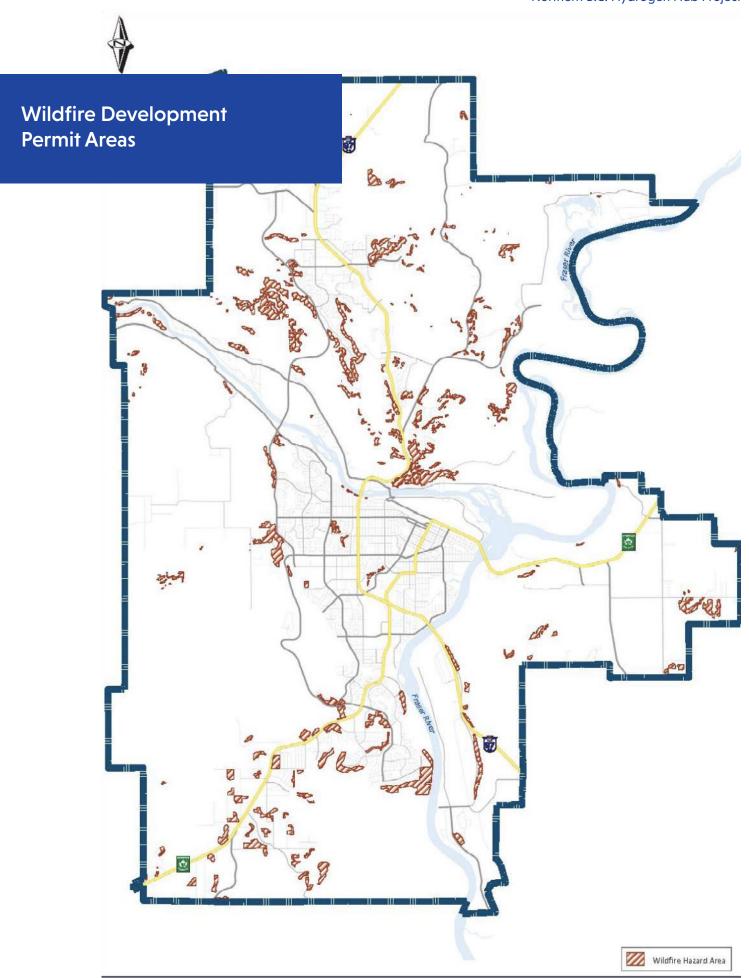














Appendix B

Bylaws, Application Forms, Permits, Fees, and Charges

Below is the list of various permits, fees, charges, and other documents requested by the City for elements of the permitting process mentioned in this document. The names of the documents are listed and are hyperlinked to online documents available on the City's Permits and Applications webpage. As bylaws and documents are subject to change, should proponents discover a broken link and have a challenge finding the current bylaw, they are encouraged to reach out to the City for support.

Bylaws

Official Community Plan

Zoning

Subdivision and Development Servicing

Fees and Charges

District Cost Charge

Sanitary Use

Clean Air

Highways

Permits and Applications

OCP or Zoning Bylaw Amendment

Subdivision Application Package

Development Permit Application Package

Building permit (Industrial)

Professional Reliance Application Submission Information

Highway Right-of-Way Occupancy Permit

Work on Highway Right-of-Way Permit

Noise Permit

Notice of Traffic Disruption

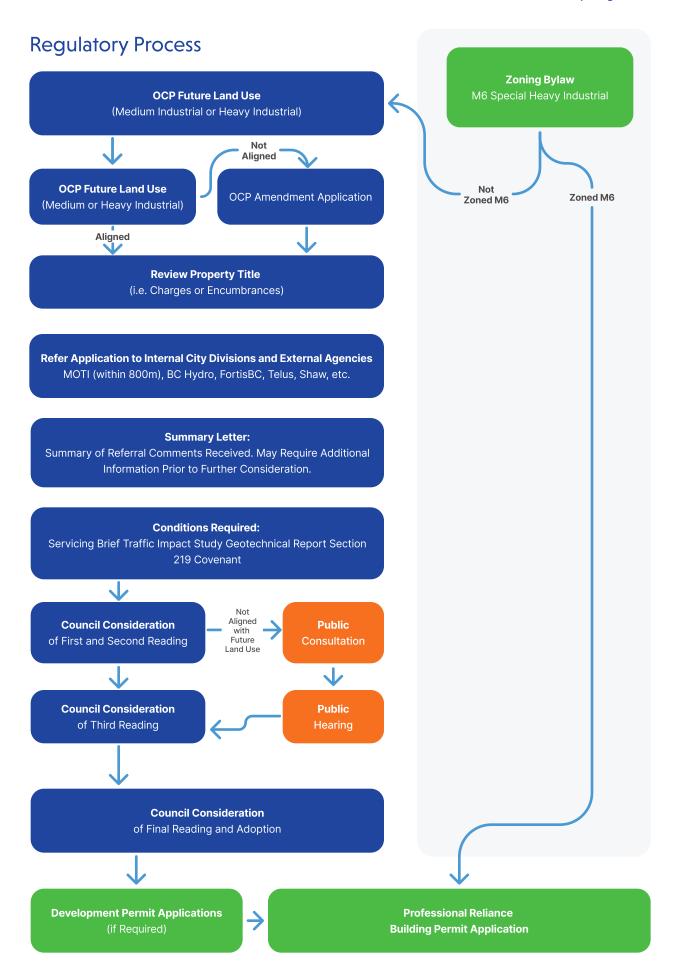
Plumbing Permit

Demolition Permit Application Package

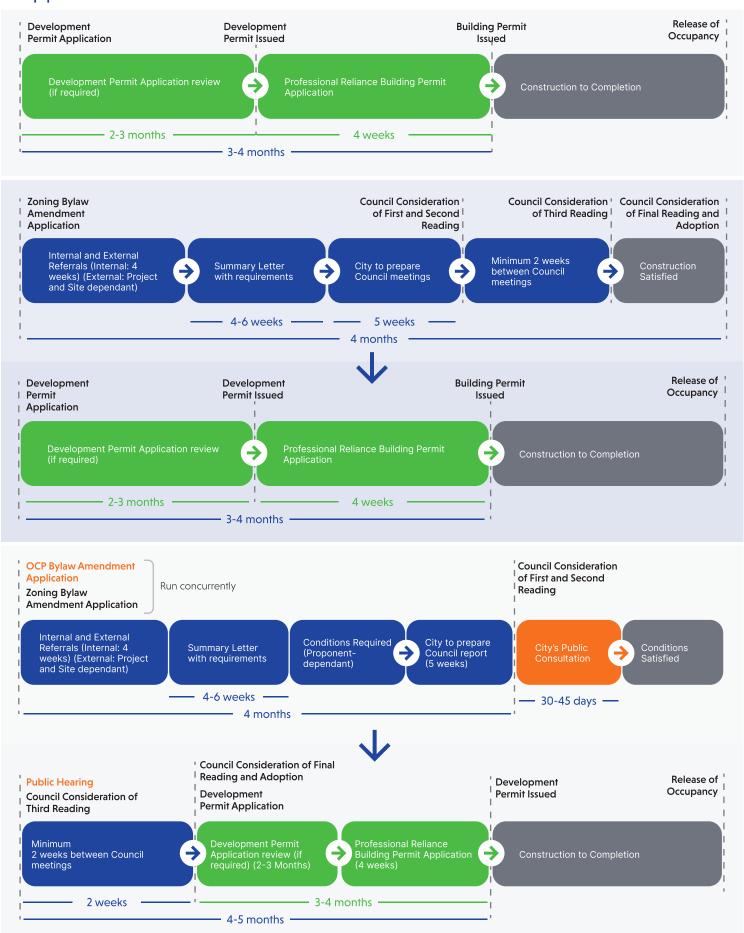
Fuel Tank Installation

Waste Discharge Permit

Access Permit



Appendix D - Timeframes



Appendix E - Professional Reliance Building Permit

solely on the information provided

sional and qualified professionals

identified on the project directory.

by the coordinating registred profes-

Below includes the excerpts from the Professional Reliance Building Permit Application Submission Information as well as additional clarification of required info and when it will be expected.

Final Building Permit Submission List **Application Submission Checklist** Application information **Technical Information and Drawings** Letters of Assurance **Application Form** Signed Indemnity Waiver Schedule Alternate Description Standard CB All sections to be completed in full **Building Code Analysis or Checklist Architectural** Project Directory List Off Site Works Design and Estimates (including breakdown of professional Structural responsibilities) Water Meter Sizing Calculation Mechanical Title Search Fire Flow and hydraulic calculations Electrical **BC Corporate Search** Archeological Review If property owner on title is a company Site Servicing Health Authority Approval and and Civil All Encumbrances/Legal Notations **ROWP Design** Fire Suppression On-site portable water and sanitary system Appointment of Agent Form Geotechnical Site Disclosure Statement **BC Housing Registration Documents** (HPO) Schedule CA **Technical Reports** Letters of Assurance Off-Site Works information Geotechnical Schedule Alternate Description Insurance **As-Constructed Drawings** Traffic Standard Lot Servicing Drawings Servicing Architectural **Material Testing Results Erosion and Sediment Control** Structural **Engineer's Construction Completion Protection Building** Mechanical Certificate Construction Fire Safety Plumbing Fire Protection Reports **Energy Advisor Pre-Construction** Electrical Sprinkler Test Reports Other? Site Servicing Fire Alarm Verification Report and Civil **Drawings** Other Approvals Fire Suppression Site Plan Final Technical Safety BC Approval Geotechnical Architectural Northern Health Approvals Schedule A (If needed) Structural Mechanical Plumbing Electrical The City of Prince George will rely

Civil

Fire Suppression and Sprinkler

Drawings

37

Considerations Plan or Report Trigger **Application Information:** · Application form • Project Directory List Professional \$1000 (for any applicable permits; not a per-• Title Search Reliance Building DPA cost) • BC Corporate Search (if property owner on title is a **Permit Application** • All Encumbrances/Legal Notations Appointment of Agent Form **Letters of Assurance** · Schedule A Structure regulated by BC Building Code Size • Schedule B, Alternate Standard, Insurance; and occupancy of building Plumbing fixtures · Architectural, Structural, Mechanical, Plumbing, Electrical, Site Servicing and Civil, Fire Suppression, Geotechnical **Technical Information and Drawings** • Signed Indemnity Waiver · Building Code Analysis or Checklist • Off Site Works Design and Estimates Water Meter Sizing Calculation • Fire Flow and hydraulic calculations Archaeological • Health Authority Approval and ROWP Design (On-site portable water and sanitary system) · Site Disclosure Statement What type of utilities need to be accessed **Technical Reports** (e.g. water, natural gas, hydro, etc.) Where the water source is How waste will be handled Geotechnical Onsite drainage and supporting geotechnical • Traffic Impact Study assessment is strongly recommended Turning Servicing radius for larger vehicles for transport Staff · Erosion and Sediment Control and training Emergency procedures Fuel/ · Protection of Adjacent Building combustibles storage Site location Building • Construction Fire Safety construction type Distance to adjacent • Energy Advisor Pre-Construction buildings **Drawings** · Site Plan Architectural Structural Mechanical Plumbing Electrical Civil • Fire Suppression and Sprinkler Drawings

Plan or Report Trigger Considerations

Record of sewerage	Building contains plumbing fixtures	Use of private services
Water meter calculation		Use of City water service
Water modelling	Access to City water	Discuss size and lease cost of water meter
		Partial collection from river/well needs mitigation from cross-contamination
Sanitary modelling	Access to City sanitary	May be required if Utilities does not have a working model
Traffic Management Plan	Works in City road dedication	Appropriate for scope of work and in accordance with WorksafeBC and the Provincial Traffic Management Manual and includes up to 4 sub-plans (Traffic Control, Incident Management, Public Information, Implementation) depending on scope and category. Will require a Notice of Traffic Disruption Form 2 days before traffic disruption is implemented.



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