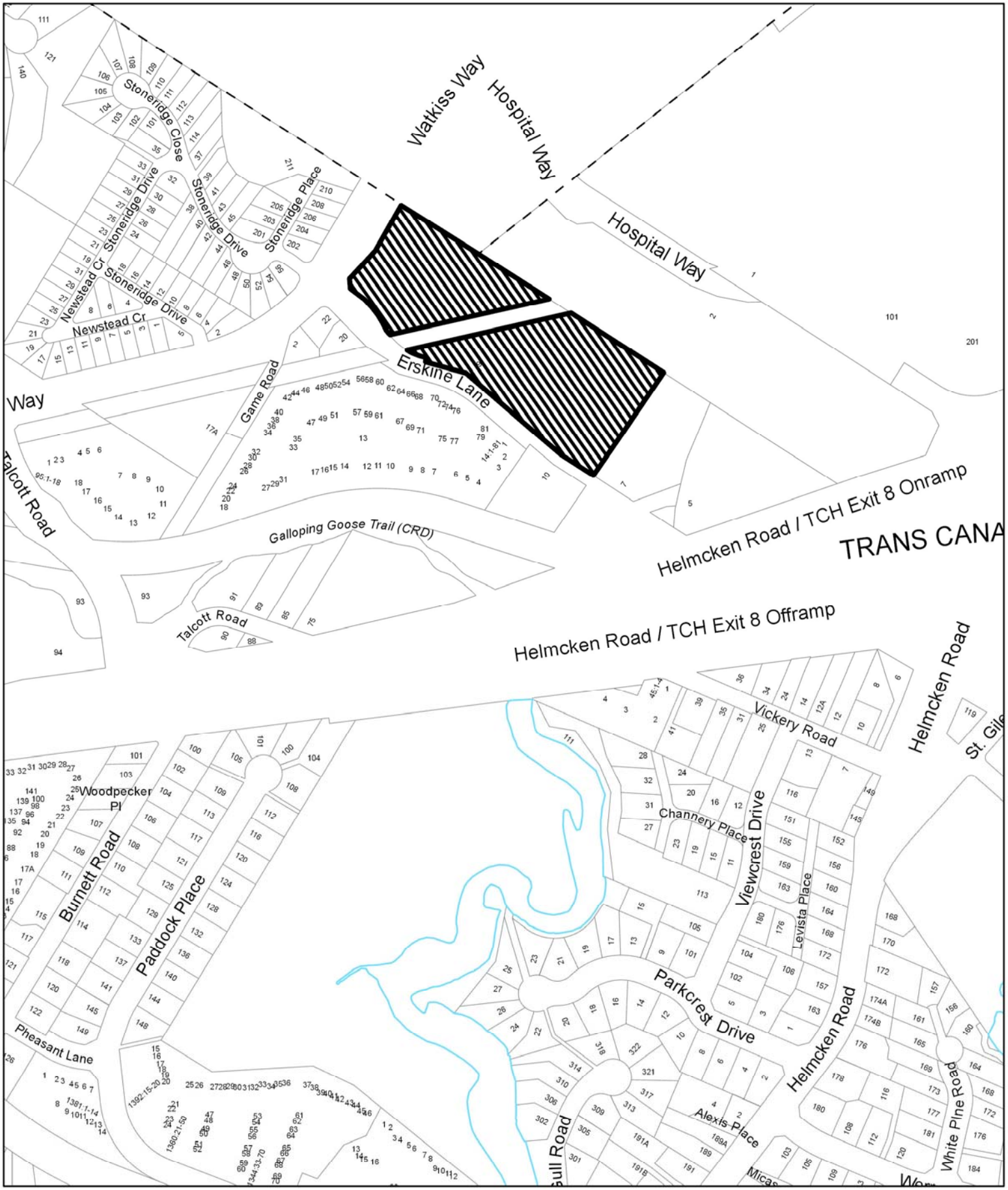
Subject Property Map

9 Erskine Lane



WESTURBAN DEVELOPMENTS LTD.

111-2036 South Island Hwy, Campbell River, BC V9W 2C8
Phone: (250)-914-8485
Fax: (250) 914-8490

August 11, 2020

Planning Department
Town of View Royal
45 View Royal Avenue
Victoria, BC, V9B 1A6

Dear Mayor and Members of Council,

Re: Rezoning Application for 9 Erskine Lane

The enclosed rezoning application is being submitted by WestUrban Developments Ltd. in order to amend the zoning on the property located at 9 Erskine Lane from Rural (A-1) to a Comprehensive Development (CD) zone and to permit the development of multi-unit, purpose-built rental apartment buildings.

WestUrban Development is committed to building what is shown in our rezoning application. To demonstrate this commitment, on August 10, 2020 we offered to submit our Development Permit (DP) application at the same time as our rezoning application so both could be reviewed concurrently. View Royal staff suggested we wait until we are able to present this new rezoning application to Council's Committee of the Whole before submitting our DP application. Once there is general agreement to proceed to first and second reading, then we will be able to submit our DP application package.

This is a new application for 9 Erskine Lane with significant changes to our original proposal that we believe are in alignment with feedback we received from Council and the public. WestUrban Developments is pleased to submit this application as we believe we have addressed all the concerns that were raised with our previous application. Please see below to understand the significant changes in this new application submission.

New Development Proposal:
WestUrban Developments Ltd. started fresh on a new application following Council's July 21 meeting where our previous application did not move forward. We have been hard at work revising and significantly changing our proposal for 9 Erskine Lane to better align with Council's feedback, public sentiment, and the goals, objectives and policies of the Official Community Plan. Significant changes to the development proposal are captured in the following table.

9 ERSKINE LANE PROPOSAL CHANGES		
Topic/Issue	**Original Submission**	**New Submission**
Urban Forest & Tree Retention	The parking lots and surface parking in the original submission covered 65% and 67% of the land for Lot A and Lot B respectively. The adjoining underground parkades not only meant	The new underground parking lots will be 2-storeys and have been placed under the proposed building footprints. With the remaining access ramps and limited surface parking, the lot coverage is now

	the existing trees would need to be removed, but replanting of trees would not be possible due to the man-made structure underneath.	only 44% for Lot A and 34% for Lot B. This additional space will allow for 40% of the urban forest to be untouched. Also, we will replant over 250 trees.
Parking Locations	The original development included two-1 level parking lots of underground parking that connected the two buildings on Lot A and Lot B.	The new development includes 4-2 level parking lots for the proposed buildings; two on Lot A and two on Lot B. The lots are located under the building to maximize the amount of undisturbed land onsite.
Building Height & Lot Coverage	The original submission proposed two 5-storey buildings and two 6-storey buildings. These buildings covered only 30% and 22% of the lot (the building footprint).	The new submission proposes four 5-storey buildings. These buildings still cover only 30% and 22% of the lot (the building footprint). The reduced height will allow the buildings on lot B to transition to the neighboring development on 7 Erskine Lane.
Density	The original submission included a total of 372 units on Lot A and B.	Since we are reducing the height of the buildings on Lot B, the number of units will be reduced by 36 (for a total of 336). This reduction in units will help to reduce traffic impacts and height. Proceeding with this development will help to address a significant need for rental units in View Royal, as detailed in the Housing Needs Assessment Report and Housing Capacity Assessment Report from July 2020.
Building Locations	The two lots had building placement where one building was parallel to the CRD right of way and the other building was parallel to the parcel exterior boundary.	The proposed submission shifts the building on Lot A to have the buildings for an 'L'. This not only makes the site access more efficient, but allows for more trees to be conserved. The building on Lot B, parallel to the 7 Erskine lot, has been shifted closer to the other proposed building on Lot B. This not only increases the site access efficiency, but also provides more setback area and privacy for the 7 Erskine Lane development. This also allows more trees in this area to be maintained.
Landscaping & Site Amenities	We had included extensive landscaping and adventure trails.	We will still provide extensive landscaping, outside of the natural urban forest areas. We have also included a play

		structure that can be used for residents. If View Royal would prefer this structure to be accessible to the public, we can donate the structure and it could be installed on Game Road, which is a nearby town owned lot.
Infrastructure Upgrades	We had planned to build the sidewalk along Erskine Lane, dedicate the land to widen Erskine Lane and construct or pay for the required intersection upgrades along Watkiss Way.	We now propose to build the sidewalks along both Erskine Lane and Watkiss Way, dedicate the land to widen Erskine Lane, build the bus pad/stop, and construct the roundabout/traffic circle at Watkiss Way/Erskine Lane.
Building Amenities	WestUrban originally proposed EV charging stations, a 10 -year rental covenant with the municipality, shared bikes and a diverse rental unit mix – Studios, 1-bedrooms, 2-bedrooms and 3-bedrooms.	We now propose full pre-wiring for EV charging stations, a 20-year rental covenant with the municipality, shared bikes, 4 carshare cars (1 per building), and a diverse rental unit mix – studio, 1-bedrooms, 2-bedrooms and 3-bedrooms.

Compliance with the Official Community Plan:

The subject property is currently designated "Mixed Residential (M-R)", supporting for up to four storeys and a Floor Space Ratio (FSR) of 1.6. Further, the subject property is located within "Neighbourhood Centre" area of the Hospital Neighbourhood that supports higher density housing that benefits from and supports the Victoria General Hospital. The OCP supports the development of higher density housing types and encourages the development of rental accommodation with emphasis on projects that support a variety of key goals, objectives and policies. Below is a table summarizing how WestUrban Developments has addressed various policies in the OCP through our new proposal.

COMPLIANCE WITH THE OFFICIAL COMMUNITY PLAN		
Policy Area	**Policy**	**How Proposal Addresses**
LAND USE AND URBAN DESIGN	*Policy LU1.1 Neighbourhood Centres:* Create a network of neighbourhood-serving, mixed-use centres. Encourage the majority of new and infill residential and commercial growth into these areas to create compact, walkable and cycling-friendly activity hubs.	The proposed development is located within the Hospital Neighbourhood Centre.
	Policy LU1.2 Connected Centres: Ensure each neighbourhood centre is served and connected to the surrounding area by a range of transportation choices including transit, and bike and pedestrian pathways. Similarly, ensure that residential densities at neighbourhood centres increase the viability of transit, bike and pedestrian travel modes.	The 336 residential units proposed for the subject site significantly increases the viability of transit, bike and pedestrian travel modes.

	Policy LU1.4 Diversity of Forms and Uses: Support a variety of residential forms and uses to encourage socio-economic diversity, and provide for the diverse needs of youth, families and an aging population.	The proposal is for purpose-built rental housing in a variety of types including studio, 1-, 2- and 3-bedroom units that appeals to diverse demographics.
	Policy LU4.2 Support Walking, Cycling and Transit: Encourage higher density at neighbourhood centres and along major transit corridors to promote walkability, cycling and transit use. Support higher residential density, commercial intensity and reduced parking requirements in areas well served by transit.	The proposal is a higher density purpose-built rental development adjacent to transit, provides walking and cycling and proposes to reduce parking.
	Policy LU4.4 High-quality Development: Promote high-quality design, planning, construction and maintenance of private development projects.	WestUrban Developments builds high-quality, well designed buildings with attention to detail.
	Policy LU4.13 Sustainable Structures and Buildings: Encourage the design and construction of sustainable and environmentally responsible structures and buildings that reduce demand for services, create less waste, make efficient use of resources and create healthier living environments.	WestUrban constructs all buildings to a minimum of a Step 2 standard under the current Step Code.
	Policy LU11.2 Hospital Neighbourhood Centre: Explore possibilities for developing a transit-oriented Hospital Neighbourhood Centre on the land immediately west of the Victoria General Hospital and abutting the planned regional rapid transit stop. Development in the Hospital Neighbourhood Centre should be carefully reviewed to consider the following: ▪ Uses and development forms that benefit from and support the Victoria General Hospital. ▪ Appropriate land uses and densities for supporting transit use. ▪ Location and design of parking facilities to minimize surface parking and promote a safe and enjoyable pedestrian environment.	The proposal is to create a higher-density rental development within the Hospital Neighbourhood Centre that will benefit the Victoria General Hospital and the greater community. The proposed densities and rental occupant demographics support transit use. The compact development form also respects the current urban forest on the property and maximizing the retention of trees. All parking is proposed to be under the buildings on the site to minimize site disturbance and retain the maximum number of trees possible. The remaining trees will foster a sense of place for local

		residents through its distinct natural feel.
ENVIRONMENT, ENERGY AND CLIMATE CHANGE	*Policy NE1.6 Native Trees and Vegetation*: Encourage the protection of native trees and vegetation in natural and developed areas.	The site has been redesigned to move parking under the proposed buildings to maximize the retention of native trees and vegetation on the subject site.
	Policy NE1.7 Urban Forest: Maintain a healthy urban forest by encouraging the retention of trees and ecological features, promoting tree coverage expansion and enhancing wildlife biodiversity.	The site will retain a significant proportion of the urban forest through redesigning the proposed development. This will enhance wildlife diversity.
	Policy NE4.6 Climate Change Impacts: Consider the impacts of climate change as a key determinant in community planning and land use management decisions. Consider if mitigation has been adequately addressed in subdivision and development proposals, and if further measures are required.	By redesigning the site, the proposed development will help mitigate the impacts of climate changes by maintaining a significant portion of the urban forest onsite.
TRANSPORTATION AND MOBILITY	*Policy TR1.2 Pedestrian Improvements:* Enhance pedestrian access and movement through the development of a system of sidewalks, multi-use trails and pedestrian paths integrated with public transit in all areas.	We are proposing to build the sidewalks along both Erskine Lane and Watkiss Way to enhance pedestrian access along the perimeter of the site. We are also proposing to build an accessible pathway onsite to enhance pedestrian access.
	Policy TR1.3 Cycling Infrastructure: Promote cycling for commuting, personal transport and recreation purposes through improvements to infrastructure and facilities. The inclusion of bicycle parking areas and facilities shall be encouraged at multi-family residential development sites.	Providing shared bikes and secured bike storage for future resident to promote cycling and a healthy lifestyle.
	Policy TR1.4 Transit Services: Promote transit use as a viable alternative to car travel.	Providing all future residents with free bus passes for 1-year to promote the use of transit. A bus stop is located on Watkiss adjacent to the site.
	Policy TR1.8 Transportation Demand Management: Encourage Transportation Demand Management (TDM) measures for new developments. TDM plans and strategies should include education, incentives and disincentives, and travel options to support	The proposed development is integrating a variety of TDM measures including shared bicycles, secure bicycle parking, carpooling, carshare and providing residents with a

	walking, cycling, ridesharing and transit, and reduce single occupancy vehicle trips and private car ownership. Consider decreasing parking requirements for development proposals that incorporate site-specific TDM strategies and that can demonstrate a decrease in the demand for car travel and an increase in the use of other travel options.	free transit pass for a year. The site is also located within walking distance to a major employer and neighborhood commercial center.
	Policy TR3.1 Transportation Master Plan: Support the safe and efficient movement of vehicles, cyclists and pedestrians throughout View Royal in accordance with the priorities and strategies established in the Transportation Master Plan.	We are proposing to construct the roundabout/traffic circle at Watkiss Way and Erskine Lane to enhance vehicle and pedestrian movement. The sidewalks along Watkiss Way and Erskine Lane will also be constructed and the road along Erskine Lane will be widened to ensure safe traffic flow.
	Policy TR3.6 Traffic Calming: Incorporate traffic calming techniques and controls in road design to ensure safe and non-congested roadways, while facilitating ease of movement for pedestrians, vehicles and bicycles.	
	Policy TR3.11 Encourage Environmentally Friendly Transportation: Support more environmentally friendly vehicular alternatives to single occupancy vehicles and private car ownership. This includes encouraging vanpooling, carpooling and ridesharing; car co-ops; and high efficiency or clean energy vehicles.	Purchasing 4 vehicles (1 per building) for car share to promote non-vehicle ownership and reduce vehicle trips.
	Policy TR3.12 Electric Vehicle Infrastructure: Encourage new developments to install infrastructure that will serve plug-in electric or hybrid vehicles.	Installing full pre-wiring for all parking spaces and 5 spaces per building for electric charging stations to promote alternative fuel use.
HOUSING	*Policy HS1.1 Range of Housing Types:* Ensure the policies of this Plan and the regulations of the Zoning Bylaw support a range of housing, including apartments, and other typologies that meet the housing needs of current and future residents.	The rental vacancy rate is currently below 1%. The proposed development offers a variety of unit types in four, purpose-built, rental buildings that will help serve the needs of current and future residents.
	Policy HS1.7 Multi-Unit Housing: Support the development of multi-unit market housing in conjunction with the provision of public amenities and park space in appropriate locations.	WestUrban is proposing to integrate a playground into this multi-unit rental development to meet the needs of future residents. Extensive landscaping with community gardens, open spaces, nature trail and a

		healing garden will be provided.
	Policy HS1.10 Affordability Through Design: Promote "affordability through design" by encouraging housing forms that are less expensive to build and maintain such as apartments.	The proposed development seeks to maximize the construction of high-quality rental buildings in an apartment form.

Zoning Considerations:
The development application proposes a zoning amendment to a Comprehensive Development (CD) zone. A CD zone would be ideal as the site is quite large and the proposed development contains unique elements that do not fit under any existing zone. A CD zone would also provide more definition and certainty around what will ultimately be developed on the subject site. The site has been designed in a way to minimize the building and parking area impacts on the existing urban forest. To accomplish this, the thought is to increase the height of the buildings to 5 storeys (15 m) in order to reduce the building footprint. The parking will also be placed under the buildings' footprints to protect and retain the maximum number of mature trees on the site and around the perimeter. The other thought is to slightly reduce the parking requirements on the site to minimize the impact on the trees and to help encourage alternative modes of transportation such as walking cycling, transit and car share. This slight reduction in parking is supported by OCP policies (Policy LU4.2, Policy TR1.8), by lower average car ownership by typical renter demographics, and by the access to transit (Watkiss Way bus stop), and shopping and employment in proximity to the subject site. The buildings will be setback from the road to preserve the mature vegetation along the road. The vegetation will also provide screening for the proposed buildings from the road. The full summary of the unit types is provided on Sheet PR2 (Schematic Plan).

Development Permit Design Considerations:
Even though we are not submitting a Development Permit application at this time, WestUrban wanted to show how the proposed development meets all of the design guidelines of the Mixed Residential Development Permit Area of the Official Community Plan as shown in Attachment 1. The proposal addresses all of the elements – Design Character; Public & Pedestrian Realm; Siting, Design and Massing; Parking, Access and Circulation; Lighting; Safety; Other – in significant ways to ensure the development is successful. The buildings are proposed to sit on top of the underground parkade to minimize site disturbance and retain the maximum number of trees. This will contribute to the community-wide urban forest and will result with the development situated in a park-like setting. WestUrban also recognizes the prominence of the site and has adjusted the location of the buildings onsite to ensure there is visual interest within the site and to the buildings. Further, WestUrban builds high-quality, well-designed buildings that are sensitive to the local context and integrates a "West Coast" architectural style and feel.

Benefits of the Proposal:
WestUrban Developments has done extensive background research related to this development proposal. The following are significant benefits for the Town of View Royal:

- We propose to install sidewalks along the Erskine Lane and Watkiss Way development frontage

- Widening of Erskine Lane through a land dedication
- Building a roundabout or traffic circle at Watkiss/Erskine
- Providing approximately 90% of the parking under the proposed buildings
- Payment of nearly $1.2 M to be used for community amenities
- Increased property tax through developing underutilized land to a higher density residential development
- Serving as the transition between single family homes and moving to higher density development within the Hospital Neighbourhood Centre
- Helping to accommodate population growth and meeting the housing need in the area
- Providing a variety of high-quality units that will allow for people of different ages and income levels
- Utilizing existing infrastructure more efficiently and therefore minimizing operating cost impacts
- Providing a 20-year purpose built rental development by placing a rental covenant on title
- If desired by the Town, providing up to 10% of affordable rental units as define by BC Housing through the HousingHub
- We have provided children's play equipment onsite, but if desired by the Town, this could be move to another location (along Game Road) to be accessible by the public.

Amenities:
In reviewing the City's Amenity policy, it a would appear that the proposed project will be required to provide 50% lift in value of the land after zoning is approved versus paying a per unit rate. Given that the project is proposing 100% purpose-built rental, WestUrban Developments Ltd. respectfully request that the City require the lesser value of the two methods of calculating the amenity contribution. This will assist in keeping the project viable.

The following building amenities being offered will include:

- EV charging stations;
- Bike share
- 4 car share vehicles (1 per building)
- 20 -year rental covenant with the municipality; and
- Diverse rental unit mix – studio, 1-bedrooms, 2-bedrooms and 3-bedrooms.

Application Package:
The following information has been included and form the development application submission:

1. Application fee;
2. Application with owner authorization;
3. Project Sustainability Checklist;
4. Architectural Plan;
5. Landscape Plan;
6. Topographic plan;
7. Servicing Overview;
8. Environmental Overview;
9. Geotechnical Report;
10. Phase 1 assessment;

11. Traffic Impact Assessment;
12. Tree Inventory Report;
13. Riparian Area Environmental Opinion Letter.

Please do not hesitate to call me or the Development Manager, Cameron Salisbury, at 250-914-8485 should you have any questions or concerns.

Thank you,
WESTURBAN DEVELOPMENTS LTD.

Sarah Alexander, P.Eng., MBA
Director of Development

ATTACHMENT 1 – DEVELOPMENT PERMIT AREA: MIXED RESIDENTIAL		
GUIDELINES – DESIGN CHARACTER	*HOW IT COMPLIES*	*HOW IT DOES NOT COMPLY*
i. Residential buildings should address the public realm and contribute to a positive pedestrian-friendly streetscape.	As the topography of and tree retention on the site will not allow for buildings to be oriented toward the street, the proposed landscaping and sidewalks along Watkiss Way and Erskine Lane will contribute in a positive manner.	
ii.The exterior design and finish of new developments should be compatible with, and complementary to, existing housing in the neighbourhood.	The design and finish of the proposed buildings is high-quality and compatible with the existing neighbourhood through the use of complementary colours and materials.	
iii. Buildings should express a unified architectural concept that expresses both variation and consistency.	The building design and concept mixes variation and consistency to create visual interest.	
iv. Materials should be durable and of high quality, reflecting the natural surroundings of View Royal and a "West Coast" design character, and bring in elements of wood, stone and a natural colour palette. Natural materials are preferred.	The development proposes to use materials and a natural colour palette consistent with a "West Coast" design character.	
v. Building design should promote "eyes on the street" for natural surveillance of the public realm through the provision of entrances, windows, patios, balconies, porches and decks facing public streets and spaces.	Building A faces Watkiss Way to provide natural surveillance through windows, balconies, etc.	
vi. Direct access to private outdoor space, some of it covered, should be provided for all units.	Private balconies/patios will be provided for all units.	
vii. Ground floor units in townhouses and multi-unit buildings should have individual front doors that are directly accessible and visible from the street. Ground floor units may be raised up to 0.6 metres (two feet) above grade to provide privacy for dwelling units.	The buildings are not located close to the streets and the topography does not allow for this. Building entrances will be shared for safety and convenience purposes.	
viii. All facades of residential buildings should be well designed, with consistent use of materials, windows, articulation and roof treatments. On corners and at intersections, both public frontages should present a consistent and visually appealing design.	All facades are well designed with consistent use of materials, windows, articulation of roof treatments.	
ix. Residential entrances should be visible from the street and emphasized with architectural detailing, glazing, colour or other defining features. Weather protection should be	Entrances are enhanced with an architecturally significant sloped canopy to identify their location.	

incorporated into the entrances of multi-unit buildings.		
x. Garage doors should not dominate the front elevation	There are no garage doors on the elevations.	
GUIDELINES – PUBLIC AND PEDESTRIAN REALM	*HOW IT COMPLIES*	*HOW IT DOES NOT COMPLY*
i. Streetscape design should incorporate treatments that enhance the pedestrian experience and create a sense of local identity.	The proposed development will construct new, pedestrian friendly sidewalks along Watkiss Way and Erskine Lane.	
ii. Streetscape should incorporate a continuous planting of irrigated deciduous street trees on both sides of the street where possible.	Existing trees will be retained along the perimeter of the subject property.	
iii. Where possible, corner and bus bulges should be incorporated into the streetscape design to enhance pedestrian crossings and provide space for landscaping and seating;	We are proposing to pay for the upgrades to the intersection of Watkiss Way and Erskine Lane. Design details pending.	
iv. Site and building design should incorporate the basic principles of Crime Prevention Through Environmental Design (CPTED).	The design and layout of the proposed development incorporates elements of natural surveillance, access control, territorial reinforcement and maintenance.	
GUIDELINES – SITING, HEIGHT AND MASSING	*HOW IT COMPLIES*	*HOW IT DOES NOT COMPLY*
i. Site design should respond to the topography and specific conditions of the site, and retain/work with existing grades and natural features such as rock outcroppings, mature trees and sensitive ecosystems such as Garry Oak meadow, riparian areas and shorelines.	The proposal works with the existing site constraints including the topography and natural vegetation. Building footprints have been minimized to retain mature trees onsite.	
ii. Residential development should be oriented towards the street, except where natural features (slopes, rocks, vegetation) prevent this configuration.	Natural features (topography, rock) prevent with the exception of the building along Watkiss Way.	
iii. Massing and siting of infill housing shall respect established neighbourhood patterns, including setbacks.	N/A	
iv. Create visual interest by providing variations in height, rooflines, massing.	Rooflines and massing are varied to create visual interest.	
v. Attempt to maintain important public views to natural areas and scenic vistas through careful siting, building design and landscaping.	Buildings are sited to retain significant natural vegetation onsite.	
vi. Building siting and placement of balconies, decks and windows should limit overlook and shadowing impacts on neighbours.	Building placement and retention of mature trees limits overlook and shadowing.	
vii. Buildings over two-storeys should utilize setbacks and/or terracing above the second level to reduce massing impacts on the street and surrounding neighbours, preserve view corridors and provide visual interest.	The buildings are setback to minimize massing impacts on the street and neighbours.	

GUIDELINES – LANDSCAPING	*HOW IT COMPLIES*	*HOW IT DOES NOT COMPLY*
i. Retain mature trees and, wherever possible, established vegetation, especially around natural features (e.g. creeks, ponds, slopes and rocky outcroppings) for visual interest and to limit disruption of natural systems.	Site was designed to maximize the retention of trees.	
ii. Utilize native species wherever possible in site landscaping. Invasive or nuisance species (e.g. English Ivy, Broom) should not be used. Plants should be chosen for seasonal interest and compatibility with the local climate. Large expanses of lawn are not encouraged.	The landscaping will include significant retention of native trees and use of native species in new landscaping.	
iii. Space for private or communal gardening and the use of native plants, edible plants, berry bushes and fruit trees in landscaping is encouraged.	Retention of existing trees minimizes other areas of new landscaping.	
iv. Use a combination of soft and hard landscape elements to create functional and visually appealing private and semi-private outdoor space.	Soft and hard landscaping elements are used within the site design.	
v. Define the transition from public to private space with hard and/or soft landscape elements such as low hedging, low solid or a combination of permeable/transparent fencing (such as wrought iron above a solid base).	Hedging and walkways are used to define transitions between public and private space.	
vi. Landscaping of townhouse and apartment developments should contribute to a pedestrian-friendly streetscape, by providing street trees and other plantings to soften building edges, provide visual interest and establish a sense of pedestrian enclosure.	Large, mature trees are being retained along the edges of the site to contribute to a pedestrian-friendly streetscape.	
vii. Low-rise apartment should consider the inclusion of common gathering areas with age-appropriate features, and sited in such a way as to maximize exposure to sunlight.	Building locations considered common outdoor gathering spaces in sunlit areas.	
viii. Landscape design strategies should be incorporated that minimize stormwater runoff, and promotes the natural infiltration and cleaning of runoff.	Retention of the majority of the urban forest onsite and minimizing the building footprints has increased natural infiltration.	
ix. Landscaping should incorporate an automatic irrigation system.	An automatic irrigation system will be installed onsite.	
x. All landscaping work and plant material shall conform to the most recent edition of the British Columbia Landscape Standard published by the British Columbia Society of Landscape Architects.	Complies.	
GUIDELINES – PARKING, ACCESS AND CIRCULATION	*HOW IT COMPLIES*	*HOW IT DOES NOT COMPLY*
i. Residential parking for townhouse and low-rise apartments should be located underground	90% of the parking will be located under the buildings.	

wherever possible. Residential surface parking shall be limited to detached and semi-detached dwellings.		
ii. Residential surface parking should incorporate permeable features such as pavers, pervious asphalt or concrete or reinforced paving/grass to increase permeability. Gravel driveways or parking areas are not permitted.	90% of the parking will be located under the buildings minimizing impervious surfaces onsite.	
iii. The visual appeal surface parking areas should be enhanced with landscaping, screening and decorative materials.	Surface parking areas will incorporate landscape elements.	
iv. Shared driveways are encouraged, where appropriate, to reduce impervious surfaces, preserve existing vegetation, provide larger areas for landscaping and limit the number of driveways crossing public sidewalks.	All driveways are shared.	
v. Access to small lot residential lots should be through the lane, where a lane exists.	N/A	
vi. Driveways, pathways and entrances on low-rise apartment sites should be accessible to all residents and visitors.	Complies.	
vii. Sidewalks should be provided on public streets.	Sidewalks are being installed on Watkiss Way and Erskine Lane frontage.	
viii. In apartment developments, sheltered bicycle parking for visitors should be provided at an accessible location near the primary entrance and located so as to ensure passive surveillance.	Sheltered bicycle parking is being provided.	
ix. Locate and screen off-site parking areas, garbage and recycling storage, vents, meters and transformers so as to minimize their visual impact on the public realm and neighbouring properties.	Refuse areas are screened.	
GUIDELINES – LIGHTING	*HOW IT COMPLIES*	*HOW IT DOES NOT COMPLY*
i. Building and site lighting should be sufficient to ensure pedestrian and motorist safety.	Complies.	
ii. Outdoor lighting should be regulated to control the quantity, quality and direction of night lighting. Lighting fixtures that are “dark skies” friendly to limit light pollution at night are encouraged.	Complies.	
iii. Where pole-mounted lighting is necessary, light standard luminaries shall be no more than 40,000 lumens and mounted on poles no more than 5 metres high.	Complies.	
iv. Light fixtures should be consistent with the general design character of the building.	Complies.	
GUIDELINES – SAFETY	*HOW IT COMPLIES*	*HOW IT DOES NOT COMPLY*

i. All developments should be designed for safety and security by incorporating Crime Prevention Through Environmental Design principles and guidelines with particular attention to passive surveillance, good site lines, appropriate lighting, clear definition of private, semi-private and public space, and appropriate access control measures.	The design and layout of the proposed development incorporates elements of natural surveillance, access control, territorial reinforcement and maintenance.	
GUIDELINES – OTHER	*HOW IT COMPLIES*	*HOW IT DOES NOT COMPLY*
i. Implementation of "adaptable design standards" in residential development is encouraged to accommodate individuals with mobility challenges, and to facilitate "aging in place".	Development will meet all Building Code standards for individuals with mobility challenges.	
ii. Incorporation of Green Building strategies such as Leadership in Energy and Environmental Design (LEED®) or Built Green standards in the design and construction all buildings is highly encouraged.	Buildings meet a minimum Step Two of BCs Step Code.	
iii. Incorporation of resource and energy efficiency into the siting, design, construction and maintenance of buildings and structures is highly encouraged.	Buildings meet a minimum Step Two of BCs Step Code.	
iv. Where used, all signage should be architecturally compatible with the style, composition, materials, colours and details of the buildings, with no internal illumination, and method of installation hidden.	Complies.	

Pcl A

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Rem. B
Plan 26648

Rem. Parcel A
Block 1
Plan VIP1066

C
Plan 26648

2
Plan VIP76363

3
Plan VIP76363

1
n VIP76363

C
Plan 26648

Rem. B
Plan 26648

Strata Plan VIS3076

Rem B
Plan 26648

Rem A
Plan VIP57062

Part 3
Plan 4706

Erskine

Lane

ERSKINE MULTIFAMILY

9 ERSKINE LANE, VIEW ROYAL, BC

PREPARED BY

THUJA ARCHITECTURE STUDIO LTD.

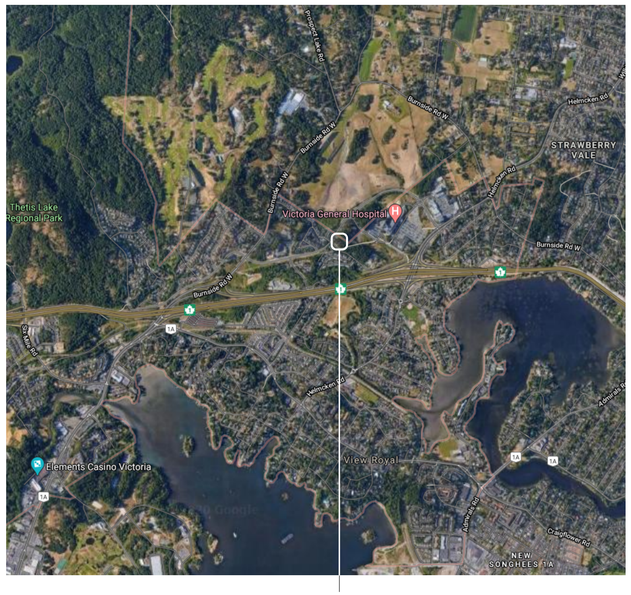
AUGUST 2020

SET NO.

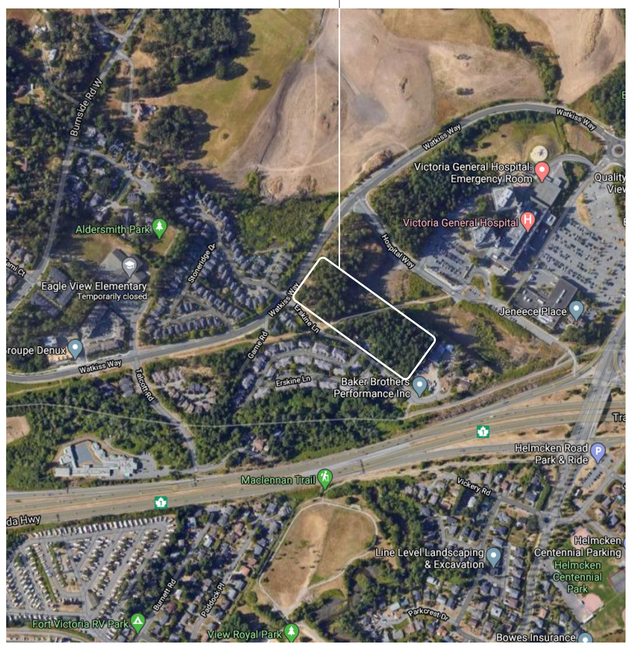
ISSUED FOR REZONING

THUJA

architecture + design



SITE LOCATION



LOCATION PLAN

N.T.S.

CONSULTANT LIST

DEVELOPER/OWNER
WESTURBAN DEVELOPMENTS LTD.
Sean Roy, CEO
1-1170 Shoppers Row, Campbell River BC V9W 2C8
250.914.8485
sroy@westurban.ca

ARCHITECT
THUJA ARCHITECTURE STUDIO LTD.
Tanis Schulte, Architect AIBC, LEEP AP
PO BOX 1857 Squamish BC V8B 0B3
250.650.7901
info@thujaarchitecture.ca

GEOTECHNICAL ENGINEER
RYZUK GEOTECHNICAL
Richard Moser, P.Eng.
28 Crease Ave, Victoria BC, V8Z 1S3
250.475.3131

LANDSCAPE ARCHITECT
LAZZARIN SVISDAHL LANDSCAPE ARCHITECTS
Laurelin Svisdahl
202- 1300 St Ave, Prince George BC, V2L 2Y3
250.563.6158
laurelin.la@outlook.com

SURVEYOR:

CIVIL ENGINEER
Island Engineering Ltd.
Mike Achtem, P.Eng
623 Discovery Street Victoria, BC V8T 5G4

DRAWING INDEX

PR1 LOCATION PLAN & CONTEXT IMAGES
PR2 PROJECT DATA & SITE PLAN
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PR5 UNIT PLANS
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CONTEXT IMAGES

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Tanis Schulte Architect AIBC LEED AP
41289 Horizon Dr. Squamish BC V8B 0Y7
T: 250.650.7901 E:info@thujaarchitecture.ca

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PROJECT
ERSKINE MULTIFAMILY

DRAWING
LOCATION & CONTEXT

SCALE	AS NOTED	PROJECT NO.	20--
DATE		DRAWN BY	TS/SW

SHEET
PR1

PROJECT DATA - LOT A

LEGAL ADDRESS:

CIVIC ADDRESS:
9 ERSKIN, VIEW ROYAL BC

ZONING:
RM? - MULTI-FAMILY RESIDENTIAL

LOT SIZE
+/- 8575 SQ.M.

BUILDING AREA:

PROPOSED FOOTPRINT	1282 SQ.M.(*2)
TOTAL	**2564 SQ.M**

FLOOR AREAS:

PARKADE	2956 SQ.M.
MAIN	1236 SQ.M.
SECOND	1236 SQ.M.
THIRD	1236 SQ.M.
FOURTH	1236 SQ.M.
FIFTH	1236 SQ.M.
TOTAL (NET)	**6180 SQ.M. EXCLUDING PARKADE**
BOTH BUILDINGS	**12,360**
COMMON (PARKADE)	116 SQ.M. (*2)
COMMON (MAIN)	45 SQ.M.
COMMON (SECOND)	45 SQ.M.
COMMON (THIRD)	45 SQ.M.
COMMON (FOURTH)	45 SQ.M.
COMMON (FIFTH)	45 SQ.M.
TOTAL (NET)	**225 SQ.M. EXCLUDING PARKADE**
TOTAL (GROSS)	**6405 SQ.M. EXCLUDING PARKADE**

FLOOR AREA RATIO:
ALLOWABLE: --
PROPOSED: 1.44

DENSITY:
PROPOSED: 158 UNITS

LOT COVERAGE:
--% ALLOWABLE
30% PROPOSED

SITE DISTURBANCE:
44%

USABLE OPEN SPACE:
REQUIRED: --
PROPOSED:

BUILDING HEIGHT:
5 STOREYS

UNIT COUNT:	MAIN	2ND-5TH	BUILDING
STUDIO BEDROOM	0	1 (*4)	4
ONE BEDROOM	7	7 (*4)	35
TWO BEDROOM	6	6 (*4)	30
THREE BEDROOM	2	2 (*4)	10
TOTAL	15	16 (*4)	79

SETBACKS

FRONT	7.5M ALLOWABLE / PROPOSED	7.5M
REAR	7.0M ALLOWABLE / PROPOSED	7.0M
SIDE	4.0M ALLOWABLE / PROPOSED	4.0M
SIDE	4.0M ALLOWABLE / PROPOSED	4.0M

PARKING:
RATIO PROVIDED 1.0 PER UNIT = 79 * 2 = 158

PROVIDED	STANDARD:	124
	HANDICAP STALLS	4
	SMALL CAR (40% max)	26
	EV STALLS	10
	TOTAL	**164**

PROJECT DATA - LOT B

LEGAL ADDRESS:

CIVIC ADDRESS:
9 ERSKIN, VIEW ROYAL BC

ZONING:
RM? - MULTI-FAMILY RESIDENTIAL

LOT SIZE
+/- 12,856 SQ.M.

BUILDING AREA:

PROPOSED FOOTPRINT	1410 SQ.M.(*2)
TOTAL	**2820 SQ.M**

FLOOR AREAS:

PARKADE	3417 SQ.M. (*2)
MAIN	1365 SQ.M.
SECOND	1365 SQ.M.
THIRD	1365 SQ.M.
FOURTH	1365 SQ.M.
FIFTH	1365 SQ.M.
TOTAL (NET)	**6825 SQ.M. EXCLUDING PARKADE**
BOTH BUILDINGS	**13,650**
COMMON (PARKADE)	142 SQ.M. (*2)
COMMON (MAIN)	45 SQ.M.
COMMON (SECOND)	45 SQ.M.
COMMON (THIRD)	45 SQ.M.
COMMON (FOURTH)	45 SQ.M.
COMMON (FIFTH)	45 SQ.M.
TOTAL (NET)	**225 SQ.M. EXCLUDING PARKADE**
TOTAL (GROSS)	**6600 SQ.M. EXCLUDING PARKADE**

FLOOR AREA RATIO:
ALLOWABLE: --
PROPOSED: 1.06

DENSITY:
PROPOSED: 178 UNIT

LOT COVERAGE:
--% ALLOWABLE
22% PROPOSED

SITE DISTURBANCE:
34%

USABLE OPEN SPACE:
REQUIRED: --
PROPOSED:

BUILDING HEIGHT:
5 STOREYS

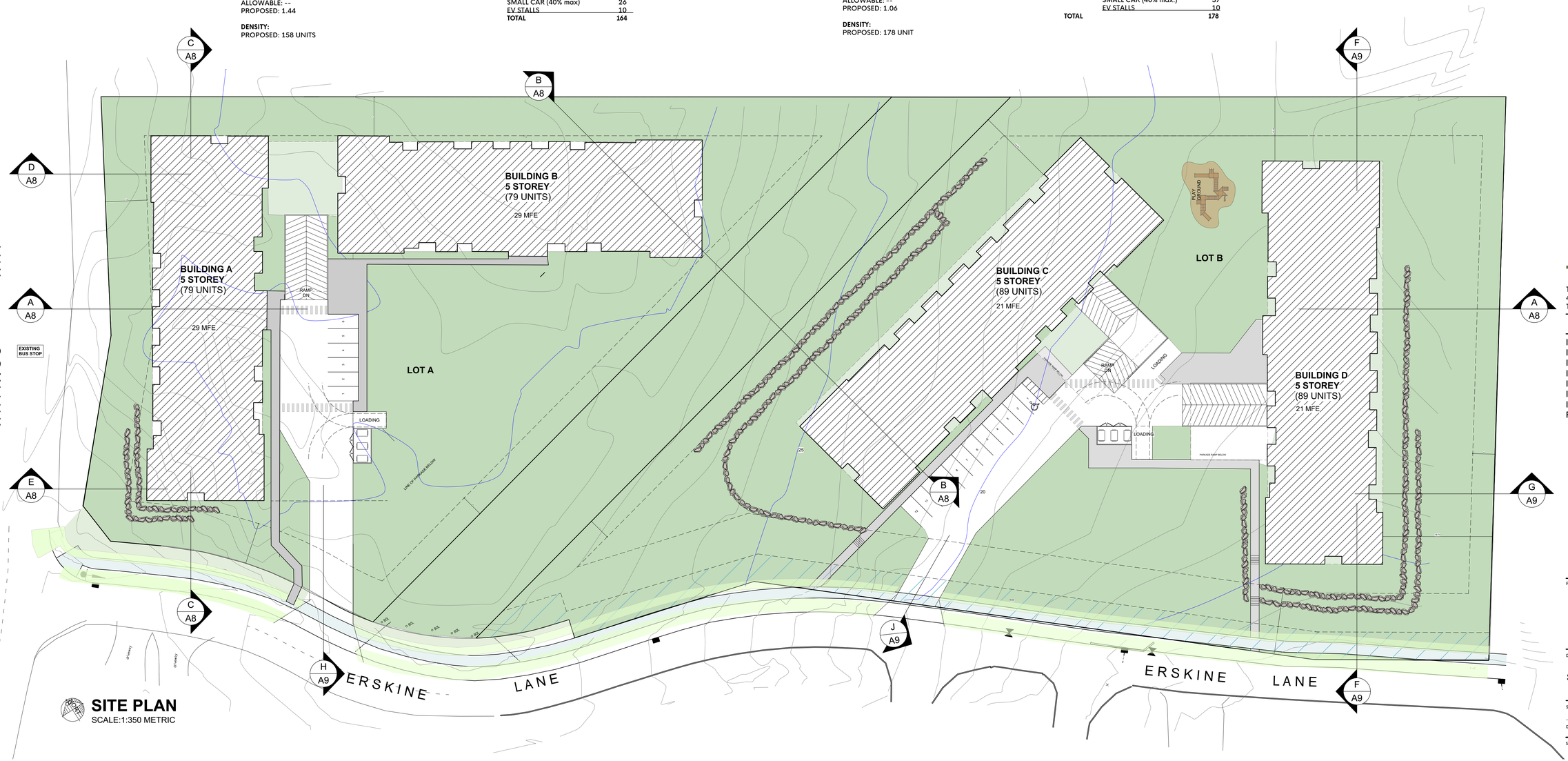
UNIT COUNT:	MAIN	2ND-5TH	BUILDING
STUDIO BEDROOM	0	1 (*4)	4
ONE BEDROOM	9	9 (*4)	45
TWO BEDROOM	6	6 (*4)	30
THREE BEDROOM	2	2 (*4)	10
TOTAL	**17**	**18** (*4)	89

SETBACKS

FRONT	7.5M ALLOWABLE / PROPOSED	7.5M
REAR	7.0M ALLOWABLE / PROPOSED	7.25M
SIDE	4.0M ALLOWABLE / PROPOSED	14.05M
SIDE	4.0M ALLOWABLE / PROPOSED	19.74M

PARKING:
RATIO PROVIDED 1.0 PER UNIT = 89 * 2 = 178

PROVIDED	STANDARD:	127
	HANDICAP STALLS	4
	SMALL CAR (40% max.)	37
	EV STALLS	10
TOTAL		**178**



SITE PLAN
SCALE:1:350 METRIC

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PROJECT
ERSKINE MULTIFAMILY

DRAWING
SITE PLAN

SCALE	AS NOTED	PROJECT NO.	20--
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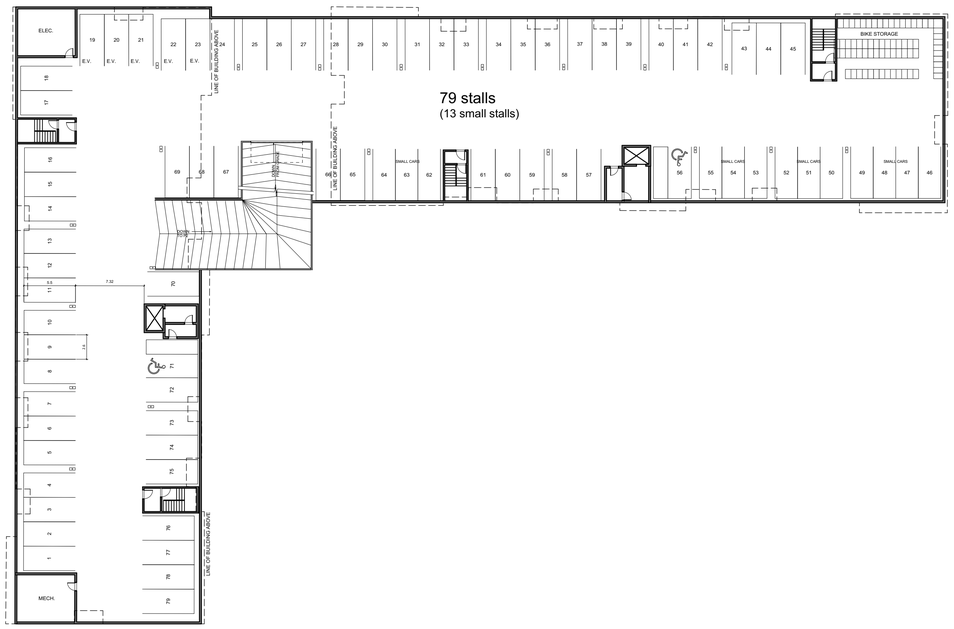
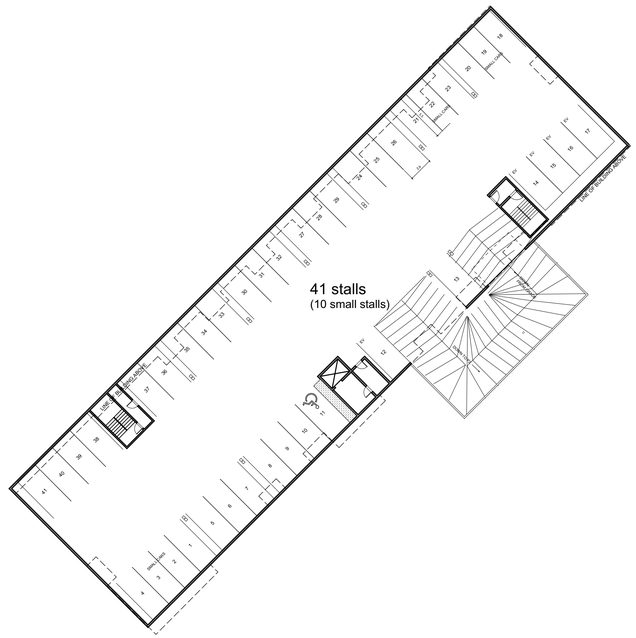
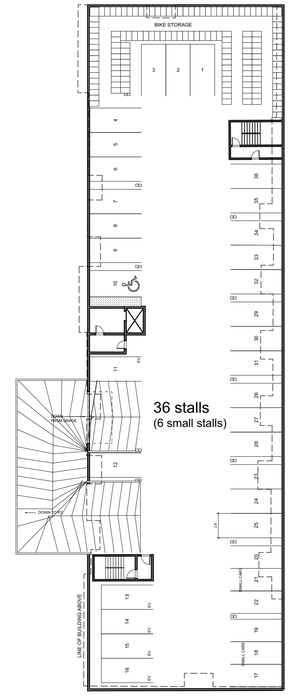
PR2

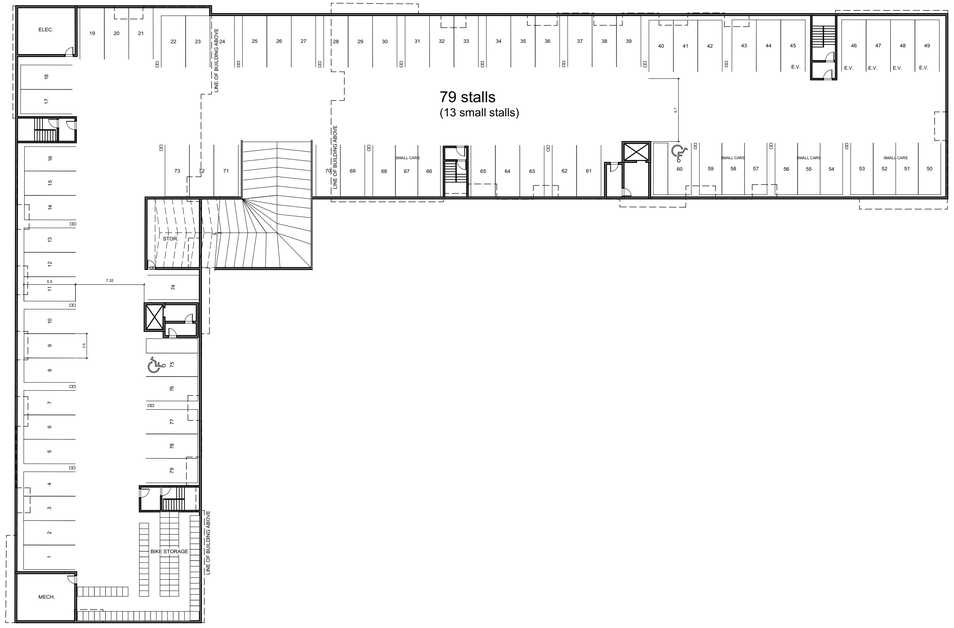


PARKADE LOT A - P1 LEVEL

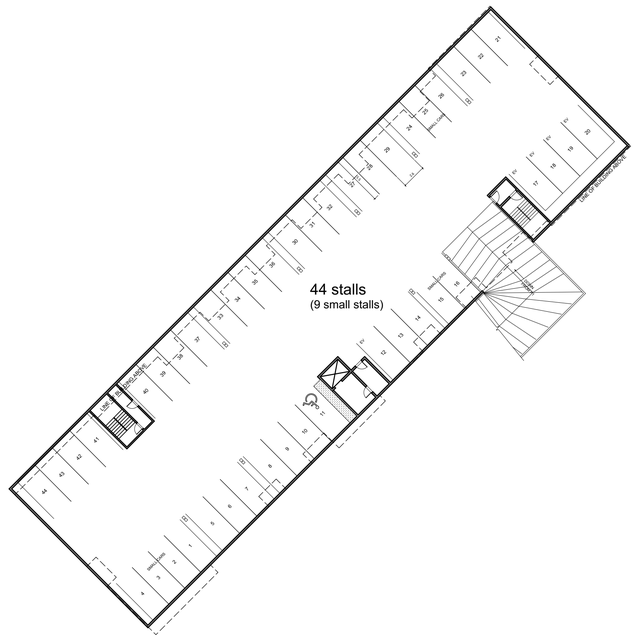


PARKADES LOT B - P1 LEVEL

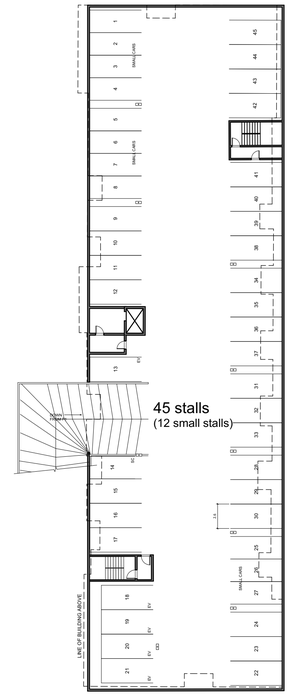




PARKADE LOT A - P2 LEVEL



PARKADES LOT B - P2 LEVEL



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architecture + design

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41289 Horizon Dr. Squamish BC V8B 0Y7
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PROJECT

ERSKINE MULTIFAMILY

DRAWING

PROPOSED PARKADE PLANS

SCALE AS NOTED	PROJECT NO. 20--
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PR3

LOT A BUILDINGS - 5 STOREY

2ND-5TH FLOOR PLAN
16 UNITS

MAIN FLOOR PLAN
15 UNITS

LOT B BUILDINGS - 5 STOREY

2ND-5TH FLOOR PLAN
18 UNITS

MAIN FLOOR PLAN
17 UNITS

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DRAWING

PROPOSED FLOOR PLANS

SCALE AS NOTED	PROJECT NO. 20--
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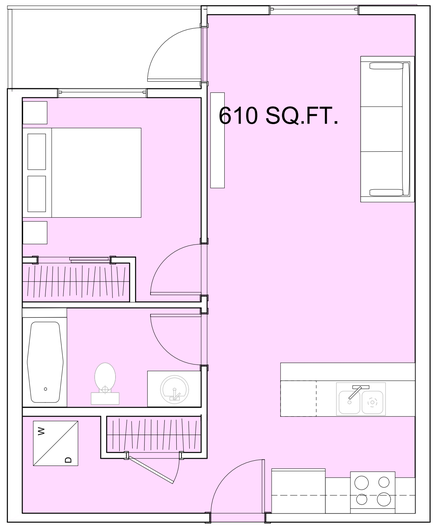
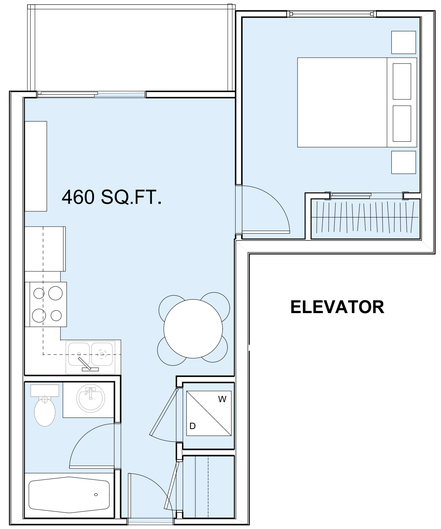
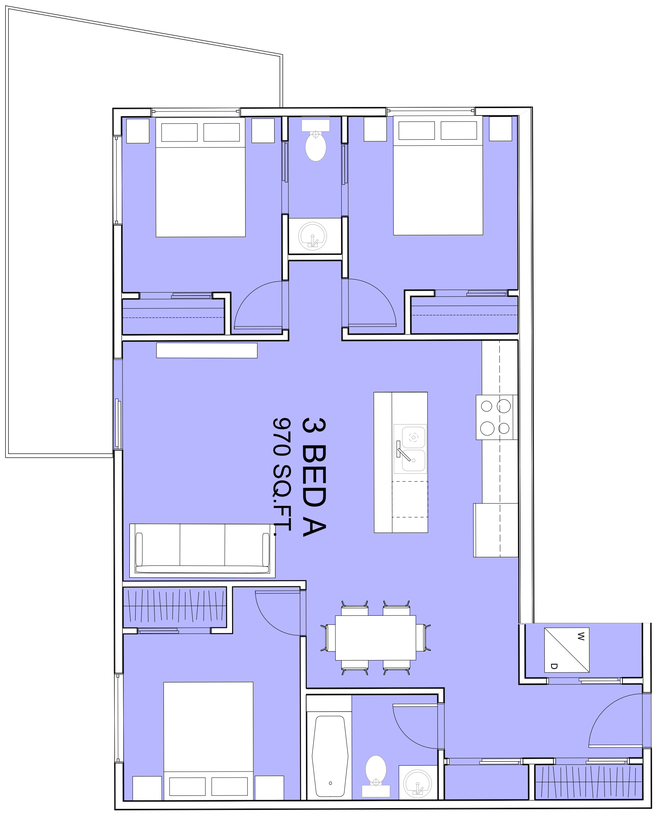
PR4



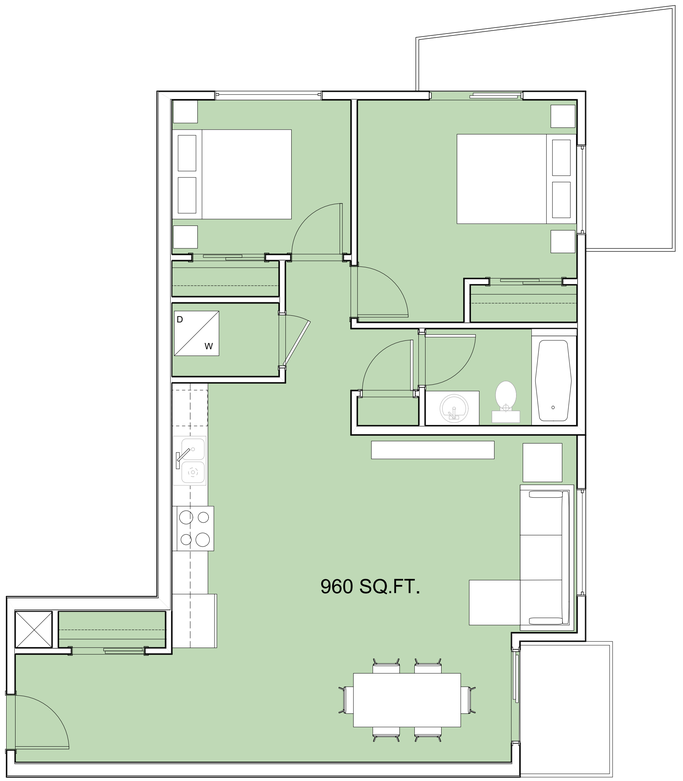
ONE BEDROOM - "E"



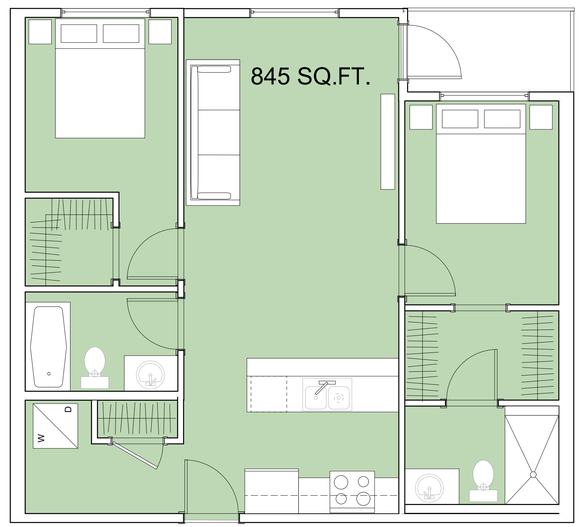
STUDIO(ISH) BEDROOM - "D"



THREE BEDROOM - "C"



TWO BEDROOM - "B"



TWO BEDROOM - "A"

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PROJECT

ERSKINE MULTIFAMILY

DRAWING

PROPOSED UNIT PLANS

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SHEET

PR5

FRONT ELEVATION

SIDE ELEVATION

SIDE ELEVATION

REAR ELEVATION

MATERIAL LEGEND

1. FIBRE CEMENT PANELS: "IRON GREY" SMOOTH FINISH
2. FIBRE CEMENT PANELS: "GREY SLATE" SMOOTH FINISH
3. FIBRE CEMENT PANELS: "LIGHT MIST" SMOOTH FINISH
4. WINDOW BOXES: FIBRE CEMENT LAPPED "CEDARTONE "
5. ASPHALT SHINGLE ROOFING: "CHARCOAL GREY"
6. VINYL WINDOWS - BLACK
7. HANDRAILS, FASCIAS, DOWNSPOUTS, FLASHING PAINTED: BLACK
8. ARCHITECTURAL CAST IN PLACE CONCRETE

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PROJECT

ERSKINE MULTIFAMILY

DRAWING

PROPOSED ELEVATIONS

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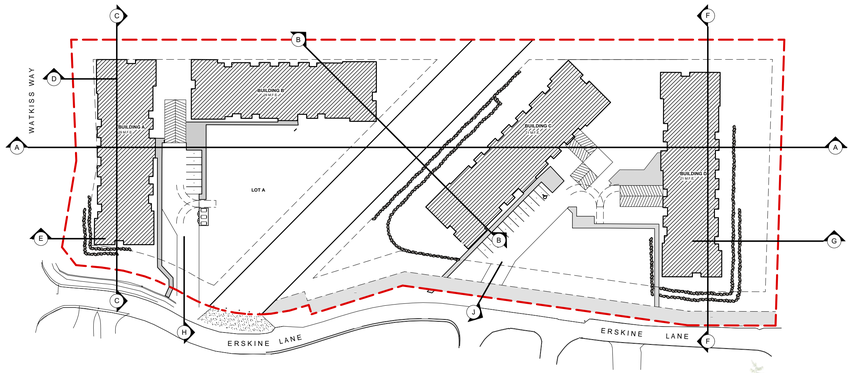
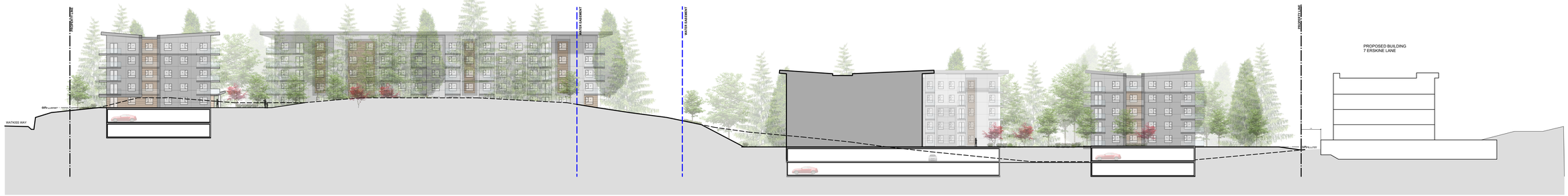
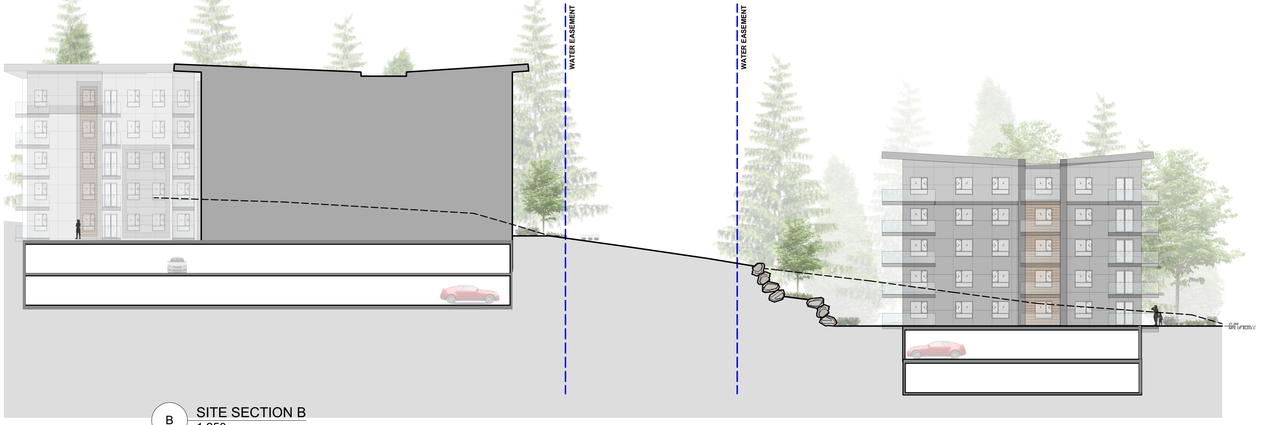
PR6





A SITE SECTION A
1:384



B SITE SECTION B
1:250

D SITE SECTION D
1:250

C SITE SECTION C
1:250

E SITE SECTION E
1:250

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PROJECT

ERSKINE MULTIFAMILY

DRAWING

SITE SECTIONS

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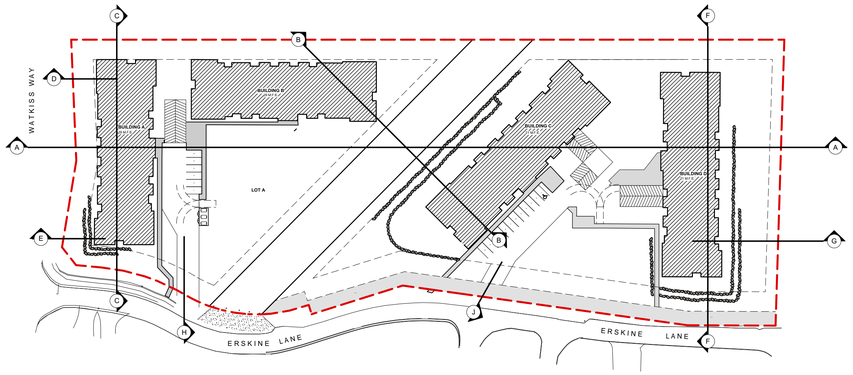
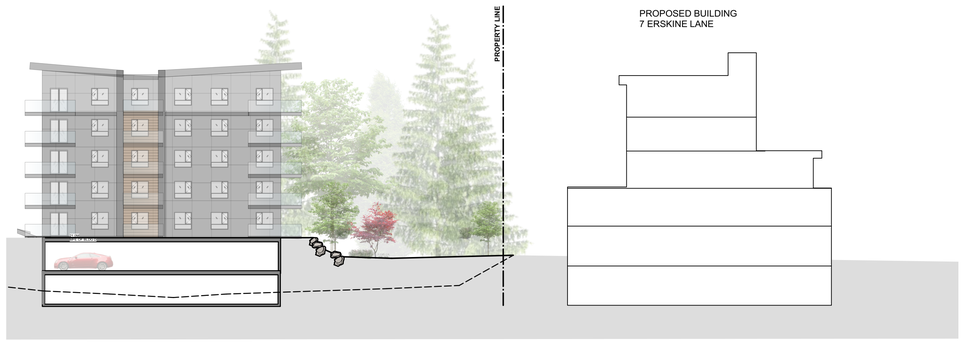
SHEET

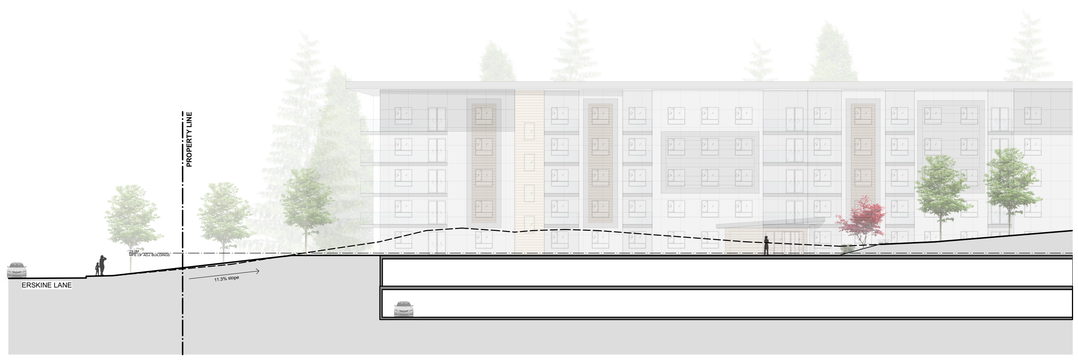
PR8



F SITE SECTION F
1:250



G SITE SECTION G
1:250



H SITE SECTION H
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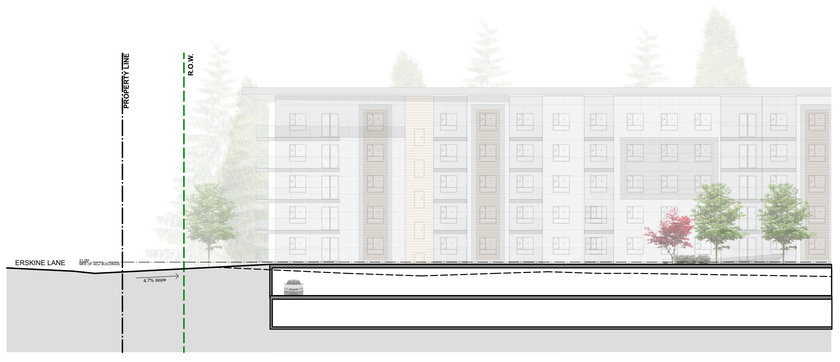

J SITE SECTION J
1:250

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PROJECT

ERSKINE MULTIFAMILY

DRAWING

SITE SECTIONS

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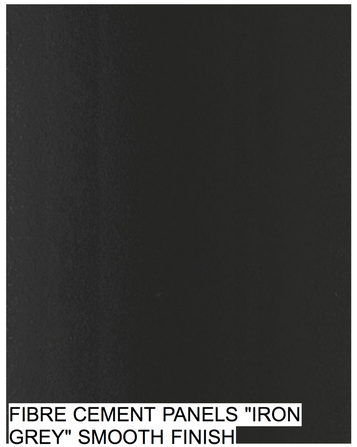
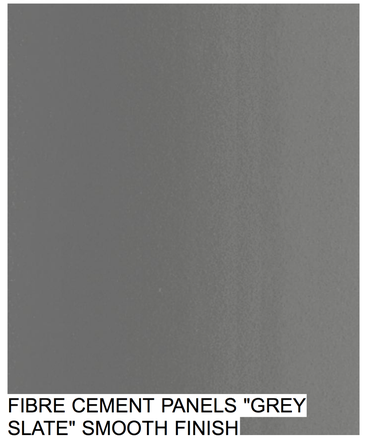
PR9

ARCHITECTURAL CAST IN PLACE CONCRETE



FIBRE CEMENT PANELS "IRON GREY" SMOOTH FINISH



FIBRE CEMENT PANELS "GREY SLATE" SMOOTH FINISH

WINDOW BOXES:
FIBRE CEMENT LAP "CEDARTONE"

FIBRE CEMENT PANELS "LIGHT MIST" SMOOTH FINISH

ASPHALT SHINGLE ROOFING "CHARCOAL GREY"

HANDRAILS + FASCIAS
PAINTED "BLACK"

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PROJECT

ERSKINE MULTIFAMILY

DRAWING

PROPOSED MATERIALS

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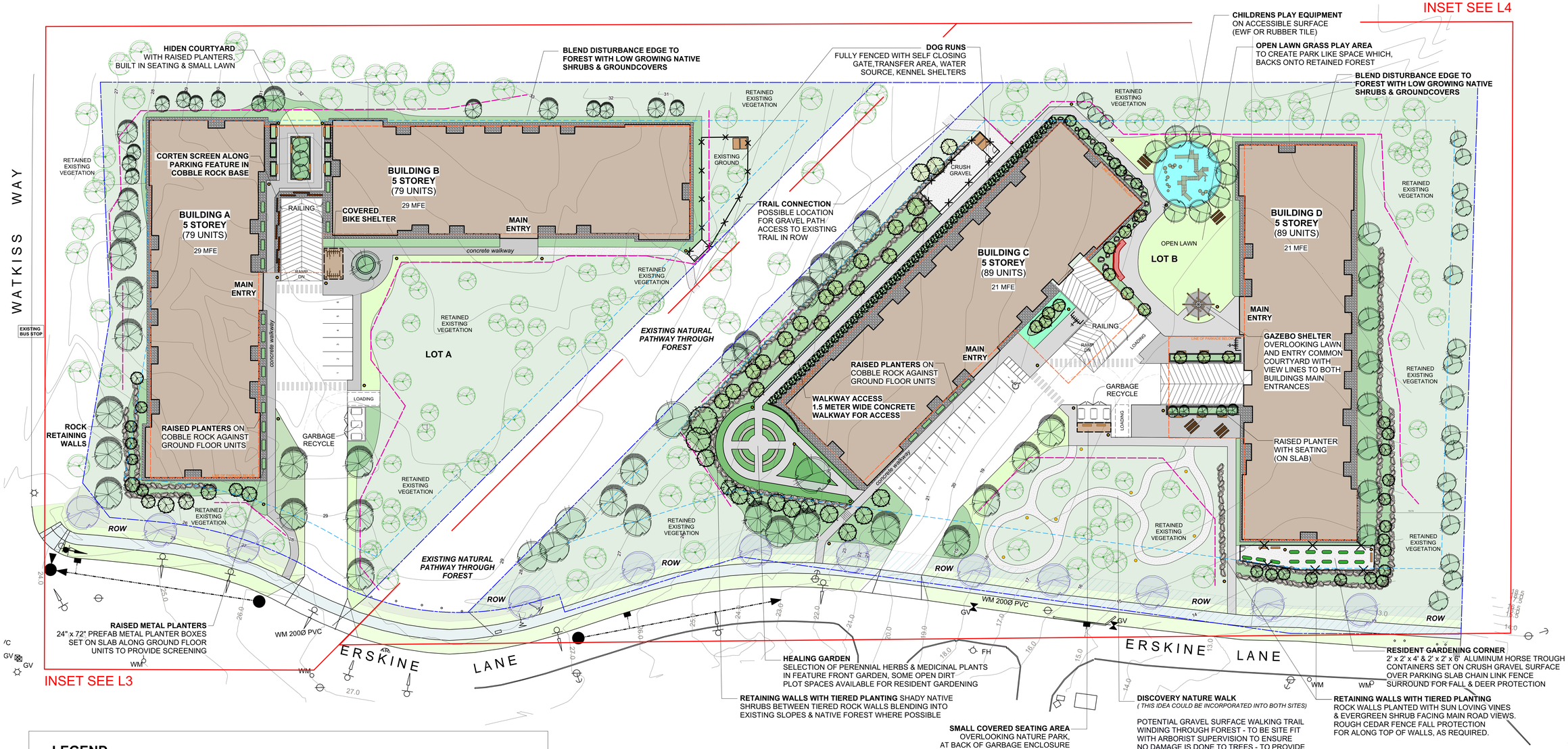
PR10



LEGEND

- Property Line
- Setback Line (Building Envelope)
- Underground Parkade
- CS — Brushed Concrete, Patterns TBD - Refer to Civil Eng. Dwgs.
- Proposed ROW Sidewalk - Refer to Civil For Details
- Compacted 3/4" Crush Rock For Informal Walkways & Dog Runs
- Planting Beds cw 60 mm Bark Mulch on Filter Fabric on Approved Growing Medium At Specified Depths (450 mm minimum For Shrubs & 750 mm minimum For Trees) For both on and off slab conditions
- Sedum Feature Planting Display cw 150 mm Depth Approved Growing Medium On Slab,
- LAWN — Seeded Lawn Areas cw 150 mm Min. Depth of Approved Growing Medium
- Existing Vegetation Area To Be Retained
- Decorative (1" - 3") Washed Round Cobble Rock Groundcover Sized Cobble TBD With Detailed Design To Coordinate With On Slab Drainage
- Feature Decorative Boulders as Locally Available & Sourced From Site Size Range 600mm - 1200mm
- Boulder Rock Stack Retaining Walls, Utilizing Rock From Site **Refer to Eng. For Final Wall Design, Location & Details*
- Black Vinyl Coated Chain Link Fence 5' Ht.
- Indicates Location of Waypoint ID Pin For Existing Trees To Be **Retained** If Possible INSIDE & OUTSIDE BUILDING ENVELOPE — *Refer To MJR Tree Report For Detailed Information*

Raised Planters Over Underground Parking On Slab (3 Types)

1. Powder Coated Metal Style, Insulated for 4 Season Planting - Approx Size 24" x 72"
2. CIP Concrete Tree Planter, Insulated for 4 Season Planting - Approx Size 1.2m x 2.5m (1 m ht.)
3. Aluminum Horse Trough Vegetable Garden Planters 2 Sizes - 2' x 2' x 4' & 6' Set On Crush Gravel On Slab

- Bench Seating - Wood or Wood Composite Construction
- Bike Racks Dero Rolling Rack or Approved Equivalent Colour TBD to Complement Building Character
- Decorative Screen Feature, With Semi Transparent Style For Screening Between Parking & Mini Plaza Spaces
- Light Bollard or Interpretive Signage 36" Height
- Bench Feature Style & Colour TBD
- Existing Contours For Refrence Only
- Proposed New On Site Trees **TOTAL PROPOSED 238**
- Proposed New Trees in ROW TO BE APPROVED BY CITY **TOTAL PROPOSED 12**

0m 5m 10 m

NOTE: ALL WORK AND MATERIALS SHALL BE TO BCSLA / CNLA STANDARDS

Date	Revisions	By
May 20 2020	Preliminary Draft Issued for Review	LS/SS
May 22 2020	SUBMISSION 1 FOR REVIEW	LS
AUG 7 2020	FOR REZONING	LS

LAZZARIN SVISDAHL LANDSCAPE ARCHITECTS
203-1300 1st Avenue, Prince George B.C. V2L 2Y3
250-563-6158 www.lsla-landarch.com

Project
WESTURBAN DEVELOPMENTS
Erskine Lane

Sheet Title
Conceptual Landscape Plan

Date
May 10, 2020

Scale
1:350 METERS

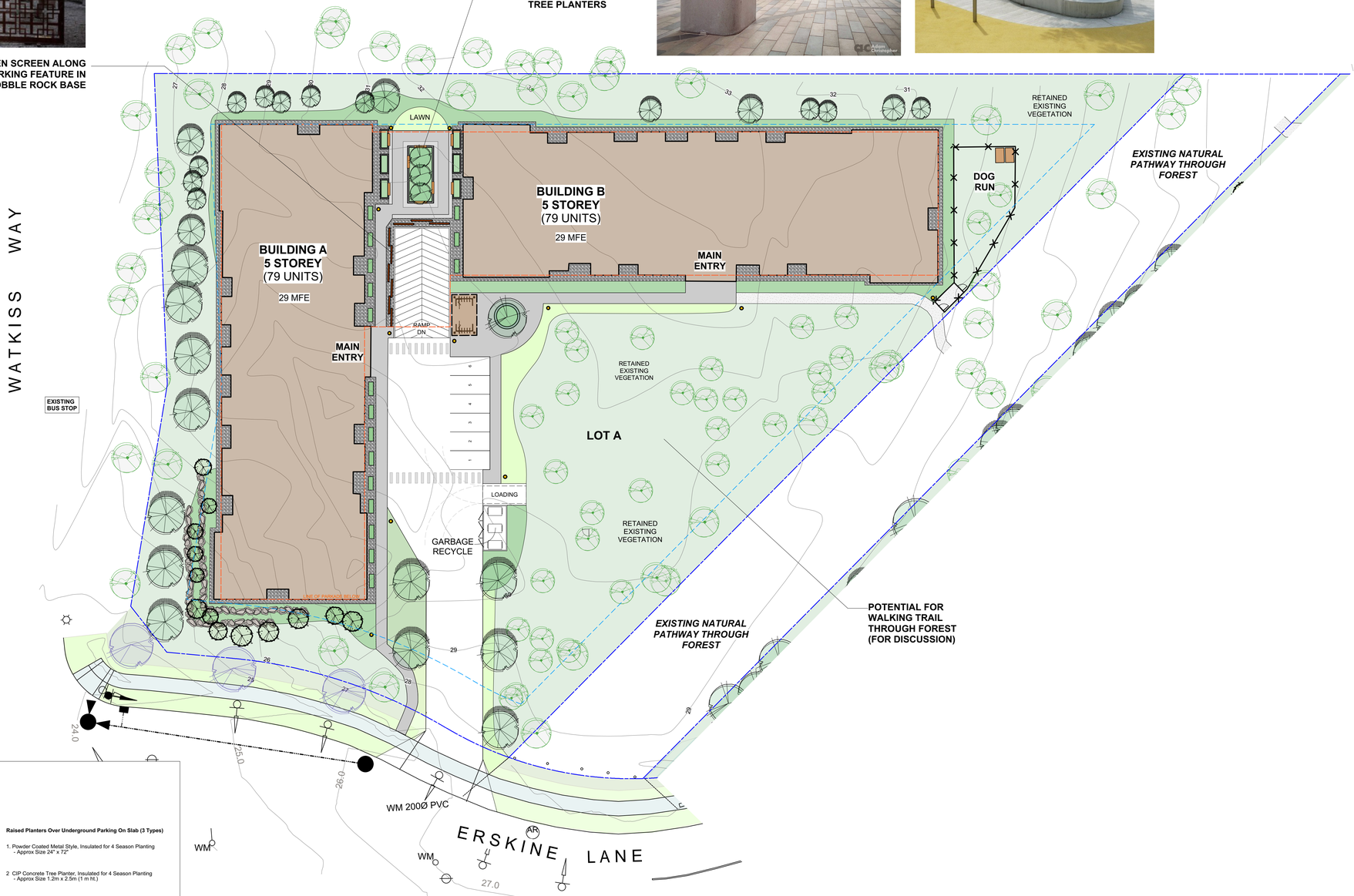
Drawn By
LS/SD

Project No.

Drawing No.
L 1

CORTEN SCREEN ALONG PARKING FEATURE IN COBBLE ROCK BASE

LARGE CIP CONCRETE TREE PLANTERS



LEGEND

- Property Line
- Setback Line (Building Envelope)
- Underground Parkade
- CS — Brushed Concrete, Patterns TBD - Refer to Civil Eng. Dwgs.
- Proposed ROW Sidewalk - Refer to Civil For Details
- Compacted 3/4" Crush Rock For Informal Walkways & Dog Runs
- Planting Beds cw 60 mm Bark Mulch on Filter Fabric on Approved Growing Medium At Specified Depths (450 mm minimum For Shrubs & 750 mm minimum For Trees) For both on and off slab conditions
- LAWN — Seeded Lawn Areas cw 150 mm Min. Depth of Approved Growing Medium
- Existing Vegetation Area To Be Retained
- Decorative (1" - 3") Washed Round Cobble Rock Groundcover Sized Cobble TBD With Detailed Design To Coordinate With On Slab Drainage
- Feature Decorative Boulders as Locally Available & Sourced From Site Size Range 600mm - 1200mm
- Boulder Rock Stack Retaining Walls, Utilizing Rock From Site **Refer to Eng. For Final Wall Design, Location & Details*
- Black Vinyl Coated Chain Link Fence 5' Ht.
- Indicates Location of Waypoint ID Pin For Existing Trees To Be **Retained** If Possible INSIDE & OUTSIDE BUILDING ENVELOPE

Refer To MJR Tree Report For Detailed Information

Raised Planters Over Underground Parking On Slab (3 Types)

1. Powder Coated Metal Style, Insulated for 4 Season Planting - Approx Size 24" x 72"
2. CIP Concrete Tree Planter, Insulated for 4 Season Planting - Approx Size 1.2m x 2.5m (1 m ht.)
3. Aluminum Horse Trough Vegetable Garden Planters 2 Sizes - 2' x 2' x 4' & 6' Set On Crush Gravel On Slab
- Bench Seating - Wood or Wood Composite Construction
- Bike Racks Dero Rolling Rack or Approved Equivalent Colour TBD to Complement Building Character
- Decorative Screen Feature, With Semi Transparent Style For Screening Between Parking & Mini Plaza Spaces
- Light Bollard or Interpretive Signage 36" Height
- Existing Contours For Refrence Only

Proposed New On Site Trees **TOTAL PROPOSED 238**

Proposed New Trees in ROW TO BE APPROVED BY CITY **TOTAL PROPOSED 12**

0m 5m 10 m

NOTE: ALL WORK AND MATERIALS SHALL BE TO BCSLA / CNLA STANDARDS

Date	Revisions	By
May 20 2020	Preliminary Draft Issued for Review	LS/SS
May 22 2020	SUBMISSION 1 FOR REVIEW	LS
AUG 7 2020	FOR REZONING	LS

LAZZARIN SVISDAHL LANDSCAPE ARCHITECTS
203-1300 1st Avenue, Prince George B.C. V2L 2Y3
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Project
WESTURBAN DEVELOPMENTS
Erskine Lane

Sheet Title
Landscape Plan
West Site

Date
May 10, 2020

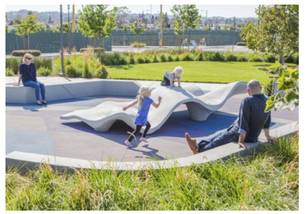
Scale
1:300 METERS

Drawn By
LS/SD

Project No.

Drawing No.

L 3



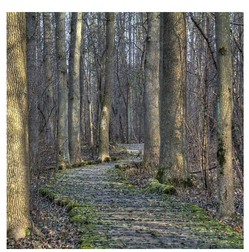
FEATURE SEATING
LONG BENCH SEAT FEATURE SET
IN CENTRE OF MAIN AMENITY PATIO AREA

HEALING GARDEN
SELECTION OF PERENNIAL HERBS & MEDICINAL PLANTS
IN FEATURE FRONT GARDEN, SOME OPEN DIRT
PLOT SPACES AVAILABLE FOR RESIDENT GARDENING

RESIDENT GARDENING CORNER
2' x 2' x 4' & 2' x 2' x 6' ALUMINUM
HORSE TROUGH CONTAINERS
SET ON CRUSH GRAVEL
SURFACE OVER PARKING SLAB
CHAIN LINK FENCE SURROUND
FOR FALL & DEER PROTECTION

DISCOVERY NATURE WALK
(THIS IDEA COULD BE INCORPORATED INTO BOTH SITES)

POTENTIAL GRAVEL SURFACE WALKING TRAIL WINDING THROUGH FOREST - TO BE SITE FIT WITH AIMS TO CREATE ACCESSIBLE ACCESS TO NATURAL FORESTED AREA. TO BE UNDERTAKEN WITH ARBORIST SUPERVISION ENSURING NO DAMAGE IS DONE TO TREES - WILL PROVIDE ACCESS FOR EXPLORATION PLAY & DISCOVERY.



LEGEND

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- Sedum Feature Planting Display cw 150 mm Depth Approved Growing Medium On Slab,
- LAWN — Seeded Lawn Areas cw 150 mm Min. Depth of Approved Growing Medium
- Existing Vegetation Area To Be Retained
- Decorative (1" - 3") Washed Round Cobble Rock Groundcover Sized Cobble TBD With Detailed Design To Coordinate With On Slab Drainage
- Feature Decorative Boulders as Locally Available & Sourced From Site Size Range 600mm - 1200mm
- Boulder Rock Stack Retaining Walls, Utilizing Rock From Site **Refer to Eng. For Final Wall Design, Location & Details*
- Black Vinyl Coated Chain Link Fence 5' Ht.
- Rough Cedar Wood Fence / Fall Protection 4' Ht.
- Indicates Location of Waypoint ID Pin For Existing Trees To Be **Retained** If Possi INSIDE & OUTSIDE BUILDING ENVELOP

Raised Planters Over Underground Parking On Slab (3 Types)

1. Powder Coated Metal Style, Insulated for 4 Season Planting - Approx Size 24" x 72"
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Project
WESTURBAN DEVELOPMENTS
Erskine Lane

Sheet Title
Landscape Plan
East Site

Date
May 10, 2020

Scale
1:300 METERS

Drawn By
LS/SD

Project No.

Drawing No.

L 4

Tree Inventory Report
9 Erskine Lane, Victoria
Completed: May 4th, 2020

Table 1. Inventory Summary

Species	Scientific Name	DBH (cm)	Number of trees
	Coniferous		
Balsam fir	*Abies balsamea*	60 mm to 300 mm	2
Douglas fir	*Pseudotsuga menziesii*	60 mm to 300 mm	228
		301 mm to 600 mm	228
		601 mm +	78
Grand fir	*Abies grandis*	60 mm to 300 mm	39
		301 mm to 600 mm	20
		601 mm +	8
Leylandii	*Cupressus leylandii*	60 mm to 300 mm	6
	Deciduous		
Apple	*Malus domestica*	60 mm to 300 mm	1
Arbutus	*Arbutus menziesii*	60 mm to 300 mm	64
		301 mm to 600 mm	31
		601 mm +	4
Bigleaf maple	*Acer macrophyllum*	60 mm to 300 mm	101
		301 mm to 600 mm	32
		601 mm +	6
Cherry	*Prunus*	60 mm to 300 mm	3
Garry oak	*Quercus garryana*	60 mm to 300 mm	203
		301 mm to 600 mm	3
Hawthorn		60 mm to 300 mm	8
Holly		60 mm to 300 mm	14
		301 mm to 600 mm	1
Red alder	*Ulnus rubra*	60 mm to 300 mm	1
Willow	*Salix*	60 mm to 300 mm	9
		301 mm to 600 mm	2
		Total Trees	1092

Inventory key notes:

- Diameter at Breast Height (DBH) measurements are taken at 4.3 meters from ground level.
- MS refers to there being multiple stems growing from the same stump, each dbh measurement taken with ms preceding indicates diameter of each co-dominate stem.
- Measurements listed in DBH column represent a tree of possible significance, the tree is already included in the count represented in the dbh range columns.
- Waypoints 271, 272, 274, 319-324, 354, 355 represent trees in close proximity to property line with critical root zones within subject property boundary.

Please contact MJR Tree Service with any further questions.

Report prepared by:

Shane Harris
ISA Certified Arborist ON-1008A
ISA Qualified Tree Risk Assessor
BC Certified Wildlife Danger Tree Assessor

Jayson Fearon
ISA Certified Arborist PN-7974A
ISA Qualified Tree Risk Assessor

On behalf of:

MJR Tree Service
7647 Superior Road
Lantzville, BC
V0R2H0
(250) 616-8906
mjtreeservice@gmail.com

2020-05-06 9 Erskine Lane Tree Location Key

Tree Inventory
9 Erskin Lane, Victoria

Completed on May 4th, 2020

Waypoint	Species	60mm to 300mm	301mm to 600mm	601mm +	DBH (cm)
31	Douglas-fir		1	2	
31	Bigleaf maple	3			
32	Bigleaf maple	2			
32	Douglas-fir	1			
33	Douglas-fir	1		1	78
34	Douglas-fir	3	2		
35	Bigleaf maple	1			
36	Douglas-fir	1	1		
36	Bigleaf maple	3			
36	Garry oak	1			
37	Bigleaf maple		1		60
37	Douglas-fir	1			
38	Grand fir		1		
38	Douglas-fir	3	1	1	75
38	Bigleaf maple	1	1		
39	Douglas-fir	1	1		
39	Holly	1			
40	Grand fir	1	2		
41	Arbutus			1	64
41	Douglas-fir	1	2		
42	Douglas-fir	1			
42	Arbutus			1	91
43	Bigleaf maple		2		
44	Bigleaf maple		1		
45	Douglas-fir	4		1	66
46	Douglas-fir	6			
47	Douglas-fir	3			
48	Douglas-fir	6	2	1	
49	Douglas-fir	2	2		
50	Garry oak	1			30
51	Garry oak		1		35/35
52	Douglas-fir	3	2		
53	Douglas-fir		2		
54	Douglas-fir	2	2		
55	Douglas-fir	2	2		
56	Bigleaf maple	1			
56	Douglas-fir	1	1		
57	Bigleaf maple	1			
57	Douglas-fir	1	4		
58	Douglas-fir	1			
58	Bigleaf maple	1			
59	Douglas-fir	1	4		
60	Douglas-fir	1			
61	Douglas-fir		1		
62	Douglas-fir	1	1		
62	Arbutus	1			

Tree Inventory
9 Erskin Lane, Victoria

Completed on May 4th, 2020

Waypoint	Species	60mm to 300mm	301mm to 600mm	601mm +	DBH (cm)
63	Douglas-fir	1		1	68
64	Douglas-fir		1	1	70
65	Bigleaf maple		2	1	77
65	Douglas-fir	2	1	1	66
66	Grand fir		1		
66	Douglas-fir	1	1		
66	Douglas-fir	1	1		
66	Bigleaf maple		2		
66	Grand fir		1		
66	Bigleaf maple		2		
67	Grand fir		2		
67	Arbutus	1			30
67	Bigleaf maple	1			
67	Bigleaf maple	1			
67	Arbutus	1			30
67	Grand fir		2		
68	Douglas-fir			1	94
68	Douglas-fir			1	94
69	Bigleaf maple	2			
69	Douglas-fir	1		1	63
69	Arbutus		1		54
69	Arbutus		1		54
69	Bigleaf maple	2			
69	Douglas-fir	1		1	63
70	Douglas-fir	3	2		
70	Douglas-fir	3	2		
70	Bigleaf maple	1			
70	Bigleaf maple	1			
71	Bigleaf maple	3			
71	Douglas-fir		1		
71	Bigleaf maple	3			
71	Douglas-fir		1		
72	Bigleaf maple	1	1		
72	Douglas-fir		1		
72	Garry oak		1		
72	Douglas-fir		1		
72	Bigleaf maple	1	1		
72	Grand fir	1			
73	Douglas-fir			1	67
73	Douglas-fir			1	63
74	Douglas-fir			1	78
74	Douglas-fir			1	78
75	Grand fir		1	1	81
75	Grand fir			1	73
75	Douglas-fir			1	81
75	Douglas-fir			1	

Tree Inventory
9 Erskin Lane, Victoria

Completed on May 4th, 2020

Waypoint	Species	60mm to 300mm	301mm to 600mm	601mm +	DBH (cm)
76	Douglas-fir			1	73
76	Grand fir	1			
77	Douglas-fir			1	80
77	Douglas-fir	3	1		
78	Douglas-fir		1		
79	Douglas-fir	3		1	69
79	Bigleaf maple	1			
80	Bigleaf maple			1	67
81	Douglas-fir		1		
81	Grand fir	1			
82	Douglas-fir	1	2		
83	Douglas-fir	3			
84	Bigleaf maple	1			
84	Douglas-fir		1		
84	Holly	1			
85	Douglas-fir		3		
85	Grand fir	1			
86	Douglas-fir	1		1	61
87	Bigleaf maple	2			
87	Douglas-fir	3	1		
88	Douglas-fir		1		
89	Douglas-fir		3		
90	Douglas-fir		1		
90	Hawthorn	4			
91	Willow	2			
92	Willow	2	1		
92	Douglas-fir	1	2		
92	Bigleaf maple	1			
93	Douglas-fir	1	1		
94	Douglas-fir	2	2		
94	Bigleaf maple		1		
95	Grand fir	1			
95	Douglas-fir	1		1	70
95	Hawthorn	1			
95	Bigleaf maple	1	1		
96	Douglas-fir		1		
97	Douglas-fir		1		
98	Douglas-fir		1		
99	Bigleaf maple		1		
100	Douglas-fir	1	2	1	70
101	Douglas-fir	1	1	1	68
101	Grand fir	4			
103	Douglas-fir		1		
103	Grand fir	4	1		
104	Douglas-fir			1	85
105	Holly		1		

Tree Inventory
9 Erskin Lane, Victoria

Completed on May 4th, 2020

Waypoint	Species	60mm to 300mm	301mm to 600mm	601mm +	DBH (cm)
105	Douglas-fir			1	88
106	Grand fir			1	65
106	Douglas-fir	1			
106	Bigleaf maple		1		
107	Bigleaf maple	1	1		
107	Grand fir	1			
108	Bigleaf maple	2			
109	Grand fir	1			
109	Douglas-fir			1	79
110	Holly	4			
110	Grand fir	1			
111	Holly	3			
111	Bigleaf maple		1		
112	Bigleaf maple		1	1	78
113	Holly	1			
113	Bigleaf maple	2	1		
113	Grand fir	2			
114	Grand fir		1		
115	Douglas-fir		1		
115	Bigleaf maple		1		
116	Douglas-fir		1		
116	Holly	1			
117	Douglas-fir	1		1	98
118	Grand fir		1		
120	Grand fir	1			
120	Douglas-fir	1		1	100+
121	Grand fir	2			
122	Grand fir		1		
122	Douglas-fir			1	87
123	Grand fir	1			
123	Douglas-fir		1		
124	Grand fir	1	1		
124	Douglas-fir			1	84
125	Bigleaf maple	4			
125	Douglas-fir		1		
125	Grand fir	1			
126	Douglas-fir		2		
127	Douglas-fir		3		
128	Douglas-fir	1	4		
129	Bigleaf maple	1	1		
130	Douglas-fir	2	1		
130	Bigleaf maple	1	1		
130	Hawthorn	1			
131	Douglas-fir		1		
132	Bigleaf maple	1			
133	Douglas-fir		2		

Tree Inventory
9 Erskin Lane, Victoria

Completed on May 4th, 2020

Waypoint	Species	60mm to 300mm	301mm to 600mm	601mm +	DBH (cm)
133	Bigleaf maple	1			
134	Arbutus		1		32
135	Arbutus		1		34
135	Douglas-fir				75
135	Grand fir	1			
136	Arbutus	1			
136	Grand fir	1			
136	Douglas-fir		1	1	85
137	Douglas-fir	1	4		
137	Red alder	1			
138	Douglas-fir	1	1		
138	Bigleaf maple	1			
139	Douglas-fir	4	3		
140	Douglas-fir		1		
140	Bigleaf maple	2			
141	Douglas-fir		4		
142	Douglas-fir	2	1		
142	Bigleaf maple	2			
143	Bigleaf maple	2	1		
144	Bigleaf maple	2			
144	Douglas-fir			1	73
145	Bigleaf maple	1			
145	Douglas-fir		1		
146	Willow	1			
146	Douglas-fir	1	5	1	80
146	Bigleaf maple	1			
147	Arbutus	1			
147	Douglas-fir	1		1	70
147	Bigleaf maple	1			
148	Bigleaf maple	1			
148	Douglas-fir	1	1	1	75
149	Douglas-fir		1		
149	Cherry	3			
149	Grand fir	1			
149	Willow		1		
150	Douglas-fir		1		
150	Grand fir	1			
151	Hawthorn	1			
151	Douglas-fir			1	62
152	Bigleaf maple	2			
153	Douglas-fir			1	90
153	Arbutus		1		40
154	Arbutus	1			
154	Bigleaf maple	3	1		
155	Bigleaf maple			1	70
155	Douglas-fir	1	1		

Tree Inventory
9 Erskin Lane, Victoria

Completed on May 4th, 2020

Waypoint	Species	60mm to 300mm	301mm to 600mm	601mm +	DBH (cm)
156	Bigleaf maple	1			
156	Douglas-fir		1		
156	Arbutus	1	1		34
157	Arbutus		1		35
157	Douglas-fir	1	5		
158	Douglas-fir	2	3	1	63
158	Bigleaf maple	2			
158	Arbutus		1		35
159	Douglas-fir	1	2		
160	Douglas-fir		3		
160	Grand fir	3			
160	Douglas-fir		1		
161	Douglas-fir		1		
162	Douglas-fir			1	70
163	Grand fir		2	2	
163	Douglas-fir		1		
164	Arbutus		1		32
165	Douglas-fir	1	1		
165	Grand fir		1		
166	Holly	3			
166	Douglas-fir	3			
166	Bigleaf maple	2	2		
166	Grand fir	1			
167	Grand fir	4			
167	Bigleaf maple	1			
168	Bigleaf maple	3			
168	Grand fir			1	105
169	Bigleaf maple			1	70
170	Grand fir			1	65
171	Douglas-fir		1		
172	Grand fir	1	1	1	100
173	Bigleaf maple		1		
173	Douglas-fir			1	85
173	Grand fir	1	1		
174	Garry oak	1			
174	Arbutus	1			
174	Douglas-fir			1	62
175	Bigleaf maple	1			
176	Garry oak	1			
176	Douglas-fir		2	1	65
177	Douglas-fir	2		1	65
178	Douglas-fir		1		
179	Arbutus		1		43
179	Arbutus		1		43
180	Douglas-fir		2		
180	Bigleaf maple	1			

Tree Inventory
9 Erskin Lane, Victoria

Completed on May 4th, 2020

Waypoint	Species	60mm to 300mm	301mm to 600mm	601mm +	DBH (cm)
181	Bigleaf maple	2	1	1	65
182	Douglas-fir			2	60, 60
183	Douglas-fir	2			
184	Douglas-fir	1		1	61
185	Douglas-fir		1		
186	Douglas-fir			1	100
187	Arbutus			1	MS 62, 33
188	Bigleaf maple	1			
189	Douglas-fir	4	3		
190	Bigleaf maple	2			
190	Douglas-fir		1		
191	Bigleaf maple	2			
192	Bigleaf maple	3	2		
193	Douglas-fir	2			
194	Willow	2			
195	Douglas-fir			1	75
196	Douglas-fir			1	89
197	Arbutus		1		MS 44, 43
198	Douglas-fir	1	1		
199	Arbutus	1	3		44, 50, 38
200	Douglas-fir	2	1		
201	Arbutus	1			
202	Douglas-fir	3	4	1	62
203	Arbutus		2		35, 46
204	Douglas-fir	2			
205	Douglas-fir	1			
206	Douglas-fir			1	73
206	Cypress	6			
207	Garry oak	1			27
207	Douglas-fir	1			
208	Apple	1			
210	Douglas-fir			1	
211	Douglas-fir			2	65, 92
212	Douglas-fir			1	84
213	Arbutus		2		38, 32
214	Douglas-fir		1		
214	Garry oak	1			18
215	Garry oak	1			29
216	Garry oak	2			11, 21
216	Douglas-fir		1		
223	Garry oak	3			15 ave
224	Douglas-fir		1		
226	Garry oak	1			24
227	Douglas-fir		2		
228	Douglas-fir		1		
229	Douglas-fir	2	1		

Tree Inventory
9 Erskin Lane, Victoria

Completed on May 4th, 2020

Waypoint	Species	60mm to 300mm	301mm to 600mm	601mm +	DBH (cm)
230	Garry oak	1			15
231	Douglas-fir	1	2		
231	Garry oak	1			25
232	Douglas-fir		1	1	65
232	Garry oak	1			10
233	Arbutus		1		37
234	Arbutus		1		MS 37, 20
235	Douglas-fir			1	64
235	Garry oak	2			25, 15
236	Arbutus	2			
236	Garry oak	2			25, 16
236	Douglas-fir		1		
237	Garry oak	2			20, 18
238	Arbutus	1			
238	Douglas-fir			1	62
239	Garry oak	1			15
240	Arbutus	2			
241	Douglas-fir		2	1	61
241	Garry oak	1			15
242	Garry oak	1			15
242	Arbutus		1		38
243	Douglas-fir	1			
243	Arbutus	1			
244	Arbutus	1			
244	Garry oak	2			15, 10
245	Arbutus	2			
245	Douglas-fir		1		
245	Garry oak	2			15, 7
247	Bigleaf maple	1			
248	Garry oak	3			25, 25, 20
249	Bigleaf maple	2			
250	Bigleaf maple	1			
251	Bigleaf maple	2			
252	Bigleaf maple	1			
253	Garry oak	2			10, 10
254	Garry oak	4			10 ave
255	Garry oak	4			25, 10, 10, 15
256	Garry oak	2			20, 10
257	Garry oak	5			15 ave
258	Garry oak	5			10 ave
259	Garry oak	4			15 ave
260	Garry oak	3			15 ave
261	Garry oak	4			15 ave
262	Garry oak	6			15 ave
263	Garry oak	2			15 ave
264	Garry oak	2			20, 7

Tree Inventory
9 Erskin Lane, Victoria

Completed on May 4th, 2020

Waypoint	Species	60mm to 300mm	301mm to 600mm	601mm +	DBH (cm)
265	Arbutus	1			
265	Garry oak	7			15 ave
266	Garry oak	10			15 ave
267	Garry oak	10			15 ave
268	Garry oak	5			10 ave
270	Garry oak	8			18 cm ave
270	Arbutus	2			
271	Garry oak	4			20, 10, 10, 10
272	Douglas-fir		1		
273	Garry oak	3			15 ave
273	Arbutus	1			
274	Arbutus	1			25
275	Douglas-fir	5	2		
275	Arbutus	2			
276	Douglas-fir	3	3		
276	Arbutus	1			
277	Douglas-fir	1	1		
277	Garry oak	4			20 ave
278	Garry oak	3			15 ave
278	Douglas-fir	3	4		
279	Arbutus		1		
279	Garry oak	4			28, 15, 15, 15
280	Garry oak	1			10
281	Garry oak	3			15 ave
281	Douglas-fir	1			
281	Arbutus	1			
282	Douglas-fir	2	1		
282	Garry oak	1			15
283	Garry oak	4			20 ave
283	Arbutus	2			
284	Douglas-fir	2	3		
285	Garry oak	2			15 ave
285	Douglas-fir		2		
285	Arbutus	3			
286	Douglas-fir	1	3		
286	Arbutus		1		
287	Garry oak	1			15
288	Garry oak	1			15
289	Douglas-fir			1	69
290	Garry oak	1			13
291	Garry oak	1			26
292	Arbutus	1			
292	Douglas-fir	1			
292	Garry oak	1			27
293	Arbutus	1			
294	Garry oak	1			22

Tree Inventory
9 Erskin Lane, Victoria

Completed on May 4th, 2020

Waypoint	Species	60mm to 300mm	301mm to 600mm	601mm +	DBH (cm)
294	Arbutus	1			
294	Douglas-fir	1			
295	Garry oak	2			13 ave
295	Douglas-fir	1			
296	Garry oak	1			13
297	Garry oak	1			12
298	Douglas-fir	1			
299	Garry oak	2			15 ave
300	Douglas-fir	2		1	79
300	Garry oak	2			23 ave
301	Douglas-fir	4	3		
302	Garry oak	3			12 ave
303	Garry oak	4			20 ave
303	Douglas-fir		1		
304	Garry oak	1			17
305	Douglas-fir		3		
305	Garry oak	1			12
306	Douglas-fir	2	1	1	64
307	Arbutus	1			
308	Douglas-fir		1		
309	Garry oak	1			28
309	Douglas-fir	3			
309	Arbutus		1		32
310	Douglas-fir	3	2		
310	Arbutus		1		
311	Douglas-fir		1	1	63
312	Douglas-fir	2	1		
313	Douglas-fir		1		
314	Douglas-fir	3	3		
314	Arbutus	1			
315	Bigleaf maple	1			
315	Douglas-fir	4	1		
316	Douglas-fir	6	1		
316	Arbutus	1	1		46
317	Willow	1			
317	Douglas-fir	2	1		
318	Douglas-fir		1		
318	Arbutus	1			
318	Hawthorn	1			
319	Douglas-fir			1	70
320	Arbutus	1			
321	Douglas-fir	1			
322	Garry oak	1			22
322	Douglas-fir		1		
323	Douglas-fir	1			
324	Douglas-fir			1	92

Tree Inventory
9 Erskin Lane, Victoria

Completed on May 4th, 2020

Waypoint	Species	60mm to 300mm	301mm to 600mm	601mm +	DBH (cm)
324	Arbutus			1	MS 42,30,51
325	Douglas-fir		1		
325	Garry oak	1			15
326	Douglas-fir			1	67
327	Garry oak	1			15
327	Douglas-fir		2		
328	Douglas-fir		2	1	70
328	Bigleaf maple	1			
329	Douglas-fir	2	1		
329	Bigleaf maple	1			
330	Bigleaf maple	1			
331	Douglas-fir			1	72
332	Garry oak	1			25
333	Arbutus	2			
333	Douglas-fir	4	1		
334	Arbutus		1		43
334	Douglas-fir	2			
334	Garry oak	1			10
335	Douglas-fir	1	1		
336	Garry oak		1		35
337	Garry oak	10			10 ave
338	Douglas-fir	1	1		
338	Garry oak	1			15
339	Douglas-fir			1	74
339	Garry oak	1			25
340	Douglas-fir		1	1	64
340	Garry oak	1			10
341	Garry oak	3			10
342	Garry oak	1			28
342	Douglas-fir		2		
343	Douglas-fir		3		
344	Garry oak	2			6, 10
345	Garry oak	1			15
345	Douglas-fir	1			
346	Garry oak	4			13 ave
346	Douglas-fir		1		
347	Douglas-fir		2		
348	Douglas-fir		1		
349	Douglas-fir	1			
349	Garry oak				10
349	Arbutus		1		40
350	Douglas-fir	1			
350	Garry oak	1			10
350	Arbutus	1			
351	Douglas-fir	1		1	78
352	Douglas-fir	4			

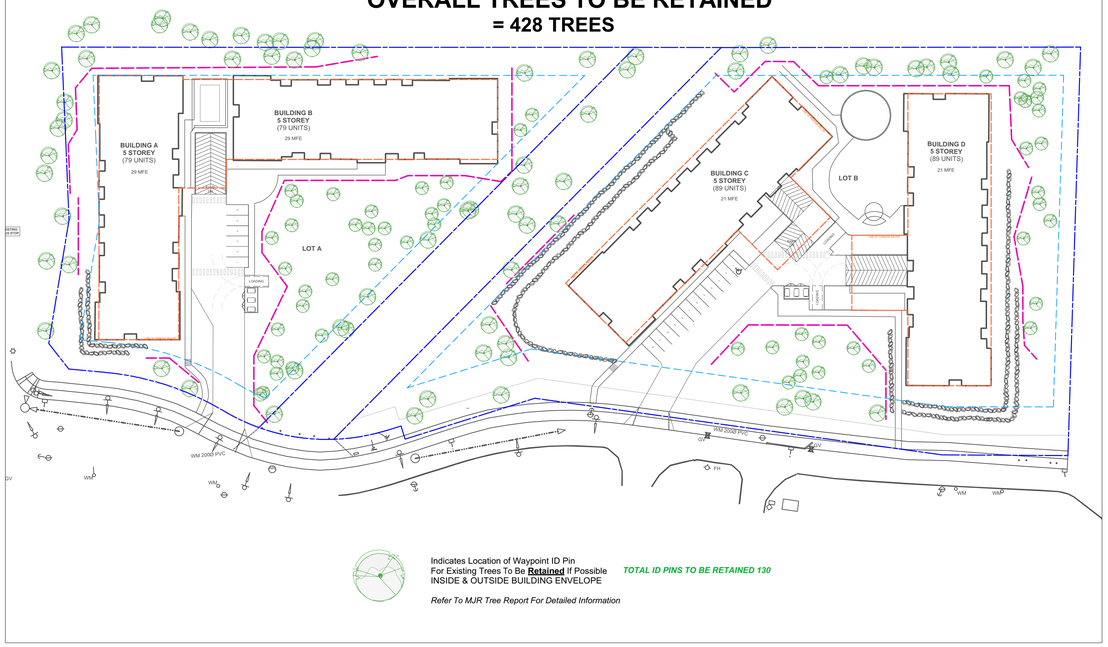
Tree Inventory
9 Erskin Lane, Victoria

Completed on May 4th, 2020

Waypoint	Species	60mm to 300mm	301mm to 600mm	601mm +	DBH (cm)
353	Douglas-fir	3			
354	Balsam fir	2			
355	Douglas-fir		1		
356	Douglas-fir	2		1	80
356	Arbutus	2			
357	Douglas-fir	1			
357	Arbutus	1			
358	Willow	1			
358	Douglas-fir		1		
359	Douglas-fir	1	1	1	76
360	Arbutus	1			
360	Bigleaf maple	1			
361	Douglas-fir	3			
361	Arbutus	1			
361	Bigleaf maple	1			
362	Arbutus	2			
362	Douglas-fir	1			
363	Douglas-fir	7			
363	Arbutus	3			
364	Bigleaf maple	1			
364	Douglas-fir		1		
365	Garry oak	4			15 ave
365	Douglas-fir	1			
366	Douglas-fir	1			
367	Douglas-fir		1		
367	Garry oak	1			10
368	Arbutus	1			
369	Douglas-fir			1	ms 100+
369	Arbutus		2		33, 43
370	Douglas-fir		1		
371	Arbutus	2			
372	Douglas-fir	2			
372	Arbutus	1			
373	Douglas-fir	1		1	63
374	Arbutus	3			
375	Arbutus	3			
		679	317	96	

0m 5m 10 m

OVERALL TREES TO BE RETAINED
= 428 TREES

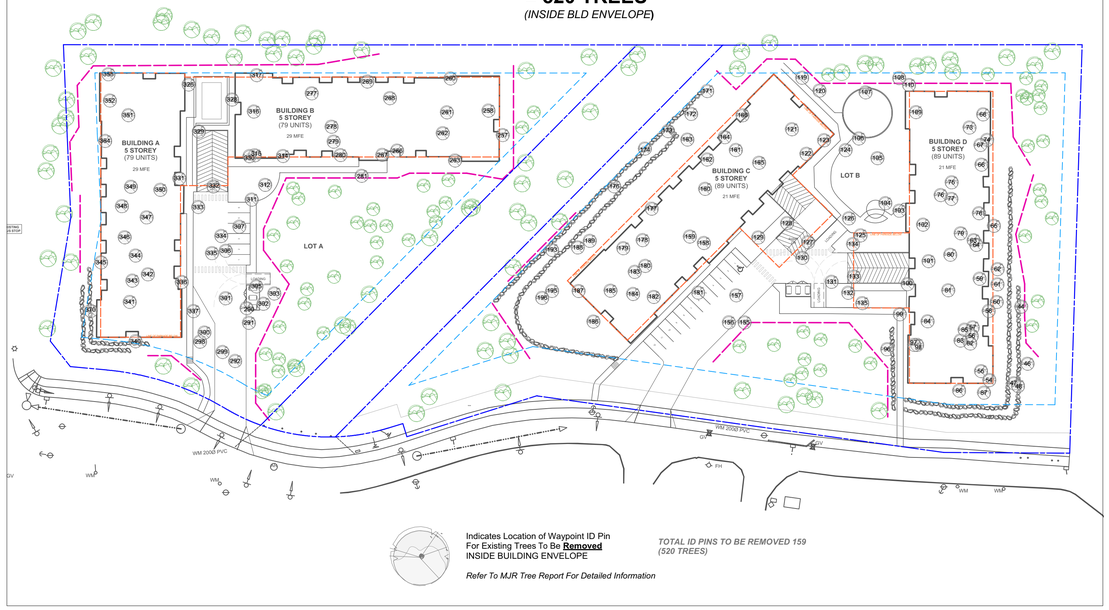


Indicates Location of Waypoint ID Pin
For Existing Trees To Be **Retained** If Possible
INSIDE & OUTSIDE BUILDING ENVELOPE

TOTAL ID PINS TO BE RETAINED 130

Refer To MJR Tree Report For Detailed Information

TREES TO BE REMOVED INSIDE BUILDING ENVELOPE / SETBACK
= 520 TREES
(INSIDE BLD ENVELOPE)

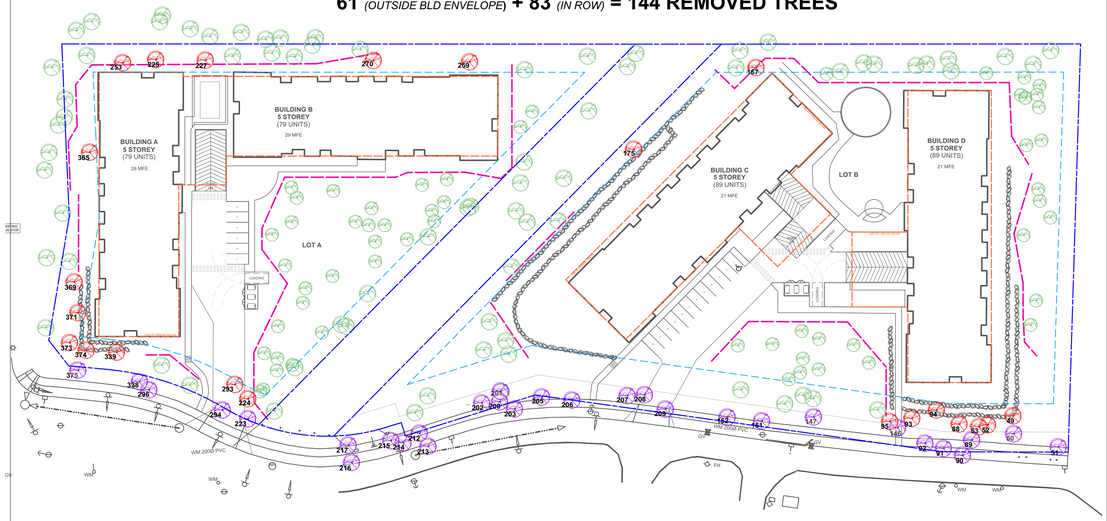


Indicates Location of Waypoint ID Pin
For Existing Trees To Be **Removed**
INSIDE BUILDING ENVELOPE

TOTAL ID PINS TO BE REMOVED 159
(520 TREES)

Refer To MJR Tree Report For Detailed Information

TREES TO BE REMOVED OUTSIDE BUILDING ENVELOPE / SETBACK AND ALONG THE ROW FOR REQUIRED SIDEWALK ROAD IMPROVEMENTS
61 *(OUTSIDE BLD ENVELOPE)* + 83 *(IN ROW)* = 144 REMOVED TREES



Indicates Location of Waypoint ID Pin
For Existing Trees To Be **Removed**
OUTSIDE BUILDING ENVELOPE

TOTAL ID PINS TO BE REMOVED 22
(61 TREES)

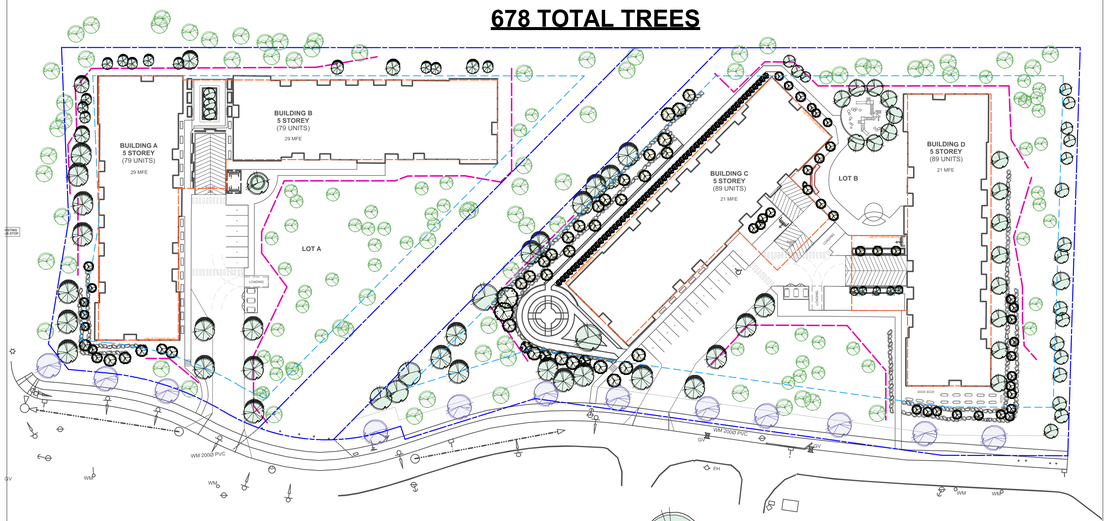
Refer To MJR Tree Report For Detailed Information

Indicates Location of Waypoint ID Pin
For Existing Trees To Be **Removed**
IN ROW - OUTSIDE BUILDING ENVELOPE
TREES REMOVED DUE TO CITY SIDEWALK REQUIEMENTS

TOTAL ID PINS TO BE REMOVED 30
(83 TREES - 57 on site & 26 off site)

Refer To MJR Tree Report For Detailed Information

OVERALL RETAINED AND NEW PROPOSED TREES
428 RETAINED EXISTING + 250 PROPOSED TREES *(238 NEW ON SITE & 12 NEW IN ROW)*
678 TOTAL TREES



Indicates Location of Waypoint ID Pin
For Existing Trees To Be **Retained** If Possible
INSIDE & OUTSIDE BUILDING ENVELOPE

TOTAL ID PINS TO BE RETAINED 130

Refer To MJR Tree Report For Detailed Information

Proposed New On Site Trees
TOTAL PROPOSED 238

Proposed New Trees in ROW
TO BE APPROVED BY CITY
TOTAL PROPOSED 12

GENERAL LEGEND

- Property Line
- Setback Line (Building Envelope)
- Underground Parkade
- Approximate Extent & Location of Tree Protection Fencing Exact Location to be Confirmed by Arborist After on Site Inspection of Trees & Individual RPZ *(ROOT PROTECTION ZONE)*

SUMMARY

TOTAL EXISTING TREES ON SITE	**= 1092**
TOTAL EXISTING TREES TO BE RETAINED	**= 428**
TOTAL PROPOSED REMOVED	**= 664**

TREES AT ID PIN LOCATIONS TO BE REMOVED
OUTSIDE BUILDING ENVELOPE / SETBACK LINE = 118
(FOR CONSTRUCTION OF BUILDINGS, PARKADE)

REQUIRED REPLACEMENT TREES AS PER BYLAW FOR TREES REMOVED OUTSIDE BUILDING ENVELOPE / SETBACK LINE

REPLACED AT 2-1 RATIO *(118 Trees x 2)* **NEW TREES REQUIRED = 236**

NEW TREES PROPOSED = 250

TOTAL TREES (PROPOSED + RETAINED) = 678

NOTE: THIS PLAN IS TO BE READ IN CONJUNCTION WITH MJR TREE SERVICE, TREE INVENTORY REPORT DATED MAY 4th 2020

TOTAL WAYPOINT ID PINS LOCATED ON SITE & IN ROW = 341 WHICH REPRESENTS A TOTAL OF 1092 TREES.

ID PIN SYMBOLS & CORRESPONDING NUMBERS HAVE BEEN PROVIDED FOR TREES TO BE REMOVED ONLY.

Date	Revisions	By
AUG 7 2020	FOR REZONING	LS

LAZZARIN SVISDAHL LANDSCAPE ARCHITECTS
203-1300 1st Avenue, Prince George B.C. V2L 2Y3
250-563-6158 www.lsla-landarch.com

Project
WESTURBAN DEVELOPMENTS
Erskine Lane

Sheet Title
Tree Management Plan

Date
May 10, 2020

Scale
1:700 METERS

Drawn By
LS/SD

Project No.

Drawing No.

L 2

208A – 2520 Bowen Road
Nanaimo, BC V9T 3L3
P: (250) 751-9070

November 18, 2019

EDI Project No: 19N0375

WestUrban Developments Ltd.
1-1170 Shoppers Row
Campbell River, BC V9W 2C8

Attention: Frank Limshue, Development Manager

RE: Environmental Overview
9 Erskine Lane, View Royal BC (PID 002-364-531)

EDI Environmental Dynamics Inc. (EDI) was retained by WestUrban Developments Ltd. (WestUrban) to provide an environmental overview as part of a rezoning application at the above-noted address. While the site is not within the local government's environmental development permit areas, it is largely forested, and so View Royal requested that the site be assessed by a Qualified Environmental Professional. This overview involved a brief background information review and a site assessment. Prior to the field assessment, the background review identified known sensitive features on or near the site, using available web maps (CRD, Habitat Wizard, iMapBC, SHIM, Wildlife Tree Stewardship Atlas, etc.). The site assessment was completed on September 27th of this year under favourable weather conditions and with full access to traverse the property. The focus was on identifying or broadly classifying:

- overall ecosystem type and cover
- sensitive ecosystems and features
- larger trees and potential for heron/raptor or other stick nests
- streams and wetlands

As a follow up to the initial site visit an assessment was conducted on November 13th to determine the presence of heron, raptor and other stick nests of concern. The assessment involved a detailed search of all suitable nest trees on the property.

The findings of the background review and field assessment are summarized in this letter.

Preliminary Development Plan

Currently, the 2.14-hectare property is zoned Rural (A-1) and the development plan would require rezoning to Comprehensive Development (CD) based on Mixed Residential (RM-3). A 15 m wide parcel owned by the Capital Regional District bisects the property into northern and southern sections in an approximate 60/40 split. The preliminary development proposal is to construct 372 rental apartment units in two five-storey buildings on the north portion and two six-storey buildings on the south portion, both with above and below ground parking (see attached site plan). While the proposed building footprints would cover about 25% of the total lot area, the total development footprint including access roads, parking and landscaped areas between buildings and paved surfaces would cover at

least 59% of the property (1.27 ha, not including buffers around buildings for construction and walkways, or broader landscaped areas).

Background Review

Located in the lower Craigflower Creek watershed, the site is about 1.2 km upstream of the Gorge Waterway (Portage Inlet), 140 m northeast of Craigflower Creek. It is in the coastal Douglas-fir moist maritime (CDFmm) biogeoclimatic zone, in which many terrestrial ecosystems are considered at risk—including all old forest[1]. These ecosystems are at risk because of their limited range and since most of the developed area on Vancouver Island falls within that range, there is little mature and old forest remaining. Overall, the property is gently sloping with a southern aspect and elevations ranging from 14 m above sea level at the south corner to 33 m at the north edge.

Terrestrial ecosystem mapping (TEM) completed in 2009 at a scale of 1:20,000 provides full coverage of the property. The site is represented by two TEM polygons—roughly covering the northern and southern halves. The northern half was classified as 80% Garry oak—Brome broadleaf woodland with very shallow soils (< 20 cm to bedrock) and 20% Cladina—Wallace's selaginella moss and lichen-covered rock outcrops with warm aspects (TEM code: 8 QB [00] v 5b/ 2 SC [00] 1b). The southern half was mapped as 100% Douglas-fir—Salal young forest (TEM code: 10 DS [01] 5).

A 1.3-hectare woodland was mapped by the 1997 Sensitive Ecosystems Inventory (SEI) at a scale of 1:20,000, about 170 m northwest of the site. Based on current imagery, this woodland appears to be mostly intact apart from one single-family lot, and it is surrounded by residential development to the south and agricultural land to the north. This area was mapped by TEM as Garry oak—Brome broadleaf woodland. Between the SEI woodland and the subject property, there is a mapped shrub swamp and open water wetland known as Stoneridge Wetland Park.

The CRD web map identified the ditch along Watkiss Way as a watercourse; however, its potential connection to fish habitat could not be determined from the map. No other notable watercourses, raptor or heron nests, rare plant or animal species[2] or sensitive features were identified on or adjacent to the property during the background information review.

Site Assessment

Terrestrial Ecosystems

About 1.53 hectares (71%) of the property is covered by mature Douglas-fir forest[3]. Garry oak woodland[4] occurs in the northern half, covering 0.29 hectares. There is also a mixed woodland covering 630 m^2 at the north end of the site. There is a single-family residence, garden area and pool located at the west edge of the parcel, including a driveway and parking area surrounded by mature coniferous trees (0.21 ha). Brief summaries of the vegetation communities on the property, their TEM classification[5], and their coverage of the site, are provided in the table on the following page. Also, see the site plan and photos attached.

[1] Coastal Douglas-fir Ecosystems at Risk

[2] Proposed critical habitat for Western painted turtle, a buffer from Craigflower Creek, slightly overlaps the site; however, there is no suitable habitat on the property.

[3] Red-listed when forest is old: Douglas-fir—Salal/Oregon grape, Douglas-fir/grand fir—Oregon grape and Douglas-fir—Arbutus

[4] Garry oak—moss (rock-moss—Wallace's Selaginella) would be a red-listed plant community if assessed by the Conservation Data Centre.

[5] Based on closest site series classifications as defined in A Field Guide to Site Identification and Interpretation for the Vancouver Forest Region

Area	Vegetation Description	TEM Site Series Description	TEM Map Code	Site Coverage (m^2 and %)
South Corner	• Partially open (~70% closure) multi-age mixed canopy of young and mature Douglas-fir, with a secondary component of bigleaf maple, and minor component of grand fir. • Some of the tree trunks are nearly overgrown with English ivy. • Fairly dense understory (>70% cover) of ocean spray, Indian plum, baldhip rose, snowberry, bracken, salal, tall and low Oregon grape, trailing blackberry, and swordfern. • Occasional Daphne, holly, and English hawthorn.	50% Douglas-fir—Salal Mature Forest 50% Douglas-fir/Grand fir—Oregon-grape Mature Forest	5 DS [01] 6 5 DG [04] 6	10,745 m^2 50%
Southeast Corner	• As above but with a greater proportion of grand fir, a relatively sparse shrub layer, and several larger trees (two Douglas-fir measured at 97 cm DBH).			
North Corner	• Partially open (~70% closure) canopy of mature Douglas-fir with a few arbutus, maple, Garry oak, and grand fir. • Understory dominated by ocean spray, salal, bracken fern, tall Oregon grape, and trailing blackberry, with the occasional Pacific crabapple and willow.	50% Douglas-fir—Salal Mature Forest 50% Douglas-fir—Arbutus Mature Forest	5 DS [01] 6 5 DA [02] 6	5,029 m^2 23%
North Central	• Partially open multi-aged mixed canopy of young and mature Douglas-fir with arbutus, Garry Oak and bigleaf maple. • Salal-dominated understory with ocean spray, baldhip rose, Saskatoon, tall Oregon grape, snowberry and trailing blackberry. Some Daphne.			
Northwest Corner	• Garry oak woodland	60% Garry-oak—Moss Woodland 40% Douglas-fir—Arbutus Mature Forest	6 OM [00] v 3b 4 DA [02] 6	452 m^2 2%
	• Mixed woodland	60% Douglas-fir—Arbutus Mature Forest 40% Garry-oak—Moss Woodland	6 DA [02] 6 4 OM [00] v 3b	634 m^2 3%
Northeast Edge	• Garry oak woodland • Himalayan blackberry along the edge of the right of way	90% Garry-oak—Moss Woodland 10% Douglas-fir—Arbutus Mature Forest	9 OM [00] v 3b 1 DA [02] 6	2,492 m^2 12%
Rural	• Existing rural land use, including a single-family home, landscaped garden area, pool, driveway and parking area.	80% Rural 20% Douglas-fir—Salal Mature Forest	8 RW 2 DS [01] 6	2,120 m^2 10%

Although the patch sizes are small, the woodlands on this property are classified as sensitive ecosystems and the forest is considered an important ecosystem by the Standard for Mapping Ecosystems at Risk in BC[6]. Sensitive ecosystems support ecological communities that are designated as provincially at risk by the BC Conservation Data Center (red—extirpated, endangered or threatened—or blue listed—special concern). Other important ecosystems, such as mature forest, have significant ecological values that are identified and mapped as part of sensitive ecosystem mapping projects on southeast Vancouver Island.

While the mature forest and woodlands are important and sensitive ecosystems, they are not pristine—and few sensitive ecosystems in the CDFmm are. Invasive plants are present in varying density throughout the site. English ivy is particularly dense in the south corner, having covered many of the mature tree trunks (Photo 21). There are strips of Himalayan blackberry along the edges of the right of way through the middle of the property (Photo 23). In the mature forest areas, there are occasional Daphne, English holly and English hawthorn, never in high density (Photo 39). Scotch broom is present in the woodland areas at a very low density (Photo 26). All these invasive plants could be removed and controlled. In the southeast corner there is an area where the understory vegetation has been removed and there is some metal and wood waste scattered around, possibly remnants of an informal camp site (Photo 3). As with the invasive plants, this waste could be removed, and the understory could be restored.

These ecosystems are also affected by fragmentation, as the site is surrounded by residential development to the south and west, cleared areas and Victoria General Hospital to the north/northeast, and rural/industrial land use and the highway to the southeast. Connectivity to the wetland and forest to the north is fragmented by Watkiss Way, and connectivity to Craigflower Creek to the south is fragmented by the residential development. Although the ecosystems could be restored at the site level, the effects of fragmentation are permanent.

Overlap with Development Footprint

To put the ecosystem coverage in the context of the proposed development, the following table shows the areas of overlap of the development footprint and the general ecosystem types. As noted in the preliminary development plan description above, the mapped development footprint does not currently include buffers around buildings for construction and walkways. As such, the actual development footprint would likely be larger.

Existing Ecosystem or Land Use	Development Footprint	
	m^2	% of Property
Mature Douglas-fir Forest	9,531	44%
Garry Oak Woodland	1,912	9%
Mixed Woodland	498	2%
Rural Residential	748	3%
Total	12,684	59%

Mature Trees and Wildlife Snags

There are many mature Douglas-fir trees throughout the property, including several approximately 1 m in diameter (DBH). Individual and groups of larger trees, mostly Douglas-fir were roughly mapped. Five wildlife snags were also identified and mapped—three in the southern half and two in the northern half of the property. See the attached site plan for these locations.

[6] Standard for Mapping Ecosystems at Risk in British Columbia

Based on the presence of mature trees and wildlife snags, there is reasonable potential for raptor nesting in the area. Similarly, there is abundant nesting habitat for songbirds throughout the site.

Riparian Areas

The ditch along the east edge of Watkiss Way may meet the definition of a stream under the RAR; however, this could not be determined during the overview assessment. It will depend on whether the ditch connects to fish habitat and would be best to assess during or following a significant rainfall event. If the RAR does apply, it appears to be a ditch as opposed to a channelized natural stream, and therefore the maximum width of the Streamside Protection and Enhancement Area (SPEA) would be 5 m. No other watercourses were observed on or adjacent to the site.

Rare Species

As this was an overview level assessment, detailed assessments for rare plant and animal species were not conducted. Ecosystems present on site have the potential for several rare species to occur. In particular, Garry Oak ecosystems support greater biodiversity and more species at risk than other ecosystems in BC (about 10% of *Species At Risk Act* listed species occur in Garry oak ecosystems)[7].

Heron and Raptor Nest Assessment

The assessment occurred under suitable overcast conditions. Two and a half hours was spent systematically observing for stick nests and sign. Two stick nests were observed on the property during the assessment. The first was a medium sized stick nest approximately 30m high in a young Douglas fir. The nest was found approximately 30m off the southeast corner of the developed portion on the lot. It was determined to be a Common Raven nest due to size structure and confirmed by the property owner who had observed the nest over the last two growing seasons. The second nest was a medium sized stick nest 20 m up a Douglas fir tree. Due to shape and size the nest could be of a smaller raptor like a Cooper's Hawk or possibly a Common Raven. Despite the number of large trees the canopy is of an even age and there is limited potential to support large stick nests. No Bald Eagle or heron nests were encountered during the assessment. A typical suite of overwintering birds was found on the property and bird activity was high.

Regulatory Considerations for Development

- In general, there are no provincial or federal requirements on private lands to protect species or ecological communities at risk. Also, the site is not within View Royal's existing environmental development permit area.
- Active bird nests, including songbirds, Common Raven and Cooper's Hawk, are protected under the *Wildlife Act*.
    - Vegetation clearing must be done outside the bird nesting window (March 1st to August 15th) or following pre-clearing nest surveys that confirm no observed active bird nests will be impacted.
- If the Watkiss Way ditch connects to fish habitat, an RAR assessment will likely be required for the development; however, the resulting 2 to 5 m SPEA will not conflict with the development plan. A more detailed review would be needed to verify downstream surface flow connectivity.

[7] Chapter 4—Species and Ecosystems at Risk—of *Restoring British Columbia's Garry Oak Ecosystems: Principles and Practices.*

Limitations

Mature forest is defined as ≥ 80 years since the last stand-replacing disturbance. For this overview-level assessment EDI interpreted the forest as being mature based on general field observations—the size of the trees in relation to the interpreted site productivity, the lack of stumps or other indicators of logging. A more detailed assessment would be needed to confirm the age range of the forested areas.

Mapping of features was done with an iPad using Avenza PDF Maps. The iPad's built-in GPS is not a high-end differential GPS and is typically accurate within 5 m under favourable conditions—however the position error can be greater than this. Ecosystem polygons were delineated based on GPS points and tracks and aerial imagery. As such, the location and boundaries of features shown on the site plan and the areas of ecosystem types are approximate.

This report was prepared exclusively for WestUrban Developments Ltd. by EDI Environmental Dynamics Inc. The quality of information, conclusions and estimates contained therein are consistent with the level of effort expended and is based on: i) information available at the time of preparation; ii) data collected by EDI Environmental Dynamics Inc. and/or supplied by outside sources; and iii) the assumptions, conditions and qualifications set forth in the report. The report is intended to be used by WestUrban Developments Ltd. for the intended purpose as outlined by this report (local government review). Any other use or reliance on this report by any third party is at that party's sole risk.

Closure

If requested, we can provide WestUrban with recommendations to balance development opportunities with sensitive ecosystem values on the site and achieve other best management practice objectives for development.

Please contact us at 250-751-9070 if you have any questions about this environmental overview.

Yours truly,

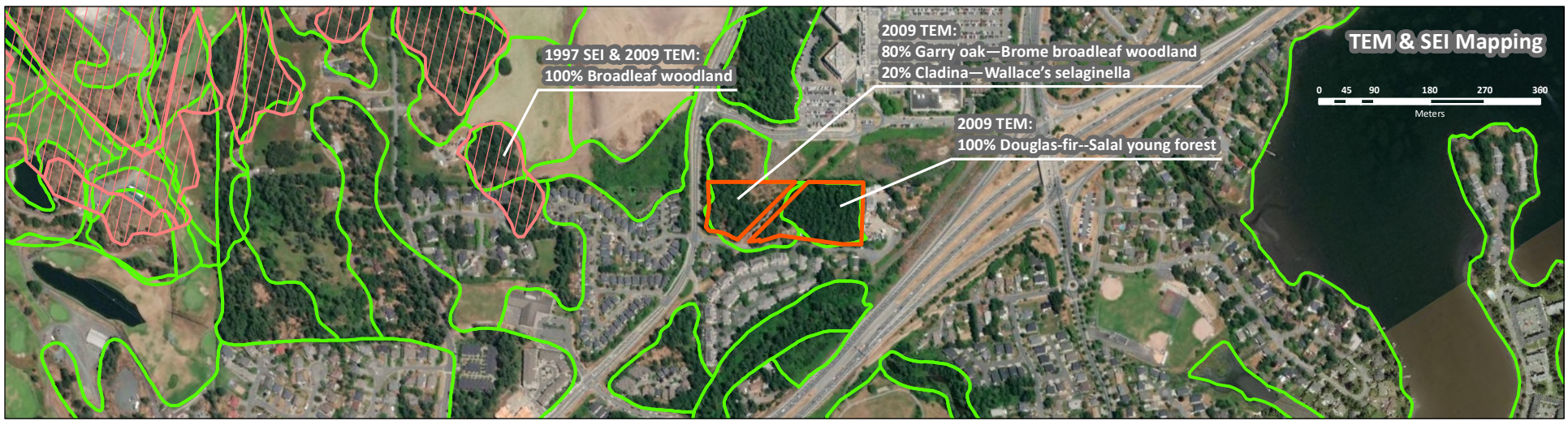
EDI Environmental Dynamics Inc.

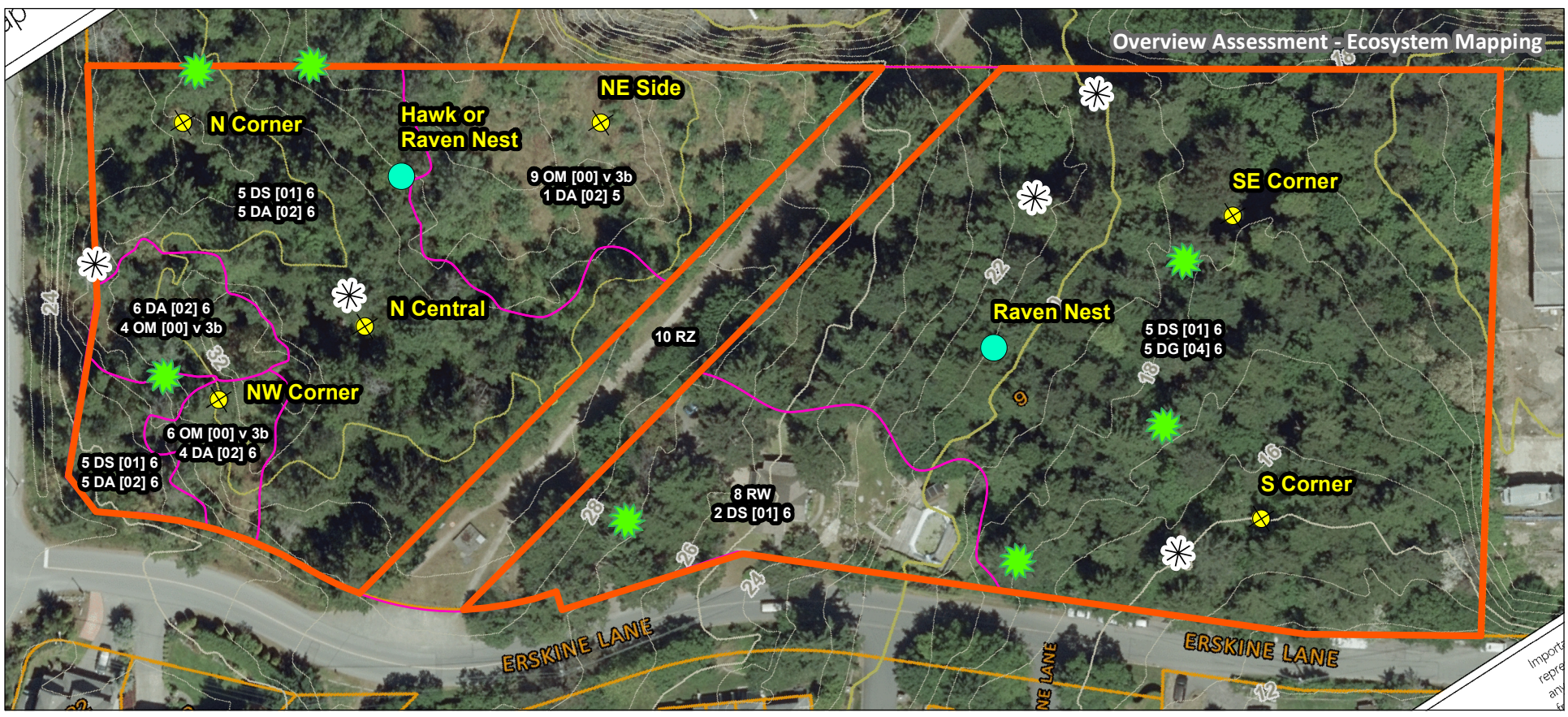
Ian Wright, PAg, RBTech

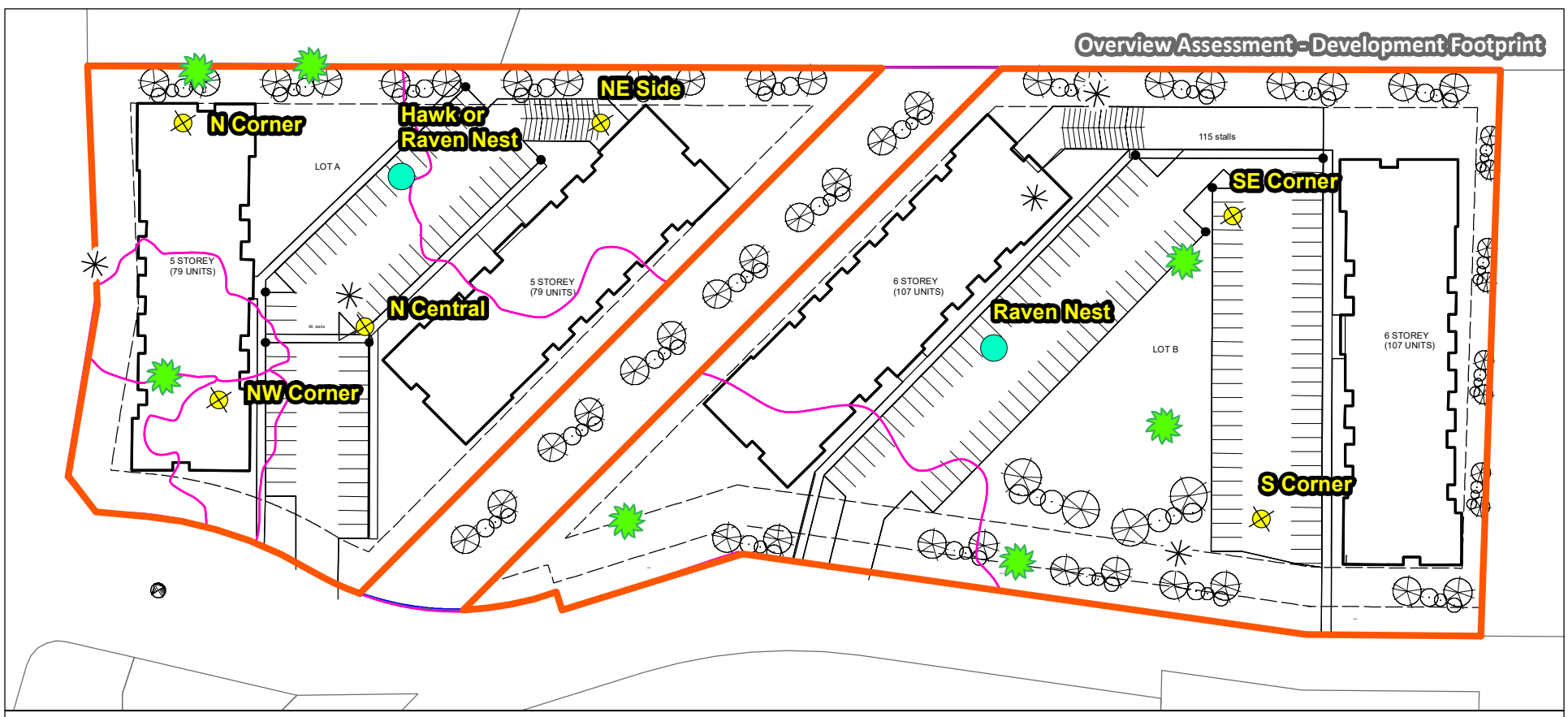
Ecologist/GIS Analyst

Attachments:

- Site Plan
- Photos







Legend

- General Area Description
- Larger Trees
- Wildlife Snags
- Nest
- Subject Property
- Terrestrial Ecosystems (EDI, 2019)
- 1997 SEI Polygons
- 2009 TEM Polygons

Environmental Overview Site Plan
9 Erskine Lane, View Royal BC

Data Sources

1997 Sensitive Ecosystems Inventory (SEI) of East Vancouver Island)

2009 Terrestrial Ecosystem Mapping (TEM) of CDFmm

View Royal Web Map Imagery & Esri Basemap Imagery

Preliminary development plan from WestUrban

Feature locations are approximate, as mapped with an iPad using Avenza PDF Maps.

Map codes are based on TEM format:

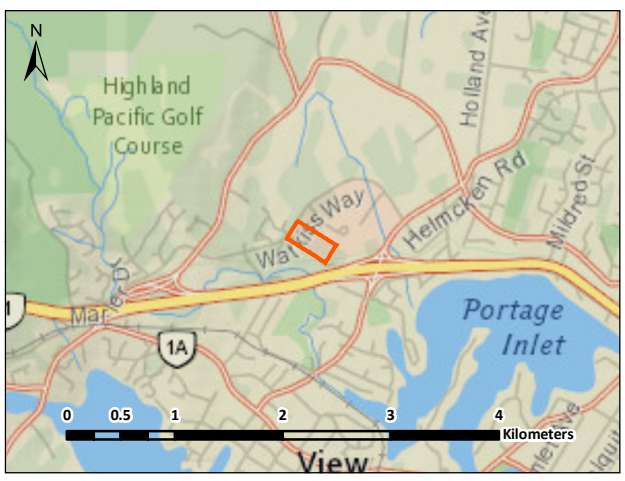
Decile (5 = 50% cover) — # XX [##] x #x — Structural Stage (6 = mature forest, 3b = tall shrub)

Site Series Map Code — Site Series # — Site Modifier (v = very shallow soils)

0 10 20 30 40 50
Meters

Map Scale 1:1,100 (printed on 11 x 17)
Map Projection: WGS 1984 UTM Zone 10N

Drawn:	Checked:	Drawing:	Date:
IW	AC	1 of 1	2019-11-18



EDI

Path: C:\Users\wright\Documents\Erskine_Ln\Erskine EA Site Plan 20191115.mxd

Photos

Photo 1. South Corner: Multi-age mixed canopy of young and mature Douglas-fir, bigleaf maple and grand fir.

Photo 2. South Corner: Multi-age mixed canopy of young and mature Douglas-fir, bigleaf maple and grand fir.

Photo 3. Southeast Corner: Some larger Douglas-fir trees, relatively sparse understorey, and some abandoned wood and metal waste.

Photo 4. Southeast Corner: Understorey of Oregon grape, trailing blackberry and bracken.

Photo 5. Southeast Corner: Understorey of salal and Oregon grape.

Photo 6. Northeast Edge: Northwest view of the Garry oak woodland.

Photo 7. Northeast Edge: Southeast view of the Garry oak woodland (Victoria General Hospital in the background on the left).

Photo 8. Northeast Edge: Northwest view of the Garry oak woodland.

Photo 9. Northeast Edge: Northeast view towards the Garry oak woodland from the Douglas-fir—arbutus transition.

Photo 10. Southwest Edge (Rural): Southeast view of the existing rural residential land use, with the house, landscaped area, driveway and parking area surrounded by mature Douglas-fir trees, taken from the right of way.

Photo 11. North Central: Douglas-fir—salal and arbutus mature forest.

Photo 12. Northwest Corner: Garry oak and Douglas-fir—arbutus woodland.

Photo 13. Northwest Corner: Garry oak and Douglas-fir—arbutus woodland.

Photo 14. North Corner: Douglas-fir—salal and arbutus mature forest.

Photo 15. North Central: Douglas-fir—salal and arbutus mature forest, with some remnants of a constructed mountain bike trail feature.

Photo 16. Northwest Corner: Northeast view of the Garry oak and mixed woodland from Erskine Lane.

Photo 17. Northwest Corner: Southeast view of the Garry oak and Douglas-fir—arbutus woodland from Watkiss Way.

Photo 18. Southwest Edge (Rural): Southeast view of the existing rural residential land use, with the house, landscaped area, driveway and parking area surrounded by mature Douglas-fir trees, taken from Erskine Lane.

Photo 19. One of the larger Douglas-fir trees (~97 cm DBH).

Photo 20. Wildlife snag #1 in the south corner.

Photo 21. Extensive growth of English ivy on many of the trees in the S corner.

Photo 22. One of the larger Douglas-fir trees in the southeast corner.

Photo 23. Northwest view of the Garry oak woodland from the right of way.

Photo 24. Southwest view of the right of way, adjacent to the Garry oak woodland.

Photo 25. Southeast view of the Garry oak woodland.

Photo 26. Representative view of the Garry oak woodland.

Photo 27. Douglas-fir—arbutus edge around the Garry oak woodland.

Photo 28. Northwest view of the Garry oak woodland.

Photo 29. North view of the Garry oak woodland to the north of the property.

Photo 30. Douglas-fir—arbutus edge around the Garry oak woodland.

Photo 31. Representative view of the mixed woodland at the northwest corner.

Photo 32. East view of the Garry oak woodland and wildlife snag at the northwest corner by Erskine Ln.

Photo 33. Northeast view of the right of way from Erskine Lane.

Photo 34. Representative view of the mixed woodland at the northwest corner.

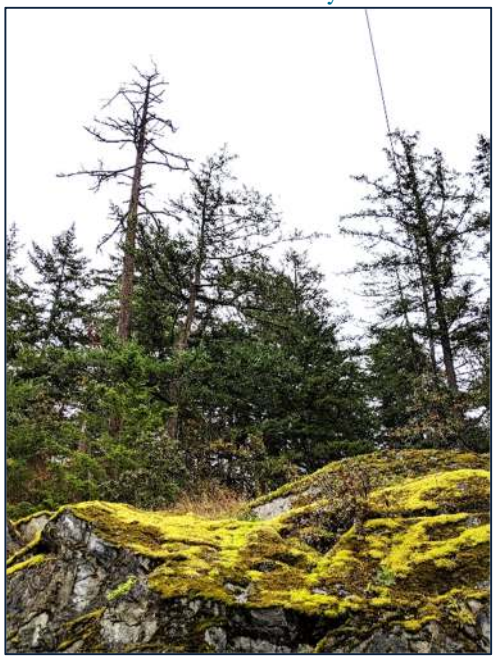


Photo 35. East view of the NW corner mixed woodland opening from Watkiss Way.

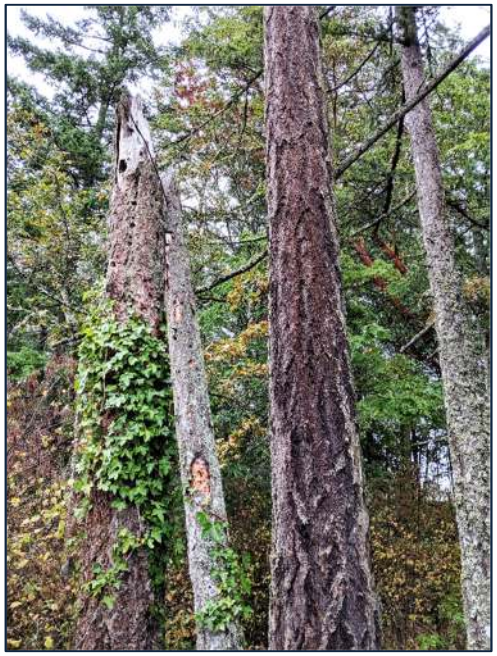


Photo 36. Wildlife snag in the north central forest.

Photo 37. Representative view of the Douglas-fir—arbutus forest.

Photo 38. East view of the existing rural residential land use from Erskine Ln.

Photo 39. Representative view of the Douglas-fir—arbutus forest.

Photo 40. Representative view of the Douglas-fir—arbutus forest.

Photo 41. Southwest view of the ditch along the east side of Watkiss Way.

Photo 42. Northeast view of the ditch along the east side of Watkiss Way.

Photo 43. Common Raven nest in the southern portion of the property.

Photo 44. Stick nest (possibly Common Raven or Cooper's Hawk) in the northern portion of the property.

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Cascadia Biological Services
772 Goldstream Ave
PO Box 27034
Victoria, BC
V9B 5S4

April 12th 2020

Westurban Developments Ltd.
1-1170 Shoppers' Row
Campbell River BC
Attn: Renee Olson

Environmental Opinion Letter – 9 Erskine Lane – View Royal BC

To whom it may concern,

This letter report is confirmation that I, Thomas Roy, R.P. Bio. of Cascadia Biological Services has completed an overview watercourse assessment for a property located at 9 Erskine Lane in the Town of View Royal. An overview map of the property is presented in Attachment I. The purpose of this assessment was to determine if the roadside ditches that are mapped as watercourse segments by the Capitol Regional District (CRD) meet the definition of fish habitat under the Riparian Areas Protection Regulations (RAPR) legislation. The watercourse segments are presented on a map in Attachment II and are found adjacent to the western and southwestern flanks of the property. As a result, a watercourse assessment was completed by the author of this report to determine the status of these ditch segments. The assessment was completed on April 9th 2020. The focus of the assessment was to evaluate the ditches for characteristics that define fish habitat under the RAPR including the presence of mineral alluvium, bankfull scour and direct connectivity via overland flow to fish habitat downstream. In this case, fish and fish habitat was identified as Craigflower Creek which is located approximately 250m downstream. Typical photographs of the watercourse are presented in Attachment III. From our assessment of the property, Cascadia Biological has determined the following presented below in bullet form;

1) There are no watercourses found within the subject property that meet the definition of a watercourse under the RAPR legislation;
2) There are no watercourses meeting the RAPR legislation within 30m of the subject property that would project a 30m Riparian Assessment Area (RAA) onto the property;
3) The ditches assessed on site and presented in Attachment II (solid blue polyline) are non fish bearing;
4) The ditches assessed on site and presented in Attachment II (solid blue polyline) do not meet the definition of a watercourse under the RAPR as a result of the

absence of overland flow connectivity, the absence of mineral alluvium as well as the absence of any signs of scour. The diches do not meet the RAPR criteria for fish habitat.

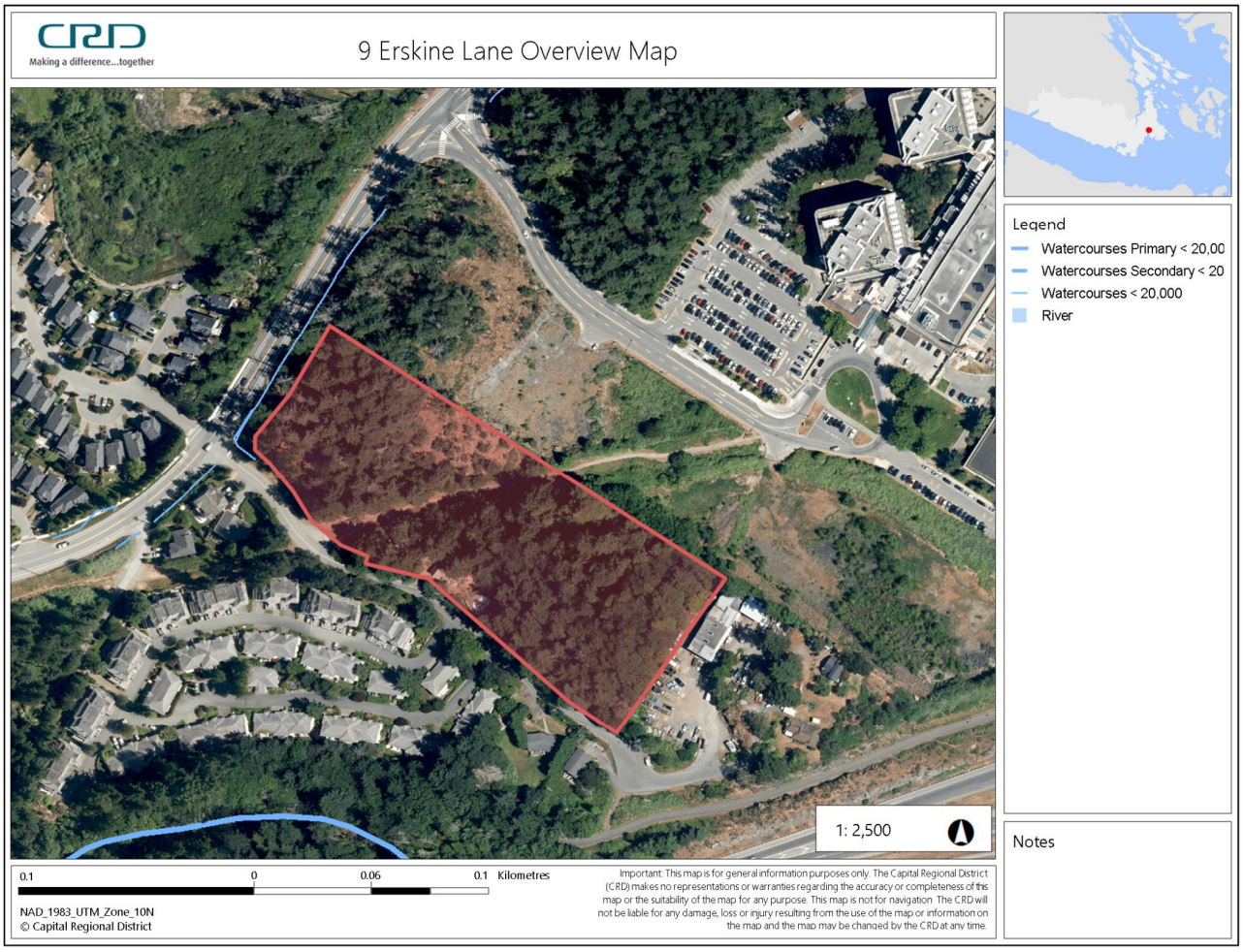
I trust that the above information will help in determining if the property is well suited for your proposed vision of the property. Please feel free to contact me via this email if you have any questions regarding this environmental assessment report.

Thanks for your time.

Thomas Roy, R.P. Bio.,
Cascadia Biological Services
(250) 888-4864
cascadiabiological@shaw.ca

Cascadia Biological Services

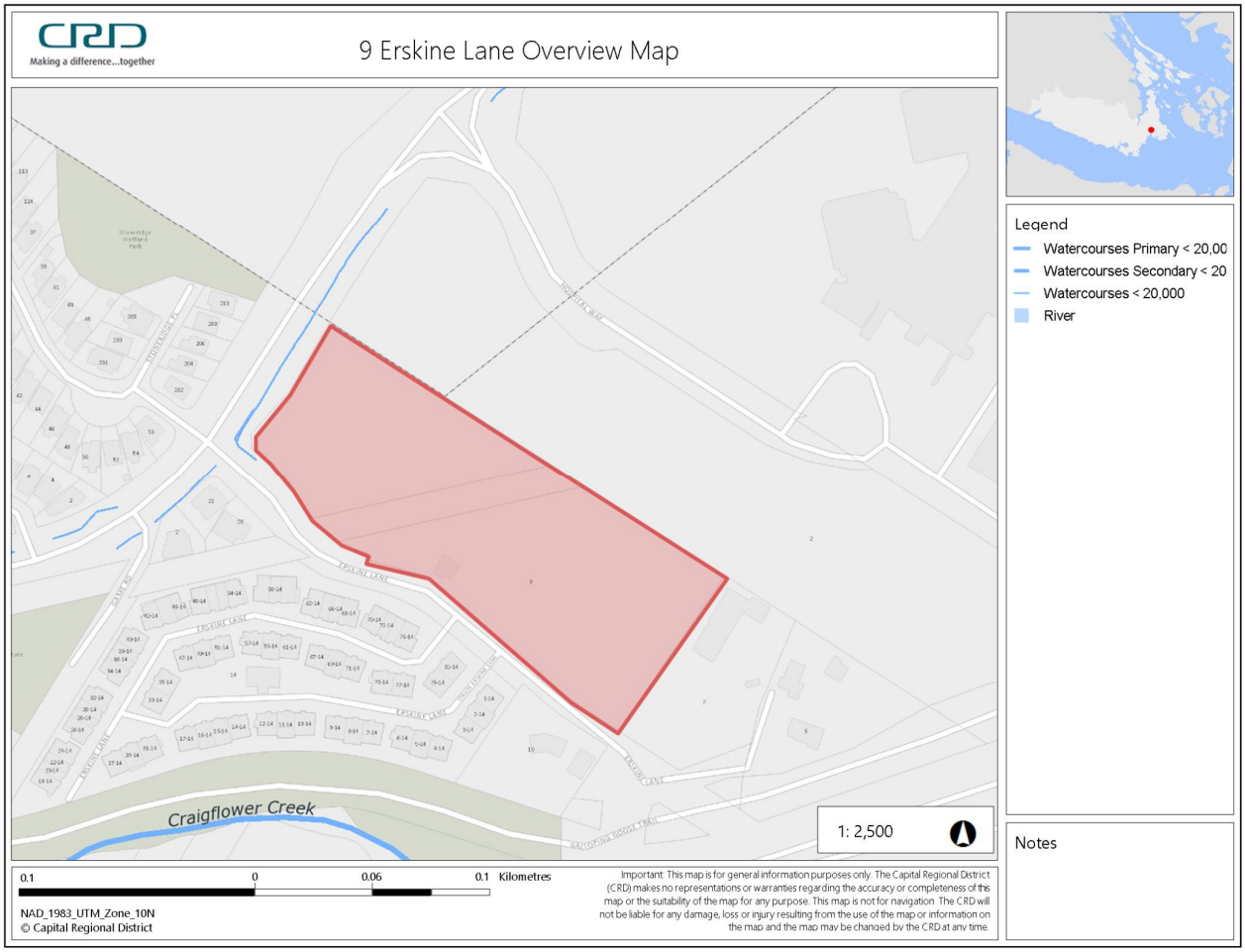
Attachment I – Overview Map of the Property



Note: Study Area is within the red polygon

Cascadia Biological Services

Attachment II – Overview Map of the Property with Ditches Presented as Blue Polylines (west and southwestern flank)



Cascadia Biological Services

Attachment III – Typical Site Photographs

Plate #1 – Typical view of the existing wetted depression/ditch onsite along the southwestern corner of the property

Plate #2 – Typical view of the existing wetted depression/ditch onsite along the western flank of the property

ISLANDER
ENGINEERING

MEMORANDUM

Date: August 8, 2020

To: Westurban Developments Ltd.
111-2036 Island Hwy S
Campbell River, BC V9W 0E8

Attention: Sarah Alexander, P.Eng., MBA

Project: 2253

RE: 9 Erskine Lane – Technical Design Brief dated October 9, 2019

We understand that Westurban is planning to submit a revised rezoning application to the Town of View Royal which proposes the same usage, however on a smaller density scale.

Because our captioned design brief was crafted for a higher density of the same usage, there are no concerns from an engineering site servicing or traffic perspective over and above what was identified in our Technical Design Brief dated October 9, 2019. In our professional opinion, there is no need to update our technical report during this land usage stage. Once the land is rezoned for the proposed use and a DP/BP is being considered, we would recommend that you revisit the densities so that Islander can revise conceptual designs.

We trust this fulfills your requirements at this time. Please contact the undersigned with questions / comments.

Yours Truly,

ISLANDER ENGINEERING LTD.

Mike Achtem, P.Eng
Principal, Senior Engineer

TECHNICAL DESIGN BRIEF

9 ERSKINE LANE
VIEW ROYAL, BC
MULTI FAMILY
RESIDENTIAL DEVELOPMENT

Prepared For:

Town of View Royal
45 View Royal Avenue
Victoria, BC
V9B 1A6

ATTN: Michele Gill, AScT

Prepared By:

Islander Engineering Ltd.
623 Discovery St.
Victoria, BC V8T 5G4

Date: October 9, 2019

Project: #2253

ISLANDER
ENGINEERING

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A Site Plan - Figure 1

B Water Network - Figure 2 and FUS Calculations

C Offsite Sanitary Sewer - Figure 3 and Sanitary Sewer Capacity Assessment

D Stormwater Management - Figure 4

1 INTRODUCTION

This design brief comments on the general servicing proposed for the development of 9 Erskine Lane, located within the Town of View Royal (Legal Description: Lot B, Plan VIP26648). The site area is approximately 2.35 hectares and the developer proposes the creation of a 372-unit residential development comprising four buildings (5 to 6 stories each) as illustrated in Appendix A, Figure 1. The site is bounded to the north by Watkiss Way, to the south by a similar multifamily development and to the east by the Victoria General Hospital. The existing site topography consists of a local high point at the northeast property line of approximately 27m, sloping gently to the southwest corner of the site where the elevation is approximately 14m. The site is split approx. one third/two thirds by the existing CRDIS trunk supply mains. A conceptual site plan, drainage plan, and sanitary sewer plan for the proposed development has been included in the appendices.

2 SERVICING

2.1 Water Servicing (Domestic)

The domestic water meters will be sized according to the American Water Works Association (AWWA) M22 meter sizing guidelines. It is anticipated that each building will require a minimum 50mm diameter domestic service. Service will be provided from the proposed 300mm dia. PVC watermain along Erskine Lane as shown in Appendix B. Proposed service lines will include domestic and fire metering with backflow prevention.

2.2 Fire Flow Capacity (Fire Underwriters Survey)

Fire flow demand shall be in accordance with the current Fire Underwriters Survey (FUS) *Water Supply for Public Fire Protection*. A brief summary of fire flow requirements has been included in Table 1 below; a detailed preliminary FUS calculation for the proposed development has been included as Appendix B.

Table 1 - Fire Flow Requirements

Minimum Residual Pressure	20 psi (14.1 m)
FUS fire flow	266.7 L/sec

Based on the preliminary fire flow analysis (FUS), the maximum required fire flow is anticipated to be 266.7 L/sec (Appendix B). It is anticipated that the proposed 300mm PVC watermain along Erskine Lane will meet these requirements. Existing fire hydrants in proximity to the site include hydrant VRFD103, which is 186m from Bldg A and B, 80m from Bldg C and 114m from Bldg D. As this hydrant is located more than 45m from the proposed Siamese connectors, additional hydrants will be required (see Figure 2). The practical pumping limit for a single pump truck is approximately 150 L/sec per hydrant; therefore, one additional hydrant will be required at each site access road (within 45m of each Siamese connection point). Both hydrants would be used simultaneously to reach the required 266.7 L/sec fire flow dictated through FUS analysis.

2.3 Sanitary Sewer Servicing

An existing 200mm diameter PVC sanitary sewer main runs along Erskine Lane fronting the property. This 200mm diameter main represents the northern reach of a larger system which collects sewage from the immediate area before crossing the Trans-Canada Highway, through the back yards of properties along Vickery Road, across Helmcken Road, into Helmcken Park Pump Station as depicted in Figure 3, Appendix C. This system ultimately ties into the CRD Craigflower Pump Station approximately 1.45km southeast of the site.

A Sanitary Master Plan was completed for the Town of View Royal by McElhanney Consulting Services Ltd. (McElhanney), Final Report dated January 2nd, 2019. The report analyzed the sanitary sewer systems adjacent to the proposed development site including the gravity system fronting the site and the downstream pump station and forcemain systems described previously. The assessment included inflow and outflow characteristics based on present and future development conditions. The sanitary design requirements

based on the Town of View Royal Engineering Specifications (Sanitary Sewers) and the Sanitary Master Plan completed by McElhanney has been summarized in Table 2 below:

Table 2 – Sanitary Design Requirements

Residential Flow	213 L/cap/day
Single-Family	2.75 cap/unit
All other residential uses	1.85 cap/unit
Stormwater Inflow & Infiltration (100 Yr)	32,500 L/ha/day
Minimum Gravity Main Velocity	0.61 m/sec
Minimum Force Main Velocity	0.75 m/sec
Maximum Force Main Velocity	3.0 m/sec

The existing sanitary system capacity has been reviewed from the development site down to the CRD Craigflower Pump Station and the output of this analysis has been included in Appendix C. The system was modeled under constant peak flow conditions for 24 hours and found to be operating at 54% capacity. The results of this analysis are summarized in Table 3 below:

Table 3 – Pre-development Sewer Capacity Summary

Unit Count	156 (Other Residential)
	321 (Single Family)
Catchment Area	42.5 ha
Peak Flow	25.10 L/sec (all loads are at upstream manholes)
Maximum Peak Flow / Design Flow Ratio (Qa/Qf)	0.54 (54% full)
Minimum Peak Flow Velocity	0.43 m/sec

Post development flow modeling is also included in Appendix C. The system was modeled under constant peak flow conditions for 24 hours and found to be operating at 45% capacity. The results of this modeling exercise are included in Table 4 below:

Table 4 – Post-development Sewer Capacity Summary

Unit Count	528 (Other Residential)
	321 (Single Family)
Catchment Area	42.5 ha
Peak Flow	31.97 L/sec
Maximum Peak Flow / Design Flow Ratio (Qa/Qf)	0.69 (69% full)
Minimum Peak Flow Velocity	0.43 m/sec

A comparison of pre and post development models indicate that the existing sanitary system has the capacity to accommodate the proposed development. Sanitary service will be extended from the 200mm dia. stubbed terminus of the existing system, extended along Erskine Lane and into the site to service each building. The northernly section will be serviced to Erskine and will cross the existing CRDIS trunk watermains prior to connecting to the existing gravity collection system.

The pumps and forcemain system from the Helmcken Park Pump Station were reviewed to confirm there is sufficient capacity to support the proposed development. The system has a shared forcemain with the Hospital Pump Station and the Milwood Pump Station prior to discharging into the CRD Craigflower Pump Station. From the Sanitary Master Plan Report, we confirm that the future Q_{100} inflows to the Helmcken Park P.S. show 25.27 L/s, stating the pump station can meet these future demands before any upgrades are needed. From Table 5, with the addition of the proposed development, the peak flow into the Pump Station will be 31.97 L/s. Because this flow is less than the ultimate capacity of the Pump Station, 54.79 L/s, no upgrades are needed to the existing pumps in the Helmcken Park

Pump Station at this time. A summary of the post-development flow condition within the existing force main has been included in Table 5.

Table 5 – Force Main Summary

Change in Peak Flow	6.87 L/sec
Existing Helmcken Park Max. Total Inflow (Q_{100})	25.10 L/sec
Proposed Helmcken Park Max. Total Inflow (Q_{100})	31.97 L/sec
Existing Helmcken Park Max. Total Outflow (Q_{100})	53.70 L/sec

The report also analyzed resulting velocities resulting from the future development condition. There were slight exceedances identified within the Helmcken Park and Midwood Pump Stations though upgrades were not considered necessary provided there are no operational concerns within each system. A velocity summary for each Pump Station has been provided in Table 6.

Table 6 – Force Main Velocity Summary

Hospital Max. Velocity (Q_{100})	1.23 m/s
Helmcken Park Max. Velocity (Q_{100})	3.10 m/s
Midwood Max. Velocity (Q_{100})	3.78 m/s

2.4 Rain Water Management Calculations

The stormwater management design methodology for all proposed works and review of all existing infrastructure has been performed in accordance with conditions set out in the ToVR Bylaw No. 985, "Subdivision and Development Servicing Bylaw" (2017).

2.4(a) Town of View Royal Rain Water Management Criteria

As per ToVR bylaw section 4.3.1 and 4.4, proposed on- and off-site drainage systems shall be designed to handle peak flow discharge determined using the

Rational Method based on a 1-in-10 year rainfall event. Peak discharge is estimated for the pre- and post- development site condition with the Rational Method,

$$Q = \frac{CiA}{360}$$

Q - Peak Stormwater Discharge (m^3/s)

C - Runoff Coefficient

A - Contributing catchment area (m^2)

i - Rainfall intensity (mm/hr)

Runoff coefficient for pre- and post-development is calculated using the values in Table 5:

Table 5 - Runoff Coefficients

Land Use	Inlet Time (min)	Min. Coeff (C)
Unimproved areas, parks, playgrounds, etc.	**15**	**0.35**
Residential areas - low density, single family dwelling neighborhoods	10	0.60
Largely impervious areas	**5**	**0.95**

2.4(b) Design Storm

All storm water works will be designed in accordance with the Town of View Royal Bylaw No. 985 and to meet normal standards of safety for the public and the occupant of the land and surroundings. The design will ensure no nuisance or increase in flood levels resulting from the project for the design storm events in the bylaw. The conceptual plan is included in Appendix D, Figure 4- Stormwater Management.

The design storms for the on- and off- site Rational Method analysis and proposed live storage calculations have been adapted from the Victoria - Gonzales Intensity-Duration Frequency (IDF) curve as per ToVR which has been summarized in Table 6:

Table 6 – Victoria - Gonzales Rainfall Intensity Curve

Design Storm	10 min
2-Year	17 mm/hr
10-Year	26 mm/hr

2.5 Storm Water Management – Onsite

The proposed storm water management system will employ a treatment train including strategically located rain-gardens and absorbent landscaping BMPs. Runoff from paved surfaces and roof leaders, where possible, will be collected within biofiltration raingardens. Post-development storm water management onsite is expected to reduce the discharge to the municipal system when compared to the existing pre-development conditions due to detention and controlled release measures. Tables 7 and 8 summarize the existing and proposed storm water discharge conditions from the site:

Table 7 – Pre-Development Storm Water Discharge Conditions

Lot	North	South
Impervious Area (C = 0.95)	0.0 ha	0.0 ha
Unimproved Area (C = 0.35)	0.8560 ha	1.4909 ha
Runoff Coefficient (Undeveloped Lands)	0.35	0.35
Intensity (10 year, 10 min)	26 mm/hr	26 mm/hr
Pre-Development Peak Flow	**18.6 L/sec**	**32.3 L/sec**

Table 8 depicts the expected post development discharge conditions for the anticipated 1 in 2yr storm event.

Table 8 – Post Development Storm Water Discharge Conditions

Lot	North	South
Impervious Area (C = 0.95)	0.4932 ha	0.7168 ha
Unimproved Area (C = 0.35)	0.3628 ha	0.7742 ha
Composite Runoff Coefficient	0.6957	0.6384
Intensity (10 year, 10 min)	26 mm/hr	26 mm/hr
Max. Discharge Flow (Pre-Dev.)	18.6 L/sec	32.3 L/sec

Raingardens will be equipped with grated overflows directed to subsurface detention rock pits, or similar facilities. Treated and attenuated flows from the site will be conveyed to the new municipal drain in Erskine Lane via flow control structures onsite. The live storage detention and controlled release rate requirements have been summarized in Table 9.

The current proposal has allowed for sufficient area outside of the impervious footprint to provide detention facilities, which, when combined with a treatment train, and controlled release will meet, or exceed rainwater best management practices for the downstream freshwater aquatic receiving environment. See the stormwater management figure in Appendix D for the proposed storm water management areas. Table 9 summarizes the site specific requirements for storm water detention and controlled release:

Table 9 – Required Storm Water Detention and Controlled Release Rate

Lot	North	South
Impervious Area	0.4932 ha	0.7168 ha
Required Storage	33.5 m^3	44.5 m^3
Catchment Area	0.8560 ha	1.4909 ha
Maximum Release Rate	18.6 L/sec	32.3 L/sec

Minimal overland flow is expected to reach the site from adjacent properties. Flow originating from the north is expected to be intercepted by the existing undeveloped land.

2.6 Storm Water Management – Offsite

The offsite drainage is controlled by the existing profile of Erskine Lane. This profile divides the site into two separate drainage systems as shown in Appendix A.

The north portion of the site flows into an existing ditch along the east side of Erskine Lane, flowing north, which enters into an existing culvert that appears to run under Erskine Lane. More research will need to be completed as there is no discernable outlet to this culvert.
The south portion of the site will connect into an existing storm water infrastructure running parallel to Erskine Lane. The municipal system conveys the storm water to a discharge point in Craigflower Creek, approximately 135m to the south. As part of frontage improvements associated with this development, the existing ditches fronting the site will be enclosed in an extension of the existing storm systems. Curb/gutter and catch basins will also be installed on the east side of Erskine Lane fronting the site to capture road runoff.

Following the construction of detention and controlled release systems for storm water discharge from impervious surfaces, the overall peak discharge rate from the site will be lower than the pre-development conditions, therefore no upgrades to the downstream storm water infrastructure are expected to be required. The onsite detention facilities will attenuate the peak flow below pre-development conditions, negating the need for downstream upgrades.

2.7 Hydro/Tel/Cable/Gas

Electrical, communications and natural gas infrastructure is available within the Erskine Lane Right of Way. Connection details and potential upgrades will be assessed through the detailed design phase.

2.8 Transportation, Road Access and Egress

Two 7.0m wide driveways will provide access from Erskine Lane to the internal parking areas which serve visitors and residents, as well as the pickup and drop off locations for each building. The existing paved width of Erskine Lane is approximately 7.8m which will be increased to 8.5m as per Town of View Royal standard road detail VRSD-R10 which includes a 2.0m sidewalk, curb and gutter along the site frontage of Erskine Lane. No upgrades are anticipated along Watkiss Way but a review of the existing traffic study for the area will need to be completed prior to re-zoning.

3 CLOSURE

The above design brief for the proposed development located at 9 – Erskine Lane in View Royal, BC has been prepared by,

ISLANDER ENGINEERING LTD.

Please contact the undersigned with any questions.

Yours Truly,

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
M.J. ACHTEM

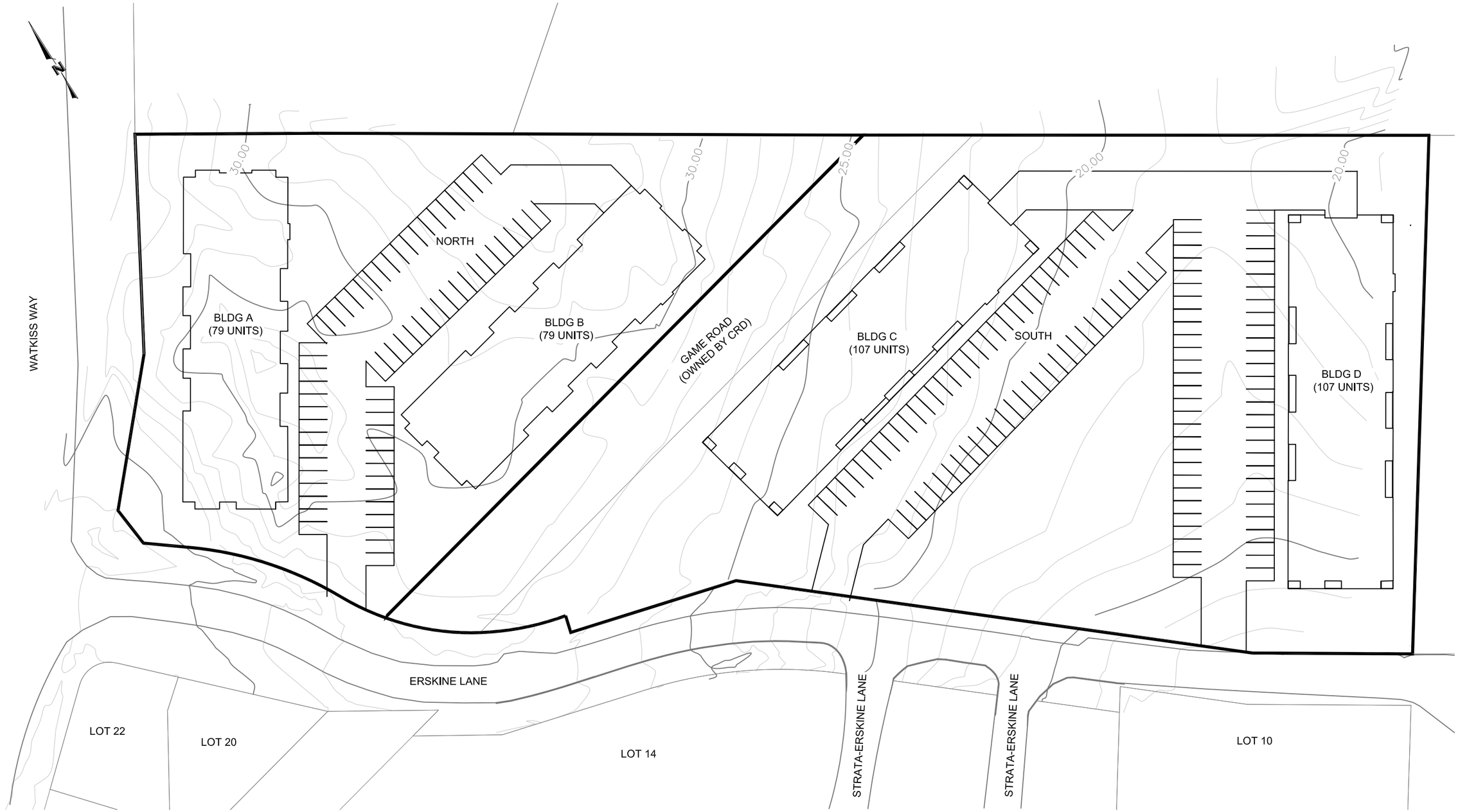
Rob Johnston, CTech.
Project Design Technician

Mike Achtem, P.Eng.
Principal, Civil Engineer

30 Oct 2019

ISLANDER
ENGINEERING

APPENDIX A
SITE PLAN - FIGURE 1



OCTOBER 2, 2019

FOR DISCUSSION PURPOSES ONLY

CIVIC ADDRESS: 9 ERSKINE LANE
LOT B
TOWN OF VIEW ROYAL, PLAN VIP26648

1:750

0 15 45m

9 ERSKINE LANE

SITE PLAN - FIGURE 1

TOWN OF VIEW ROYAL

IEL PROJECT - 2253	
ISSUED: OCT 09, 2019	
DRAWN BY: KK	CHECKED BY: MJA

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ENGINEERING

APPENDIX B
WATER NETWORK – FIGURE 2
AND FUS CALCULATIONS

N

BLDG A
(79 UNITS)

NORTH

BLDG B
(79 UNITS)

BLDG C
(107 UNITS)

SOUTH

BLDG D
(107 UNITS)

EX. STEEL W 1200mmØ

EX. STEEL W 900mmØ

EXISTING TWIN TRUNK
SUPPLY LINES

PROPOSED FIRE
HYDRANT

EX. W 200mmØ PVC

W 300mmØ PVC

PROPOSED WATER
MAIN UPGRADE

PROPOSED FIRE
HYDRANT

OCTOBER 2, 2019

FOR DISCUSSION
PURPOSES ONLY

CIVIC ADDRESS: 9 ERSKINE LANE
LOT B
TOWN OF VIEW ROYAL, PLAN VIP26648

1:750

0 15 45m

9 ERSKINE LANE

WATER NETWORK - FIGURE 2

TOWN OF VIEW ROYAL

IEL PROJECT - 2253	
ISSUED: OCT 09, 2019	
DRAWN BY: KK	CHECKED BY: MJA

WATER SUPPLY FOR PUBLIC FIRE PROTECTION

Job Name: 9 Erskine Lane Date: 9-Oct-19
Job # 2253 Name: K. Krajnc

Building A

A. TYPE OF CONSTRUCTION

Fire-Resistive Construction	0.6
Non-combustible Construction	0.8
Ordinary Construction	1.0
Wood Frame Construction	1.5

C = 1.5

B. GROUND FLOOR AREA

1282 m² 1st

C. HEIGHT OF BUILDING IN STOREYS

Height 5 (Number of floors) *Average

Area Total: 6410 m²

D. FIRE FLOW FORMULA

$F = 220 \cdot C \sqrt{A}$

C 1.5
A 6410 m²
F 26421 L/min

F (Nearest 1000) : 26000 L/min

E. TOTAL DECREASE FOR OCCUPANCY

Non-Combustible	-25%
Limited Combustible	-15%
Combustible	No Change
Free Burning	15%
Rapid Burning	25%

O = -25 %

T = -6500 L/min
Tt = 19500 L/min

F. DECREASE FOR SPRINKLER PROTECTION

50% for complete automatic protection
30% for adequatly designed systems
10% for water supply standard to both domestic and fire department hose lines required
10% for fully supervised system

T = 50 %

T = 9750 L/min

G. TOTAL INCREASE OF EXPOSURES

Seperation	Charge	Seperation	Charge
0 to 3m	25%	20.1 to 30m	10%
3.1 to 10m	20%	30.1 to 40m	5%
10.1 to 20m	15%	>45m	0%

N = 0% Total charge: 15%
S = 5%
E = 10% T = 15%
W = 0%

T = 2925 L/min

H. TOTAL FIRE FLOW REQUIREMENT

E = 19500 L/min
F = 9750 L/min
G = 2925 L/min

Total =	12675	L/min
Total =	*13000*	L/min
Total =	*216.7*	L/sec
Total =	3434.2	USGal/min
Total =	2859.6	IGal/min

WATER SUPPLY FOR PUBLIC FIRE PROTECTION

Job Name: 9 Erskine Lane Date: 9-Oct-19
Job # 2253 Name: K. Krajnc

Building B

A. TYPE OF CONSTRUCTION

Fire-Resistive Construction	0.6
Non-combustible Construction	0.8
Ordinary Construction	1.0
Wood Frame Construction	1.5

C = 1.5

B. GROUND FLOOR AREA

1282 m² 1st

C. HEIGHT OF BUILDING IN STOREYS

Height 5 (Number of floors) *Average

Area Total: 6410 m²

D. FIRE FLOW FORMULA

$F = 220 \cdot C \sqrt{A}$

C 1.5
A 6410 m²
F 26421 L/min

F (Nearest 1000) : 26000 L/min

E. TOTAL DECREASE FOR OCCUPANCY

Non-Combustible	-25%
Limited Combustible	-15%
Combustible	No Change
Free Burning	15%
Rapid Burning	25%

O = -25 %

T = -6500 L/min
Tt = 19500 L/min

F. DECREASE FOR SPRINKLER PROTECTION

50% for complete automatic protection
30% for adequatly designed systems
10% for water supply standard to both domestic and fire department hose lines required
10% for fully supervised system

T = 50 %

T = 9750 L/min

G. TOTAL INCREASE OF EXPOSURES

Seperation	Charge	Seperation	Charge
0 to 3m	25%	20.1 to 30m	10%
3.1 to 10m	20%	30.1 to 40m	5%
10.1 to 20m	15%	>45m	0%

N = 0% Total charge: 20%
S = 0%
E = 10% T = 20%
W = 10%

T = 3900 L/min

H. TOTAL FIRE FLOW REQUIREMENT

E = 19500 L/min
F = 9750 L/min
G = 3900 L/min

Total =	13650	L/min
Total =	*14000*	L/min
Total =	*233.3*	L/sec
Total =	3698.4	USGal/min
Total =	3079.6	IGal/min

WATER SUPPLY FOR PUBLIC FIRE PROTECTION

Job Name: 9 Erskine Lane Date: 9-Oct-19
Job # 2253 Name: K. Krajnc

Building C

A. TYPE OF CONSTRUCTION

Fire-Resistive Construction	0.6
Non-combustible Construction	0.8
Ordinary Construction	1.0
Wood Frame Construction	1.5

C = 1.5

B. GROUND FLOOR AREA

1414 m² 1st

C. HEIGHT OF BUILDING IN STOREYS

Height 6 (Number of floors) *Average

Area Total: 8484 m²

D. FIRE FLOW FORMULA

$F = 220 \cdot C \sqrt{A}$

C 1.5
A 8484 m²
F 30396 L/min

F (Nearest 1000) : 30000 L/min

E. TOTAL DECREASE FOR OCCUPANCY

Non-Combustible	-25%
Limited Combustible	-15%
Combustible	No Change
Free Burning	15%
Rapid Burning	25%

O = -25 %

T = -7500 L/min
Tt = 22500 L/min

F. DECREASE FOR SPRINKLER PROTECTION

50% for complete automatic protection
30% for adequatly designed systems
10% for water supply standard to both domestic and fire department hose lines required
10% for fully supervised system

T = 50 %

T = 11250 L/min

G. TOTAL INCREASE OF EXPOSURES

Seperation	Charge	Seperation	Charge
0 to 3m	25%	20.1 to 30m	10%
3.1 to 10m	20%	30.1 to 40m	5%
10.1 to 20m	15%	>45m	0%

N = 0%
S = 5%
E = 0%
W = 10%

Total charge: 15%

T = 15%

T = 3375 L/min

H. TOTAL FIRE FLOW REQUIREMENT

E = 22500 L/min
F = 11250 L/min
G = 3375 L/min

Total =	14625	L/min
Total =	*15000*	L/min
Total =	*250.0*	L/sec
Total =	3962.6	USGal/min
Total =	3299.5	IGal/min

WATER SUPPLY FOR PUBLIC FIRE PROTECTION

Job Name: 9 Erskine Lane Date: 9-Oct-19
Job # 2253 Name: K. Krajnc

Building D

A. TYPE OF CONSTRUCTION

Fire-Resistive Construction	0.6
Non-combustible Construction	0.8
Ordinary Construction	1.0
Wood Frame Construction	1.5

C = 1.5

B. GROUND FLOOR AREA

1414 m² 1st

C. HEIGHT OF BUILDING IN STOREYS

Height 6 (Number of floors) *Average

Area Total: 8484 m²

D. FIRE FLOW FORMULA

$F = 220 \cdot C \sqrt{A}$

C 1.5
A 8484 m²
F 30396 L/min

F (Nearest 1000) : 30000 L/min

E. TOTAL DECREASE FOR OCCUPANCY

Non-Combustible	-25%
Limited Combustible	-15%
Combustible	No Change
Free Burning	15%
Rapid Burning	25%

O = -25 %

T = -7500 L/min
Tt = 22500 L/min

F. DECREASE FOR SPRINKLER PROTECTION

50% for complete automatic protection
30% for adequatly designed systems
10% for water supply standard to both domestic and fire department hose lines required
10% for fully supervised system

T = 50 %

T = 11250 L/min

G. TOTAL INCREASE OF EXPOSURES

Seperation	Charge	Seperation	Charge
0 to 3m	25%	20.1 to 30m	10%
3.1 to 10m	20%	30.1 to 40m	5%
10.1 to 20m	15%	>45m	0%

N = 0% Total charge: 20%
S = 5%
E = 15% T = 20%
W = 0%

T = 4500 L/min

H. TOTAL FIRE FLOW REQUIREMENT

E = 22500 L/min
F = 11250 L/min
G = 4500 L/min

Total =	15750	L/min
Total =	*16000*	L/min
Total =	*266.7*	L/sec
Total =	4226.8	USGal/min
Total =	3519.5	IGal/min

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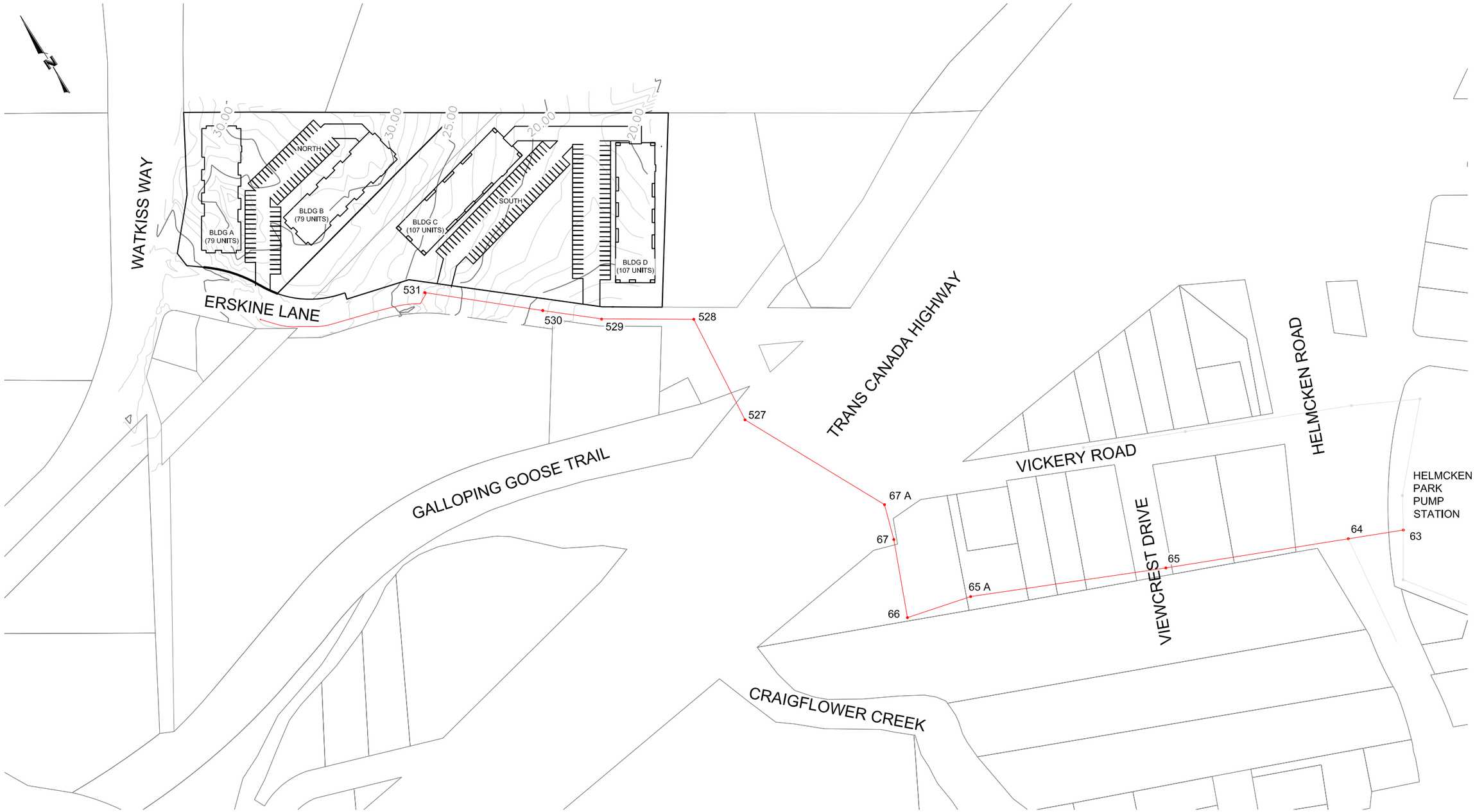
APPENDIX C
OFFSITE SANITARY SEWER - FIGURE 3 AND SANITARY SEWER CAPACITY ASSESSMENT



OCTOBER 2, 2019

FOR DISCUSSION PURPOSES ONLY

CIVIC ADDRESS: 9 ERSKINE LANE
LOT B
TOWN OF VIEW ROYAL, PLAN VIP26648

1:2000 0 40 120m

9 ERSKINE LANE

OFFSITE SANITARY SEWER - FIGURE 3

TOWN OF VIEW ROYAL

IEL PROJECT - 2253	
ISSUED: OCT 09, 2019	
DRAWN BY: KK	CHECKED BY: MJA

TABLE 1 - SANITARY SYSTEM EXISTING CAPACITY ASSESSMENT

PROJECT: 9 Erskine Lane
JOB No. 2253
FILE: G:\My Drive\Civil\Civil Projects\2253 - 9 Erskine Lane\9 Calculations & Estimates\9.3 Design Spreadsheet Information\[2253- Table 1 - Existing System Assessment - Oct 29 2019.xlsx]A
SINGLE-FAMILY CAPITA 2.75 Per Unit Reference: View Royal Sanitary Master Plan January 2019
MULTI-FAMILY (HIGH) CAPITA 1.85 Per Unit Based on 0.67 x SFC
RESIDENTIAL FLOW 213 L/Capita/Day
INFILTRATION 32500 L/ha/Day (100 yr)
PEAKING FACTOR Harmon Formula

DATE: 10/31/2019
ENG.: MJA
DESIGN: RBJ
CHECKED:

FIGURES GIVEN BELOW APPLY TO THE LOWER END OF EACH LINE

LINE	LENGTH & SLOPE				Single-Family Units		Multi-Family Units		Catchment (ha)		Total Capita	Infiltration (L/s)	Average DWF (L/s)	Peaking Factor	Peak DWF (L/s)	Existing Commercial Flow (L/s)	Proposed Commercial Flow (L/s)	Qa Total Flow (L/s)	Qa Total Flow (m^3/s)	PIPE CHARACTERISTICS (assuming n,f constant with depth)											
	(m)				Incr.	Sum	Incr.	Sum	Area	Sum										PIPE SIZE Ø (mm)		SLOPE		n	Qf m3/s	Vf m/s	Tf min	Qa/Qf	d/D (from chart)	Va/Vf (from chart)	Va
NewSMH 1 - SMH 2	35.00	@	2.00	%	0.00	0.00	0.00	0.00	0.86	0.86	0.00	0.323	0.000	4.500	0.000	0.000	0.000	0.32	0.00032	200	@	2.00	%	0.013	0.046	1.48	0.40	0.0070	0.13	0.48	0.71
SMH 2 - SCO531	51.60	@	6.00	%	0.00	0.00	0.00	0.00	0.00	0.86	0.00	0.000	0.000	4.500	0.000	0.000	0.000	0.32	0.00032	200	@	6.00	%	0.013	0.080	2.56	0.34	0.0040	0.18	0.60	1.53
SCO531-SMH530	62.00	@	14.40	%	3.00	3.00	0.00	0.00	0.17	1.03	8.25	0.064	0.020	4.422	0.090	0.000	0.000	0.48	0.00048	200	@	14.40	%	0.013	0.124	3.96	0.26	0.0038	0.24	0.68	2.69
SMH530-SMH529	31.00	@	1.73	%	0.00	3.00	65.00	65.00	2.13	3.16	120.25	0.801	0.296	4.221	1.251	0.000	0.000	2.53	0.00253	200	@	1.73	%	0.013	0.043	1.37	0.38	0.0586	0.13	0.48	0.66
New Service-SMH529	10.00	@	2.00	%	0.00	3.00	0.00	65.00	1.60	4.76	0.00	0.602	0.000	4.500	0.000	0.000	0.000	3.13	0.00313	200	@	2.00	%	0.013	0.046	1.48	0.11	0.0675	0.13	0.48	0.71
SMH529-SMH528	48.00	@	1.90	%	2.00	5.00	0.00	65.00	0.53	5.29	5.50	0.199	0.014	4.436	0.060	0.000	0.000	3.39	0.00339	200	@	1.90	%	0.013	0.045	1.44	0.56	0.0750	0.13	0.48	0.69
SMH528-SMH527	88.00	@	2.86	%	0.00	5.00	70.00	135.00	0.53	5.82	129.50	0.199	0.319	4.211	1.344	0.000	0.000	4.93	0.00493	200	@	2.86	%	0.013	0.055	1.77	0.83	0.0890	0.15	0.54	0.95
SMH527-SMH67A	49.00	@	2.78	%	0.00	5.00	0.00	135.00	0.00	5.82	0.00	0.000	0.000	4.500	0.000	0.000	0.000	4.93	0.00493	200	@	2.78	%	0.013	0.055	1.74	0.47	0.0902	0.15	0.54	0.94
SMH67A-SMH67	40.00	@	3.54	%	7.00	12.00	0.00	135.00	0.00	5.82	19.25	0.000	0.047	4.383	0.208	0.000	0.000	5.14	0.00514	200	@	3.54	%	0.013	0.062	1.96	0.34	0.0833	0.16	0.58	1.14
SMH67-SMH66	40.00	@	3.58	%	2.00	14.00	0.00	135.00	0.17	5.99	5.50	0.064	0.014	4.436	0.060	0.000	0.000	5.27	0.00527	200	@	3.58	%	0.013	0.062	1.98	0.34	0.0849	0.16	0.58	1.15
SMH66-SMH65A	26.50	@	0.92	%	2.00	16.00	0.00	135.00	0.17	6.16	5.50	0.064	0.014	4.436	0.060	0.000	0.000	5.39	0.00539	200	@	0.92	%	0.013	0.031	1.00	0.44	0.1714	0.12	0.43	0.43
SMH65A-SMH65	100.60	@	0.92	%	5.00	21.00	0.00	135.00	0.51	6.67	13.75	0.192	0.034	4.400	0.149	0.000	0.000	5.73	0.00573	200	@	0.92	%	0.013	0.031	1.00	1.67	0.1822	0.12	0.43	0.43
SMH65-SMH64	94.40	@	1.04	%	4.00	25.00	0.00	135.00	0.41	7.08	11.00	0.154	0.027	4.411	0.120	0.000	0.000	6.01	0.00601	200	@	1.04	%	0.013	0.033	1.06	1.48	0.1796	0.12	0.43	0.46
Southwest to SMH 64	315.00	@	3.80	%	44.00	69.00	0.00	135.00	3.94	11.02	121.00	1.482	0.298	4.220	1.259	0.000	0.000	8.75	0.00875	200	@	3.80	%	0.013	0.064	2.04	2.58	0.1368	0.16	0.58	1.18
SMH64-SMH63	23.00	@	1.74	%	0.00	69.00	0.00	135.00	0.29	11.31	0.00	0.109	0.000	4.500	0.000	0.000	0.000	8.86	0.00886	200	@	1.74	%	0.013	0.043	1.38	0.28	0.2047	0.13	0.48	0.66
Southeast to SMH 63	315.00	@	3.80	%	37.00	106.00	0.00	135.00	4.19	15.50	101.75	1.576	0.251	4.242	1.064	0.000	0.000	11.39	0.01139	200	@	3.80	%	0.013	0.064	2.04	2.58	0.1781	0.16	0.58	1.18
Existing from North to P.S.	1000.00	@	2.00	%	215.00	321.00	21.00	156.00	27.00	42.50	630.10	10.156	1.553	3.920	6.090	0.000	0.000	25.10	0.02510	200	@	2.00	%	0.013	0.046	1.48	11.29	0.5412	0.13	0.48	0.71

TABLE 2 - SANITARY SYSTEM PROPOSED CAPACITY ASSESSMENT

PROJECT: 9 Erskine Lane
JOB No. 2253
FILE: G:\My Drive\Civil\Civil Projects\2253 - 9 Erskine Lane\9 Calculations & Estimates\9.3 Design Spreadsheet Information\[2253- Table 1 - Proposed System Assessment - Oct 29 2019.xlsx]A
SINGLE-FAMILY CAPITA 2.75 Per Unit Reference: View Royal Sanitary Master Plan January 2019
MULTI-FAMILY (HIGH) CAPITA 1.85 Per Unit Based on 0.67 x SFC
RESIDENTIAL FLOW 213 L/Capita/Day
INFILTRATION 32500 L/ha/Day (100 yr)
PEAKING FACTOR Harmon Formula

DATE: 10/31/2019
ENG.: MJA
DESIGN: RBJ
CHECKED:

FIGURES GIVEN BELOW APPLY TO THE LOWER END OF EACH LINE

LINE	LENGTH & SLOPE				Single-Family Units		Multi-Family Units		Catchment (ha)		Total Capita	Infiltration (L/s)	Average DWF (L/s)	Peaking Factor	Peak DWF (L/s)	Existing Commercial Flow (L/s)	Proposed Commercial Flow (L/s)	Qa Total Flow (L/s)	Qa Total Flow (m^3/s)	PIPE CHARACTERISTICS (assuming n,f constant with depth)										
																				PIPE SIZE		SLOPE		n	Qf	Vf	Tf	Qa/Qf	d/D	Va/Vf	Va
	(m)				Incr.	Sum	Incr.	Sum	Area	Sum										Ø (mm)					m3/s	m/s	min		(from chart)	(from chart)	
NewSMH 1 - SMH 2	35.00	@	2.00	%	0.00	0.00	158.00	158.00	0.86	0.86	292.30	0.323	0.721	4.083	2.942	0.000	0.000	3.27	0.00327	200	@	2.00	%	0.013	0.046	1.48	0.40	0.0704	0.13	0.48	0.71
SMH 2 - SCO531	51.60	@	6.00	%	0.00	0.00	0.00	158.00	0.00	0.86	0.00	0.000	0.000	4.500	0.000	0.000	0.000	3.27	0.00327	200	@	6.00	%	0.013	0.080	2.56	0.34	0.0407	0.18	0.60	1.53
SCO531-SMH530	62.00	@	14.40	%	3.00	3.00	0.00	158.00	0.17	1.03	8.25	0.064	0.020	4.422	0.090	0.000	0.000	3.42	0.00342	200	@	14.40	%	0.013	0.124	3.96	0.26	0.0275	0.24	0.68	2.69
SMH530-SMH529	31.00	@	1.73	%	0.00	3.00	65.00	223.00	2.13	3.16	120.25	0.801	0.296	4.221	1.251	0.000	0.000	5.47	0.00547	200	@	1.73	%	0.013	0.043	1.37	0.38	0.1268	0.13	0.48	0.66
New Service-SMH529	10.00	@	2.00	%	0.00	3.00	214.00	437.00	1.60	4.76	395.90	0.602	0.976	4.024	3.928	0.000	0.000	10.00	0.01000	200	@	2.00	%	0.013	0.046	1.48	0.11	0.2156	0.13	0.48	0.71
SMH529-SMH528	48.00	@	1.90	%	2.00	5.00	0.00	437.00	0.53	5.29	5.50	0.199	0.014	4.436	0.060	0.000	0.000	10.26	0.01026	200	@	1.90	%	0.013	0.045	1.44	0.56	0.2270	0.13	0.48	0.69
SMH528-SMH527	88.00	@	2.86	%	0.00	5.00	70.00	507.00	0.53	5.82	129.50	0.199	0.319	4.211	1.344	0.000	0.000	11.81	0.01181	200	@	2.86	%	0.013	0.055	1.77	0.83	0.2128	0.15	0.54	0.95
SMH527-SMH67A	49.00	@	2.78	%	0.00	5.00	0.00	507.00	0.00	5.82	0.00	0.000	0.000	4.500	0.000	0.000	0.000	11.81	0.01181	200	@	2.78	%	0.013	0.055	1.74	0.47	0.2159	0.15	0.54	0.94
SMH67A-SMH67	40.00	@	3.54	%	7.00	12.00	0.00	507.00	0.00	5.82	19.25	0.000	0.047	4.383	0.208	0.000	0.000	12.01	0.01201	200	@	3.54	%	0.013	0.062	1.96	0.34	0.1947	0.16	0.58	1.14
SMH67-SMH66	40.00	@	3.58	%	2.00	14.00	0.00	507.00	0.17	5.99	5.50	0.064	0.014	4.436	0.060	0.000	0.000	12.14	0.01214	200	@	3.58	%	0.013	0.062	1.98	0.34	0.1956	0.16	0.58	1.15
SMH66-SMH65A	26.50	@	0.92	%	2.00	16.00	0.00	507.00	0.17	6.16	5.50	0.064	0.014	4.436	0.060	0.000	0.000	12.26	0.01226	200	@	0.92	%	0.013	0.031	1.00	0.44	0.3898	0.12	0.43	0.43
SMH65A-SMH65	100.60	@	0.92	%	5.00	21.00	0.00	507.00	0.51	6.67	13.75	0.192	0.034	4.400	0.149	0.000	0.000	12.60	0.01260	200	@	0.92	%	0.013	0.031	1.00	1.67	0.4006	0.12	0.43	0.43
SMH65-SMH64	94.40	@	1.04	%	4.00	25.00	0.00	507.00	0.41	7.08	11.00	0.154	0.027	4.411	0.120	0.000	0.000	12.88	0.01288	200	@	1.04	%	0.013	0.033	1.06	1.48	0.3850	0.12	0.43	0.46
Southwest to SMH 64	315.00	@	3.80	%	44.00	69.00	0.00	507.00	3.94	11.02	121.00	1.482	0.298	4.220	1.259	0.000	0.000	15.62	0.01562	200	@	3.80	%	0.013	0.064	2.04	2.58	0.2443	0.16	0.58	1.18
SMH64-SMH63	23.00	@	1.74	%	0.00	69.00	0.00	507.00	0.29	11.31	0.00	0.109	0.000	4.500	0.000	0.000	0.000	15.73	0.01573	200	@	1.74	%	0.013	0.043	1.38	0.28	0.3635	0.13	0.48	0.66
Southeast to SMH 63	315.00	@	3.80	%	37.00	106.00	0.00	507.00	4.19	15.50	101.75	1.576	0.251	4.242	1.064	0.000	0.000	18.26	0.01826	200	@	3.80	%	0.013	0.064	2.04	2.58	0.2856	0.16	0.58	1.18
Existing from North to P.S.	1000.00	@	2.00	%	215.00	321.00	21.00	528.00	27.00	42.50	630.10	10.156	1.553	3.920	6.090	0.000	0.000	31.97	0.03197	200	@	2.00	%	0.013	0.046	1.48	11.29	0.6893	0.13	0.48	0.71

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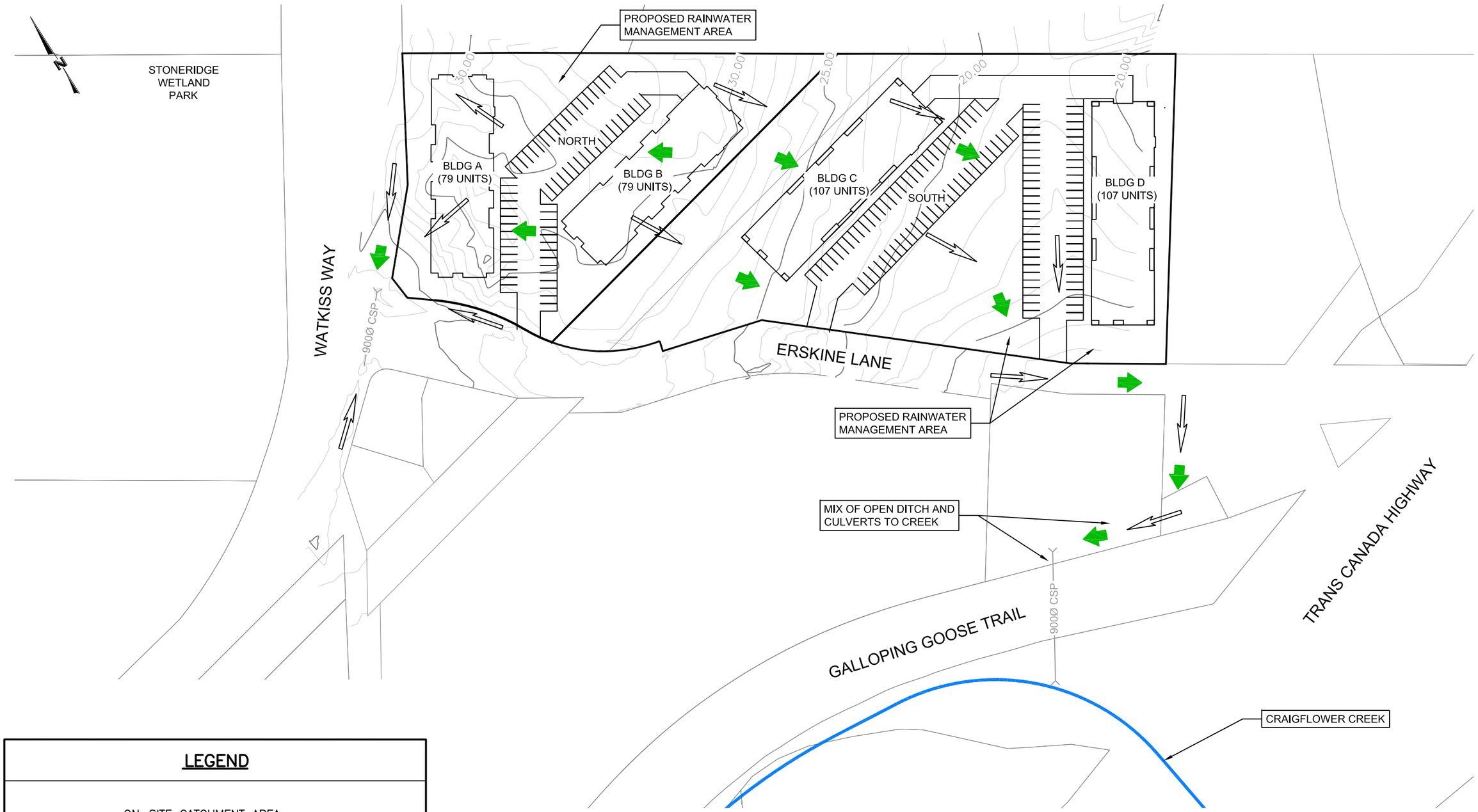
APPENDIX D
STORMWATER MANAGEMENT - FIGURE 4



LEGEND

ON–SITE CATCHMENT AREA
- NORTH – 0.8586 ha
- SOUTH – 1.4927 ha

EXISTING FLOW DIRECTION

PROPOSED FLOW DIRECTION

OCTOBER 2, 2019

FOR DISCUSSION PURPOSES ONLY

CIVIC ADDRESS: 9 ERSKINE LANE
LOT B
TOWN OF VIEW ROYAL, PLAN VIP26648

1:1250

0 25 75m

9 ERSKINE LANE

STORMWATER MANAGEMENT - FIGURE 4

TOWN OF VIEW ROYAL

IEL PROJECT - 2253	
ISSUED: OCT 09, 2019	
DRAWN BY: KK	CHECKED BY: MJA

9 ERSKINE LANE DEVELOPMENT

Traffic Impact Assessment

Author: MJ Oh

Reviewer: Nathan Carswell, P.Eng.,

Prepared for: WestUrban Developments

Our File: 2755.B01

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#501-740 Hillside Avenue
Victoria, BC V8T 1Z4

T 250.388.9877
F 250.388.9879
wattconsultinggroup.com

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1.0 INTRODUCTION

Watt Consulting Group was retained by WestUrban Developments to conduct a traffic impact assessment (TIA) for a proposed residential development located at 9 Erskine Lane in the Town of View Royal, BC. This report reviews existing and post development traffic conditions for both the short- and long-term horizon. The report also reviews the site accesses and the active transportation network.

1.1 STUDY AREA

The following key intersections will be studied along with the proposed development accesses located on Erskine Lane:

- Watkiss Way / Erskine Lane / Stoneridge Drive (unsignalized, two-way stop controlled);
- Burnside Road W / Watkiss Way (signalized);
- Watkiss Way / Hospital Access / Mall Access (unsignalized, roundabout); and
- Watkiss Way / Chancellor / Helmcken Road (signalized).

Figure 1 shows the study intersections and site location.

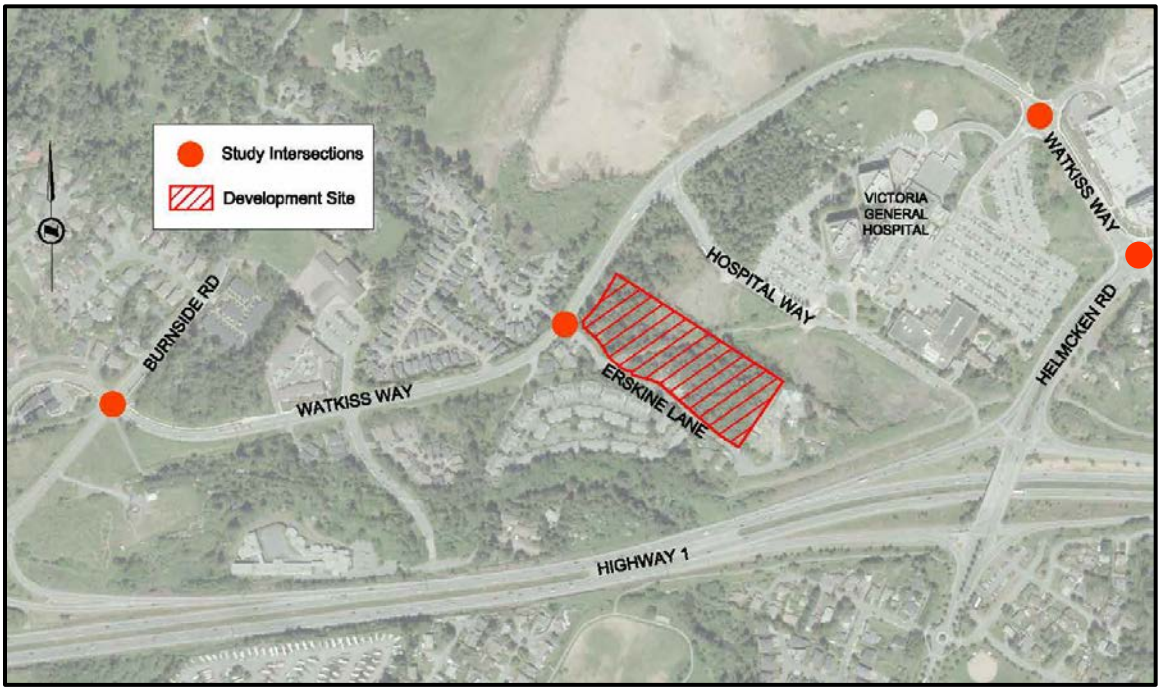


Figure 1: Study Intersections and Site Location

2.0 EXISTING CONDITIONS

2.1 LAND USE

The proposed site is currently zoned as A1 (Rural) and there is an existing single-family home on the site. The surrounding land use is a mix of multi-family and single family residential along Erskine Lane and Stoneridge Drive, with the Victoria General Hospital to the east. A proposed multi-family development is planned for the adjacent property at 7 Erskine Lane.

Other projects, proposed, in the area include the Eagle Nest development at the corner of Burnside Road / Helmcken Road and the BC Transit HandyDart facility at the corner of Burnside Road / Watkiss Way (2401 Burnside Road).

2.2 ROAD NETWORK

Watkiss Way is a two-lane major road with a posted speed limit of 50km/h. Burnside Road W is a two-lane collector road with a posted speed limit of 50km/h. Erskine Lane and Stoneridge Drive are two-lane local roads with a posted speed limit of 30km/h.

As Erskine Lane dead ends south of the proposed site, all site traffic will use the intersection of Watkiss Way / Erskine Lane. The four-legged intersection of Watkiss Way / Erskine Lane is stop-controlled on Erskine Lane.

Helmcken Road is a major road with a combination of raised center median, dedicated left turn lanes and a two way left turn lane that provides access to residential properties between Burnside Road and Watkiss Way / Chancellor Avenue. The intersection of Helmcken Rd / Watkiss Way / Chancellor Ave is a four legged signalized intersection. Dedicated left turn lanes are provided on all approaches to the intersection and the Helmcken Road westbound approach includes a channelized right turn island. The left turn movements on Helmcken Road provide fully protected left turn signal phasing. The eastbound left turn movement (Watkiss Way onto Helmcken Road) provides protected/permitted left turn signal phasing.

2.3 TRAFFIC COUNT

Traffic count data was taken from a previous study. Turning movement counts were conducted for the Watkiss Way intersections during the AM and PM peak hours (8:00AM – 9:00AM and 4:00PM to 5:00PM, respectively) on the following dates:

- Watkiss Way / Burnside Road: November 14, 2018
- Watkiss Way / Erskine Lane: November 16, 2017
- Watkiss Way / Victoria General Access: November 13, 2018

The existing counts were adjusted to 2019 traffic volumes using a 2% annual growth rate. This growth rate was also used to determine future background traffic volumes. All traffic volumes were balanced.

For Helmcken Road / Watkiss Way / Chancellor Avenue the traffic count data was collected on January 20, 2020 during the AM and PM peak hours (8:00AM – 9:00AM and 4:00PM to 5:00PM). By January 2020 traffic on Highway 1 was able to free-flow at McKenzie Avenue / Admirals Road; however, the key elements of the interchange such as the dual right turn (free flow) from McKenzie to Highway 1 and the southbound cloverleaf were not completed. However, just having the Highway free flow reduced the traffic volumes on Helmcken Road between Watkiss Way / Chancellor Avenue by approximately 13% in the AM and 9% in the PM.

The completion of the McKenzie Interchange is expected to occur in the Fall of 2020. The completion of the interchange is expected to further reduce the traffic volumes on the Helmcken Road, Burnside Road, and Watkiss Way corridors as the increased capacity and free-flow at the interchange will draw traffic away from the circuitous routing they utilize now to avoid the delays at Highway 1/McKenzie/Admirals. Therefore the traffic volumes utilized for this study are worst case and not expected to as high as projected.

2.4 TRAFFIC MODEL

Weekday AM and PM peak hour traffic conditions will be modeled using Synchro 10 and SIDRA8 for the opening year full build-out and 10-year post opening year with and without the development traffic to identify short- and long-term impacts of the development. SIDRA will be used only to analyze traffic conditions at the roundabout (Watkiss Way / Hospital Access / Mall Access). Queue lengths were determined by SimTraffic.

Synchro software (Synchro 9/10) provides analysis using the Highway Capacity Manual (2010) methodology, while SimTraffic integrates established driver behaviors and characteristics to simulate actual conditions by randomly “seeding” or positioning vehicles travelling throughout the network. The software generates measures of effectiveness that include level of service (LOS), delay and 95th percentile queue length. Intersections are analyzed to determine the level of service, delays and 95th percentile queue lengths. The levels of service are broken down into six letter grades with LOS A being excellent operations and LOS F indicating failing operations. Level of service C is generally considered to be an acceptable LOS by most municipalities. Level of service D is generally considered to be on the threshold between acceptable and unacceptable operations. A description of level of service and Synchro software is provided in **Appendix A**.

The horizon years will be evaluated for impacts to traffic operations with and without the development. The results will be used to determine if mitigation measures are needed as a result of background traffic growth or as a result of the development. Simulation settings for Synchro analysis will include:

- Vehicle length of 7.5m;
- Heavy vehicle length of 22.7m;
- Peak hour factors will use count data from study; and
- Heavy vehicle percentage will be based on count data.

2.5 EXISTING TRAFFIC CONDITIONS (VIEW ROYAL)

The existing 2019 / 2020 AM and PM peak hour conditions are summarized in **Table 1**, and traffic volumes are shown in **Figure 2.** All intersections operate at LOS C or better in the AM and PM peak hours, and there are no existing queuing issues.

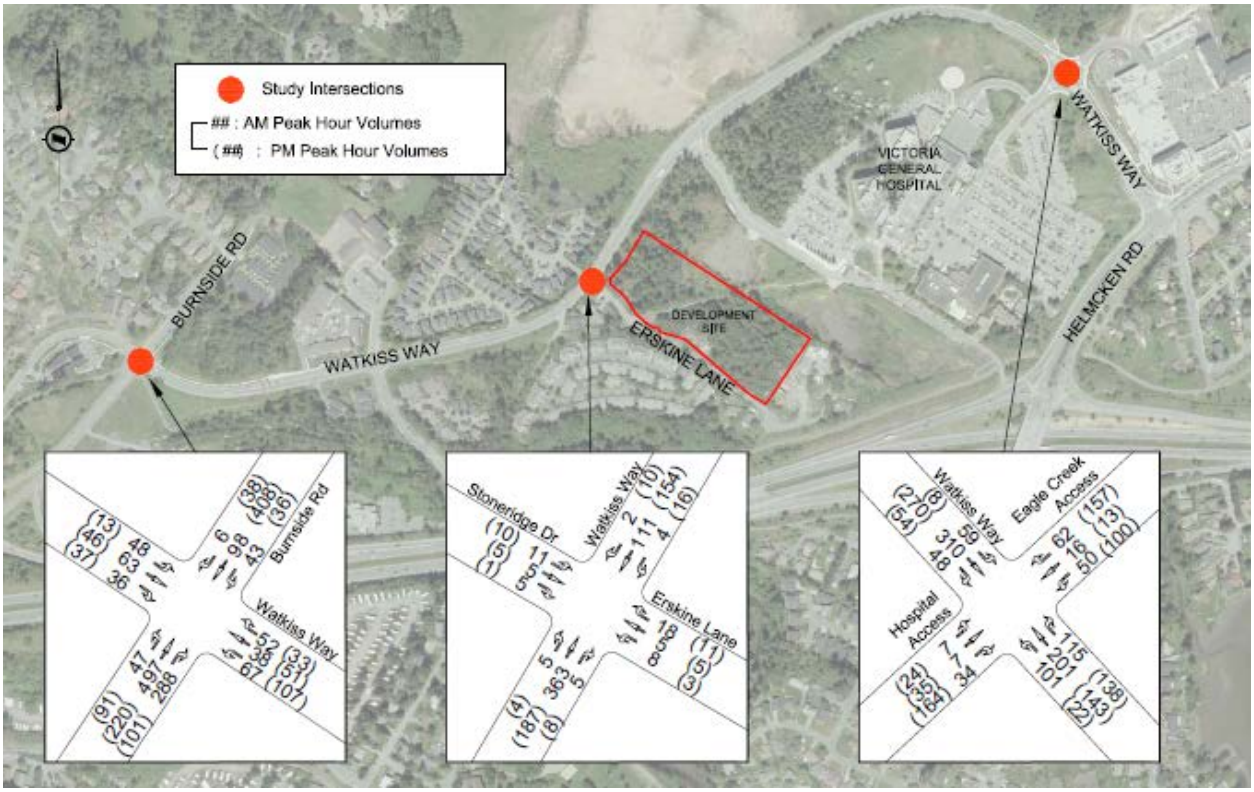


Figure 2: 2019/2020 Existing Traffic Volumes

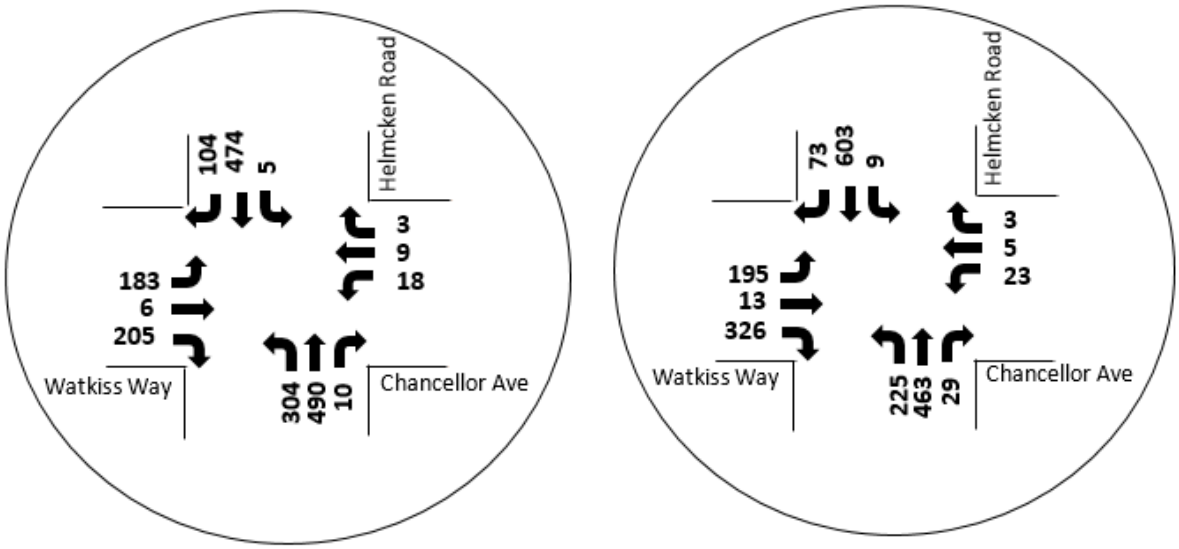
TABLE 1: 2019/2020 AM AND PM PEAK HOUR TRAFFIC CONDITIONS

Intersection	Movement	AM Peak Hour			PM Peak Hour		
		LOS	Delay (s)	95th Queue (m)	LOS	Delay (s)	95th Queue (m)
Burnside Rd W / Watkiss Way (Signalized) EB/WB=Watkiss Way NB/SB=Burnside Rd	EBLTR	C	23	30	B	12	25
	WBLTR	C	29	35	C	28	35
	NBLT	B	8	60	A	7	55
	NBR	A	0	30	A	0	20
	SBLTR	A	7	30	A	9	55
Watkiss Way / Erskine Ln EB/WB=Watkiss Way NB/SB=Stoneridge Dr-Erskine Ln	EBL	A	8	5	A	8	5
	EBTR	A	0	5	A	0	5
	WBL	A	8	5	A	8	10
	WBTR	A	0	5	A	0	10
	NBLTR	B	13	15	B	12	10

Intersection	Movement	AM Peak Hour			PM Peak Hour		
		LOS	Delay (s)	95th Queue (m)	LOS	Delay (s)	95th Queue (m)
	SBLTR	B	14	10	B	13	10
Watkiss Way / Hospital - Mall Access EB/WB=Watkiss Way NB/SB=Hospital-Mall	EBLTR	B	13	35	A	9	20
	WBLT	A	8	15	A	7	10
	WBR	A	0	0	A	2	10
	NBLTR	A	8	5	B	14	30
	SBLTR	A	8	10	A	10	20

2.6 EXISTING TRAFFIC CONDITIONS (MOTI)

The south leg of the Helmcken Road / Watkiss Way intersection is under the jurisdiction of the Ministry of Transportation and Infrastructure.



Left = AM / Right = PM

Figure 3: 2020 Helmcken Road/Watkiss Way Traffic

TABLE 2: 2020 AM AND PM PEAK HOUR TRAFFIC CONDITIONS AT WATKISS/HELMCKEN

Movement	2020AM Peak Hour			2020 PM Peak Hour		
	LOS	Delay (s)	95th Queue (m)	LOS	Delay (s)	95th Queue (m)
EBL/T	D	38.8	55	**E**	**69.9**	90
EBR	A	6.1	40	C	24.5	80
WBL	C	26.1	10	D	45.0	15
WBT/R	B	17.2	5	C	29.0	5
NBL	**E**	**57.4**	95	**F**	**88.0**	60
NBT/R	B	10.3	230	B	12.4	75
SBL	D	43.2	15	**E**	**74.6**	15
SBT	C	23.4	105	C	28.2	170
SBR	A	3.9	30	A	0.8	30

NB/SB = Helmcken Road; EB/WB = Watkiss/Chancellor

The queues for this intersection are based on SimTraffic and rounded up to the nearest 5m. The southbound queues are estimated at 170m in the afternoon by the software; however southbound queues (Helmcken Road north towards Interurban) are known to extend beyond the Burnside intersection in the PM peak hour (up to 1km). During the AM peak hour the northbound protected left turn operates at a LOS E with all other movements at LOS D or better. During the PM peak hour the eastbound left/through, northbound left and southbound left turns operate at a LOS E/F. As an isolated intersection the northbound/southbound through movements operate at a LOS C; however, delays in the southbound direction are known to be longer due to the queuing.

3.0 BACKGROUND TRAFFIC CONDITIONS

Background traffic was assessed at a linear growth rate of 2.0% per year. Traffic volumes were projected to the assumed opening day in 2022, and the 10 year post opening date horizon in 2032. The 2% growth rate accounts for known developments (HandyDart facility and Eagle Nest) as well unknown developments that could occur in the area.

The 2% growth rate adds approximately 50 vph to Watkiss Way and 70 vph to Burnside Road in the 2022 AM and PM peak hour horizon. For the long term (2032) the growth rate adds approximately 120 vph to Watkiss Way and up to 310 vph on Burnside Road. On Helmcken Road the 2% adds up to 65 vph in 2022 and up to 380 vph in the long term.

The additional trips added, due to growth, account for the Eagle Nest development traffic (4 to 8 vph on Watkiss Way in the peak hours and 12 to 35 vph on Helmcken Road from the Eagle Nest TIA) and the HandyDart Facility. It should be noted that BC Transit's website states the

HandyDart Facility will open in 2023, after the 2022 horizon year. Therefore no HandyDart trips would be included in the 2022 background traffic volumes.

A traffic impact study is currently underway for the HandyDart Facility; however, no results / information on this study is available at this time. It is expected that the access for this facility will be off Burnside Road to avoid crossing the Galloping Goose. Depending on the ability to provide a two way left turn lane to allow for lefts out of the facility to use the Helmcken Road / Six Mile / Island Highway interchange routing of the HandyDart traffic is not known.

A high level review of the potential trips generated by the HandyDart Facility was undertaken to ensure additional traffic was not required to be added to the background volumes. Based on the current HandyDart fleet of 54 to 56 vehicles and with an estimated 20% of those vehicles as spares (which is a conservative estimate of spare vehicles maintained by a transit agency) there is a maximum of 44 HandyDart vehicles that could leave the site in the morning and 44 return in the late afternoon. The late afternoon (3pm to 5pm) typically sees the majority of HandyDart vehicle return; however, a portion remain in-service until 10:00pm. Based on news articles this site could handle 110 HandyDart vehicles or approximately double the existing fleet. The expansion of the service from 55 vehicles to 110 vehicles will take time as well as funding resources to purchase vehicles, support additional service hours (drivers, fuel, etc.), and maintain the vehicles. The timeline for when 88 (with 22 spares for a total of 110) HandyDart vehicles could be in-service is unknown at this time. However, if assumed a portion (50%) would use Watkiss Way to Helmcken Road the addition of 44 trips in the long term is accounted for in the growth (HandyDart trips would be 37% of the trips added by the growth rate, which leaves additional growth (63% of the trips) for unknown developments in the area).

3.1 7 ERSKINE LANE TRAFFIC

Since Erskine Lane is a dead-end road with relatively low volumes per movement (3 to 18 vehicles per hour per movement) the use of a growth rate to account for the proposed 7 Erskine Lane development would not generate sufficient trips. Therefore the traffic from the proposed 7 Erskine Lane development site was added to background traffic. The proposed development is a 70-unit multi-family building which will generate 31 trips in the AM peak hour, and 36 trips in the PM peak hour. The trips from the development were assigned with consideration to the original TIA at the Watkiss Way / Erskine Lane intersection, and then distributed according to the trip assignment in this TIA, discussed further in **Section 4.3.** See **Figure 4** and **Figure 5** to see the distribution of these trips through the network in the AM and PM peak hour.

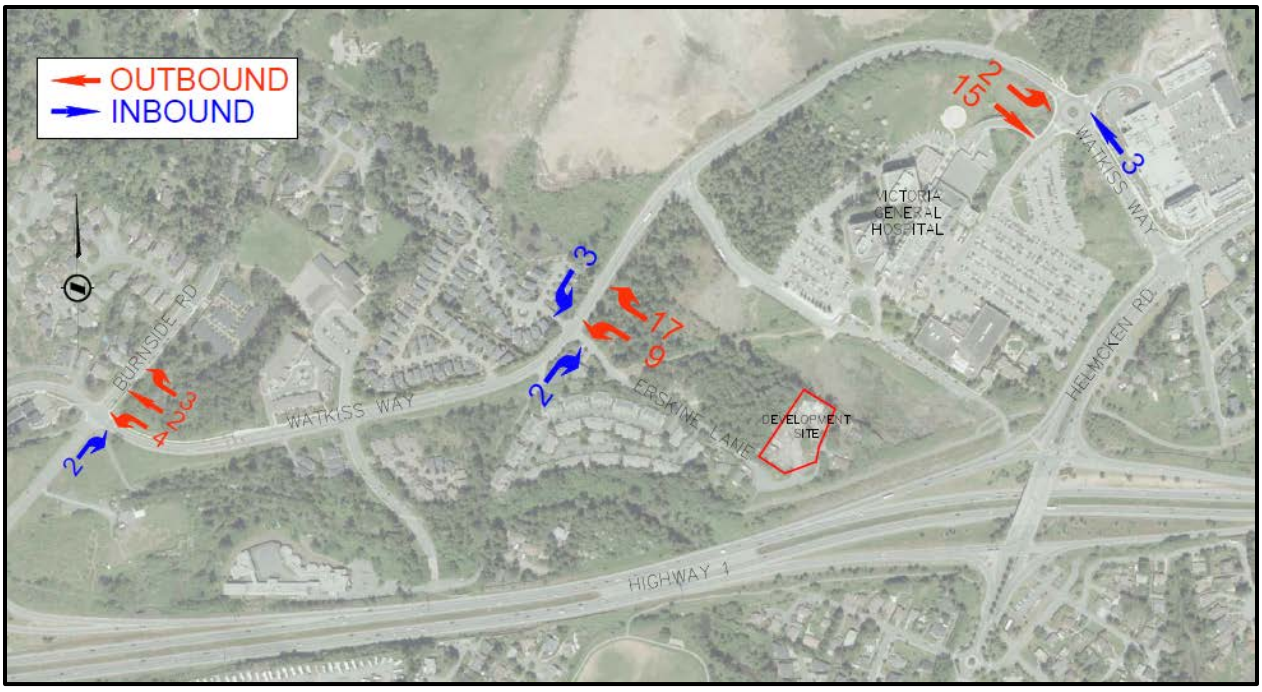


Figure 4: AM Trip Assignment for 7 Erskine Lane (Site Outlined in Red)

Figure 5: PM Trip Assignment for 7 Erskine Lane (Site Outlined in Red)

3.2 2022 BACKGROUND TRAFFIC CONDITIONS

The 2022 AM and PM peak hour conditions are summarized in **Table 3**, and traffic volumes are shown in **Figure 6.** All intersections operate at LOS C or better in the AM and PM peak hours, and there are no queuing issues along Watkiss Way.

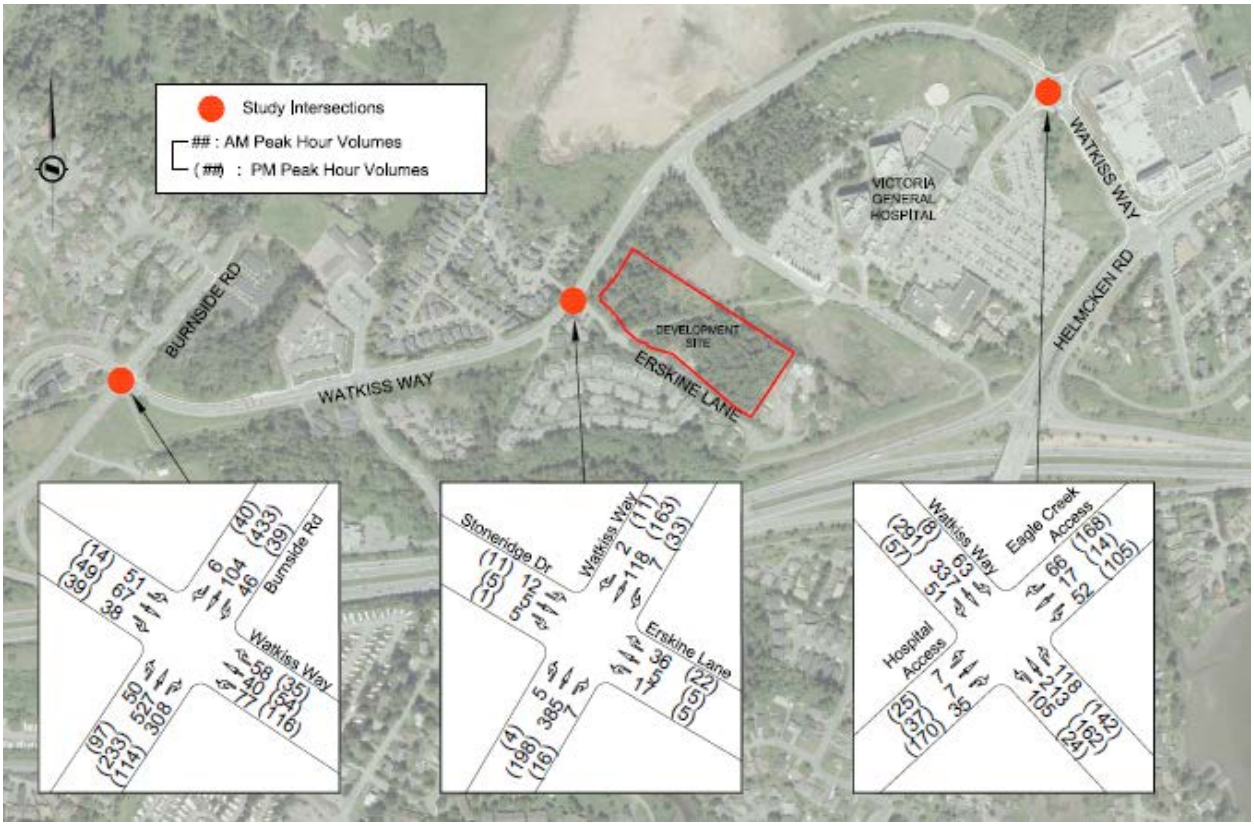


Figure 5: 2022 Background Traffic Volumes

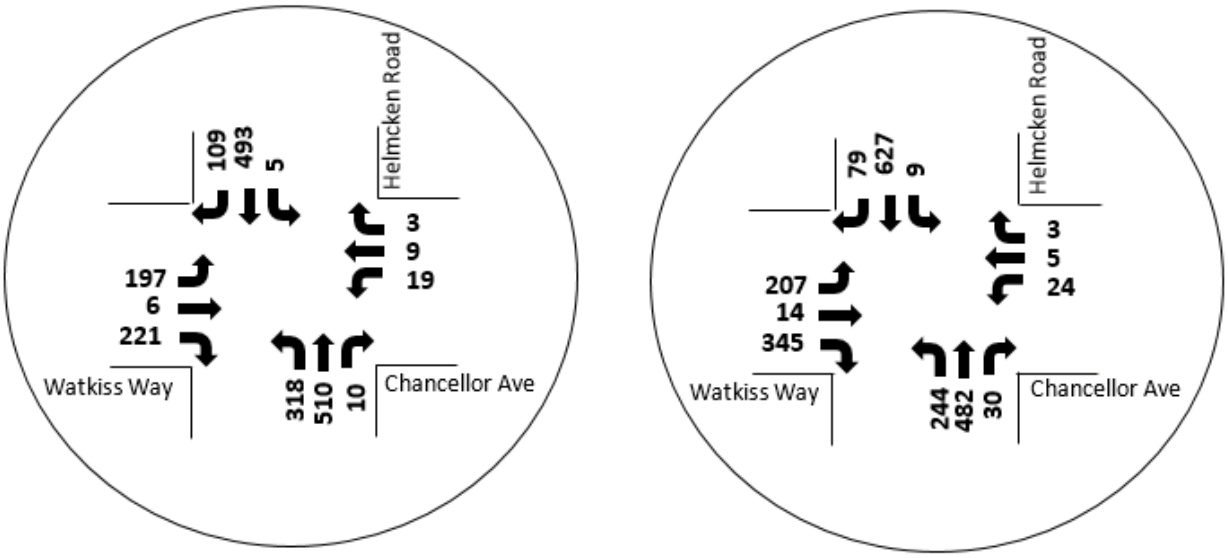
TABLE 3: 2022 BACKGROUND TRAFFIC CONDITIONS

Intersection	Movement	2022 AM Peak Hour			2022 PM Peak Hour		
		LOS	Delay (s)	95th Queue (m)	LOS	Delay (s)	95th Queue (m)
Burnside Rd W / Watkiss Way (Signalized) EB/WB=Watkiss Way NB/SB=Burnside Rd	EBLTR	C	22	35	B	13	25
	WBLTR	C	31	35	C	34	45
	NBLT	B	9	70	A	7	55
	NBR	A	0	35	A	0	20
	SBLTR	A	7	30	B	10	55
Watkiss Way / Erskine Ln EB/WB=Watkiss Way NB/SB=Stoneridge Dr-Erskine Ln	EBL	A	8	5	A	8	5
	EBTR	A	0	5	A	0	5
	WBL	A	8	10	A	8	10
	WBTR	A	0	10	A	0	10
	NBLTR	B	14	15	B	12	15
	SBLTR	C	15	10	B	14	10
Watkiss Way /	EBLTR	B	14	50	A	10	20

Intersection	Movement	2022 AM Peak Hour			2022 PM Peak Hour		
		LOS	Delay (s)	95th Queue (m)	LOS	Delay (s)	95th Queue (m)
Hospital - Mall Access EB/WB=Watkiss Way NB/SB=Hospital-Mall Access	WBLT	A	8	15	A	7	15
	WBR	A	0	0	A	2	15
	NBLTR	A	8	5	B	16	35
	SBLTR	A	9	10	B	11	22

3.2.1 HELMCKEN / WATKISS INTERSECTION

Figure 7 illustrates the 2022 background traffic volumes at Helmcken Road / Watkiss Way.



Left = AM / Right = PM

Figure 7: 2022 Background Helmcken Road/Watkiss Way Traffic

TABLE 4: 2022 AM AND PM PEAK HOUR BACKGROUND TRAFFIC CONDITIONS AT WATKISS/HELMCKEN

Movement	2022 AM Peak Hour			2022 PM Peak Hour		
	LOS	Delay (s)	95th Queue (m)	LOS	Delay (s)	95th Queue (m)
EBL/T	D	38.6	60	**E**	**71.5**	90
EBR	A	6.8	45	C	29.2	80
WBL	C	25.8	10	D	45.3	10
WBT/R	B	16.7	5	C	28.9	5
NBL	**E**	**64.3**	110	**F**	**94.9**	70
NBT/R	B	11.1	220	B	12.8	95
SBL	D	44.2	10	**E**	**74.8**	15
SBT	C	22.9	120	C	30.0	170
SBR	A	4.2	30	A	1.3	30

The addition of two years of growth does not change any of the levels of services; however, there are slight increases in delays and queue lengths. The northbound left turn queues will exceed the parallel storage and extend into the taper during the AM peak hour.

3.3 2032 BACKGROUND CONDITIONS

The 2032 AM and PM peak hour conditions are summarized in **Table 5**, and traffic volumes are shown in **Figure 8.** All intersection movements along the Watkiss Corridor operate at LOS C or better in the AM and PM peak hours, except for the westbound movement at Burnside Road W / Watkiss Way which will operate at a LOS D based on existing signal timing and phasing. The eastbound queue at the roundabout will be 110m or approximately 15 vehicles; however, the movement operates at a LOS C.

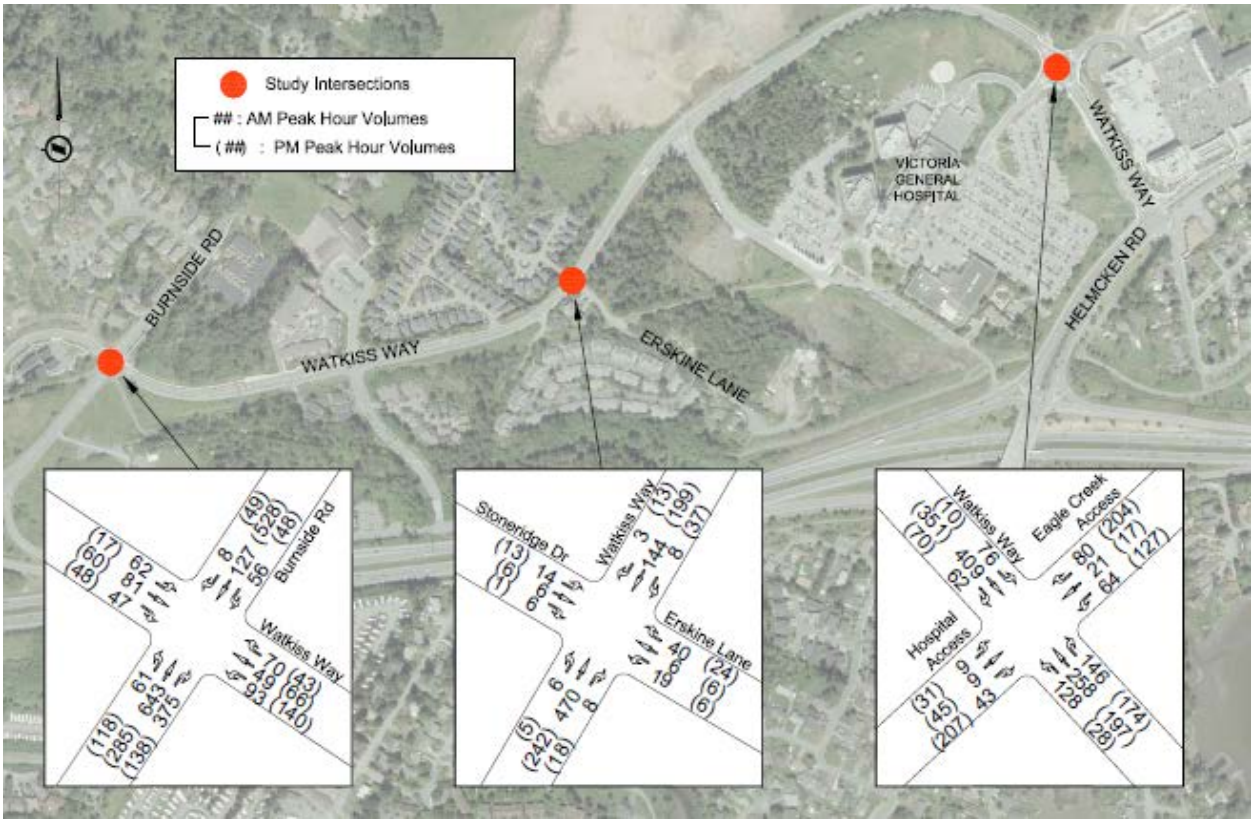


Figure 8: 2032 Background Traffic Volumes

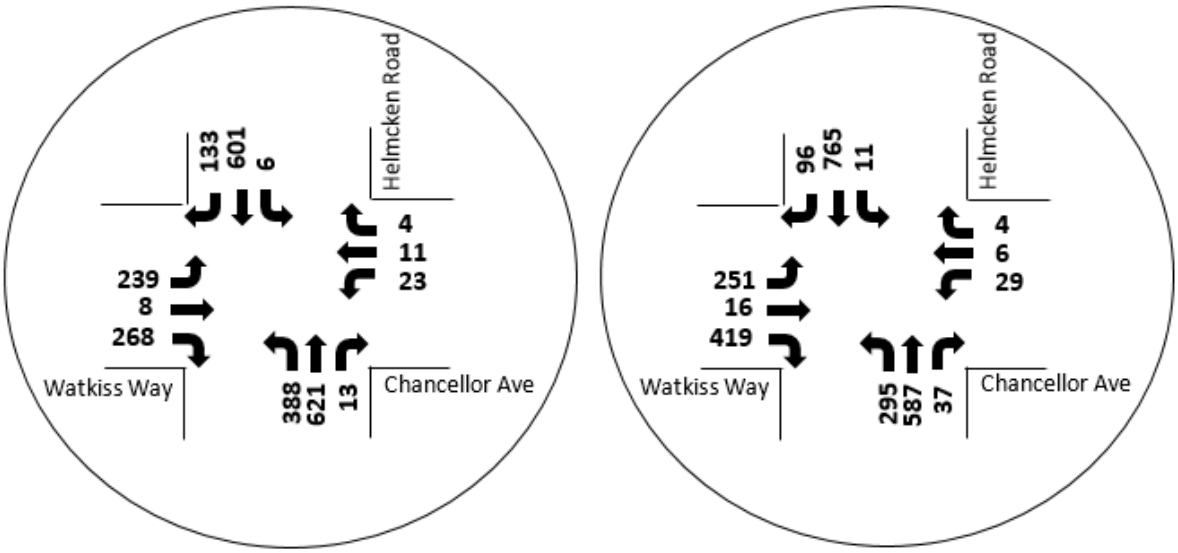
TABLE 5: 2032 BACKGROUND TRAFFIC CONDITIONS

Intersection	Movement	2032 AM Peak Hour			2032 PM Peak Hour		
		LOS	Delay (s)	95th Queue (m)	LOS	Delay (s)	95th Queue (m)
Burnside Rd W / Watkiss Way (Signalized) EB/WB=Watkiss Way NB/SB=Burnside Rd	EBLTR	C	27	40	B	14	30
	WBLTR	D	47	35	D	44	50
	NBLT	B	13	90	B	10	100
	NBR	A	0	50	A	0	60
	SBLTR	A	9	50	B	15	90
Watkiss Way / Erskine Ln EB/WB=Watkiss Way NB/SB=Stoneridge Dr-Erskine Ln	EBL	A	8	5	A	8	5
	EBTR	A	0	5	A	0	5
	WBL	A	9	5	A	8	10
	WBTR	A	0	5	A	0	10
	NBLTR	C	18	15	B	14	15
	SBLTR	C	19	10	C	16	10
Watkiss Way / Hospital - Mall Access EB/WB=Watkiss Way	EBLTR	C	22	110	B	13	40
	WBLT	A	10	20	A	9	15
	WBR	A	0	0	A	2	15

Intersection	Movement	2032 AM Peak Hour			2032 PM Peak Hour		
		LOS	Delay (s)	95th Queue (m)	LOS	Delay (s)	95th Queue (m)
NB/SB=Hospital-Mall Access	NBLTR	A	9	5	C	28	75
	SBLTR	A	11	15	B	15	45

3.3.1 HELMCKEN / WATKISS INTERSECTION

Figure 9 provides the 2032 AM peak hour and PM peak hour traffic volumes.



Left = AM / Right = PM

Figure 9: 2032 Background Helmcken Road/Watkiss Way Traffic

TABLE 6: 2032 AM AND PM PEAK HOUR BACKGROUND TRAFFIC CONDITIONS AT WATKISS/HELMCKEN

Movement	2032 AM Peak Hour			2032 PM Peak Hour		
	LOS	Delay (s)	95th Queue (m)	LOS	Delay (s)	95th Queue (m)
EBL/T	D	37.7	65	**F**	**84.2**	100
EBR	B	14.1	55	**E**	**55.2**	80
WBL	C	25.0	10	D	47.9	20
WBT/R	B	14.7	5	C	27.4	10
NBL	F	**114.7**	**130***	**F**	**175.2**	**125***
NBT/R	B	13.9	255	B	14.3	255
SBL	D	47.2	10	**E**	**76.5**	15
SBT	D	40.9	130	D	43.2	335
SBR	A	7.2	45	A	2.4	30

*Queues exceed storage

In 2032, during the AM peak hour with existing signal timings, the eastbound right turn will drop to a LOS B (from LOS A), the northbound left will drop to a LOS F (from LOS E), and the southbound through movement will drop to a LOS D (from LOS C). In the PM peak hour the eastbound left/through drops to LOS F and eastbound right drops to a LOS E (from LOS C). The southbound through will also drops to a LOS D from LOS C. Queues, particularly in the southbound direction will increase by more than 150m. The northbound left turns will extend beyond the provided storage with the background traffic growth. Adjustments in signal timing may be required to accommodate the northbound left turn volumes if these volumes are reached.

4.0 POST DEVELOPMENT CONDITIONS

4.1 PROPOSED LAND USE

The development will consist of 362 dwelling units in four mid-rise buildings (6 storeys). Trip generation rates were estimated using the 10th Edition of the ITE Trip Generation Manual. Trip generation rates for the weekday AM and PM peak hours are shown in **Table 7**. **Table 8** shows the estimated trips generated by the proposed development. They equate to 130 weekday AM peak hour trips and 158 weekday PM peak hour trips.

TABLE 7: PEAK HOUR TRIP GENERATION RATES

ITE Land Use		Weekday AM			Weekday PM		
Code	Description	Rate	In	Out	Rate	In	Out
221	Multi-Family Housing (Mid-Rise)	0.36	26%	74%	0.44	61%	39%

TABLE 8: PEAK HOUR DEVELOPMENT TRIPS

Description	Units	Weekday AM			Weekday PM		
		In	Out	Total	In	Out	Total
Multi-Family Housing (Mid-Rise)	372	35	99	134	100	64	164

4.2 SITE ACCESS

The site is accessed from Erskine Lane via Watkiss Way. Pedestrians and cyclists have the option to use the connection to Galloping Goose Trail at the south end of Erskine Lane to walk/bike to the site. There is a trail passing through the site that connects Erskine Lane to the Victoria General Hospital.

There are two accesses proposed on Erskine Road. One site access is proposed for the two buildings north of the trail to the hospital, and the second site access is proposed for the two buildings south of the trail. See **Figure 10** for the site plan.

Figure 10: Proposed Site Plan

4.3 TRIP ASSIGNMENT

The site trips were assigned based on the existing traffic distributions and consideration of nearby origin / destinations. The following summarizes directional split percentages of the site trips.

Trips In

- 50% of trips from Helmcken Road;
- 35% of trips from Burnside Road (South);
- 10% of trips from Burnside Road (North);
- 5% of trips from Eagle Creek Village;

Trips Out

- 65% of trips to Helmcken Road;
- 20% of trips to Burnside Road (South);
- 10% of trips to Burnside Road (North)
- 5% of trips to Eagle Creek Village;

For the Watkiss Way / Helmcken Road intersection traffic was split as follows:

AM Trips In

- 75% of trips from Helmcken Road Northbound Left (12);
- 25% of trips from Helmcken Road Southbound Right (5).

AM Trips Out

- 52% of trips Eastbound left (33);
- 48% of trips Eastbound right (30).

PM Trips In

- 75% of trips from Helmcken Road Northbound Left (37);
- 25% of trips from Helmcken Road Southbound Right (13).

PM Trips Out

- 39% of trips Eastbound left (16);
- 61% of trips Eastbound right (26).

Figure 11 and **Figure 12** show the trip assignments for AM and PM peak hours.

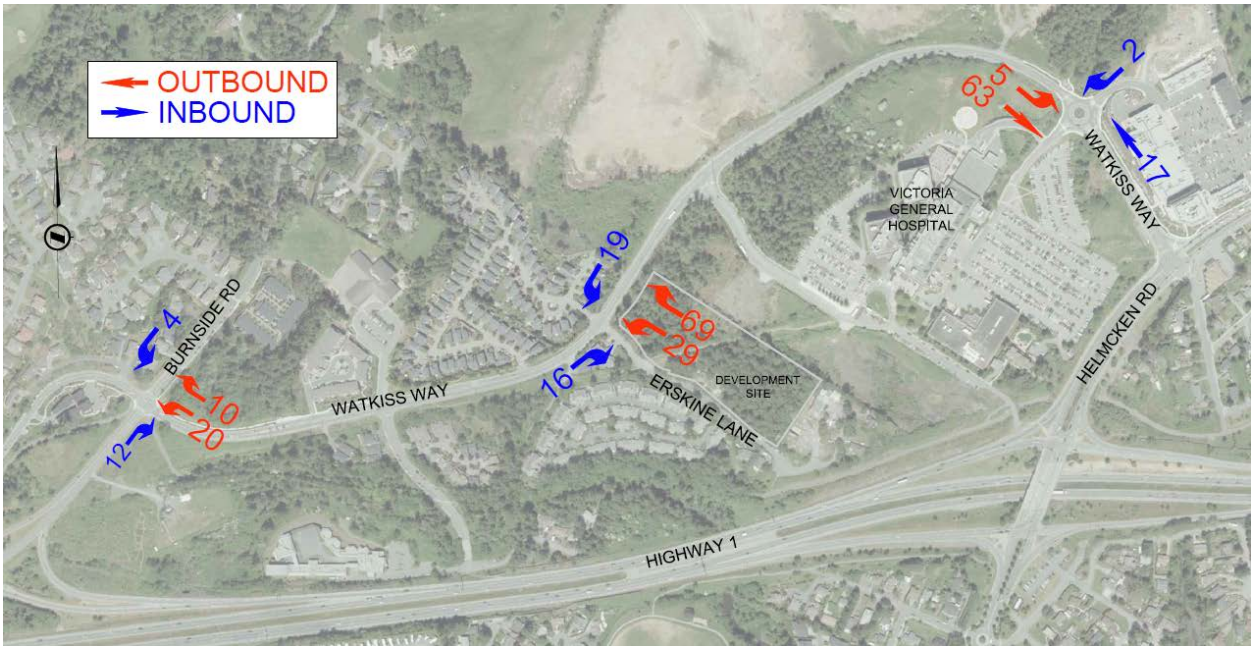


Figure 11: Trip Assignment – AM Peak Hour

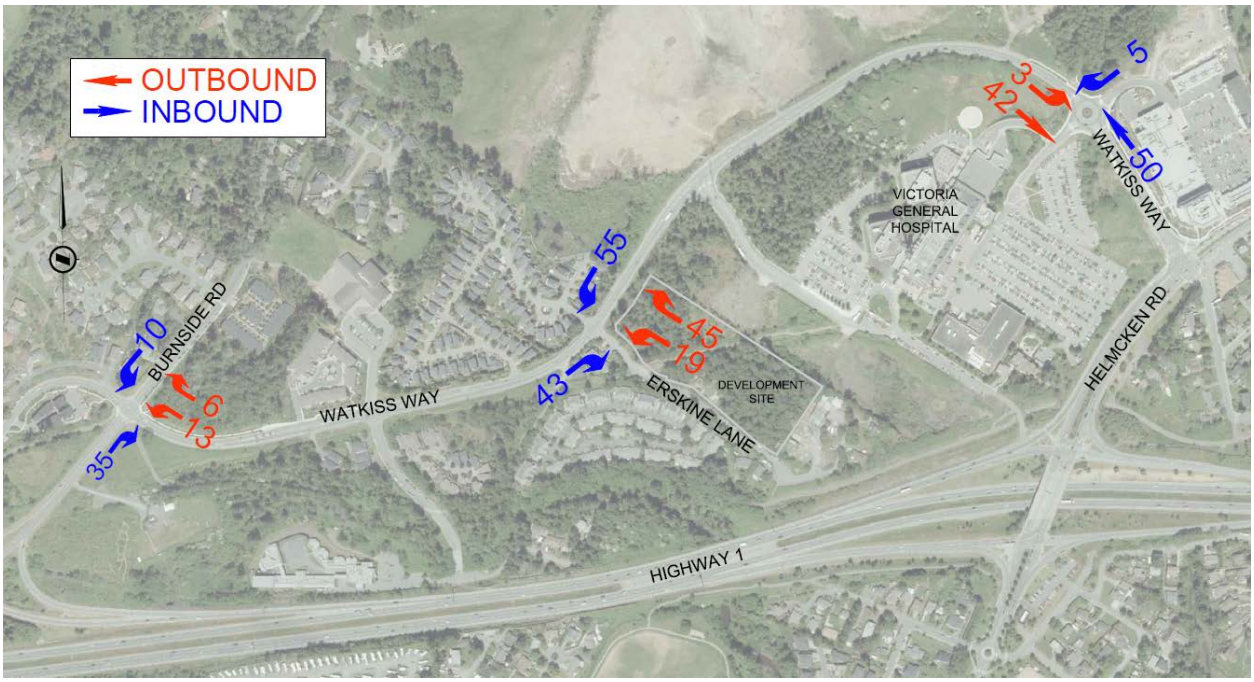


Figure 12: Trip Assignment – PM Peak Hour

4.4 2022 OPENING DAY TRAFFIC CONDITIONS

The 2022 AM and PM peak hour conditions are summarized in **Table 9**, and traffic volumes are shown in **Figure 13.** All intersections along Watkiss Way operate at LOS D or better in the AM and PM peak hours, and there are no queuing issues. The westbound movement at Burnside Road W / Watkiss Way worsens to LOS D from LOS C with the addition of development traffic, however, only two additional seconds of delay are added indicating that the movement was already borderline at a LOS C/D.

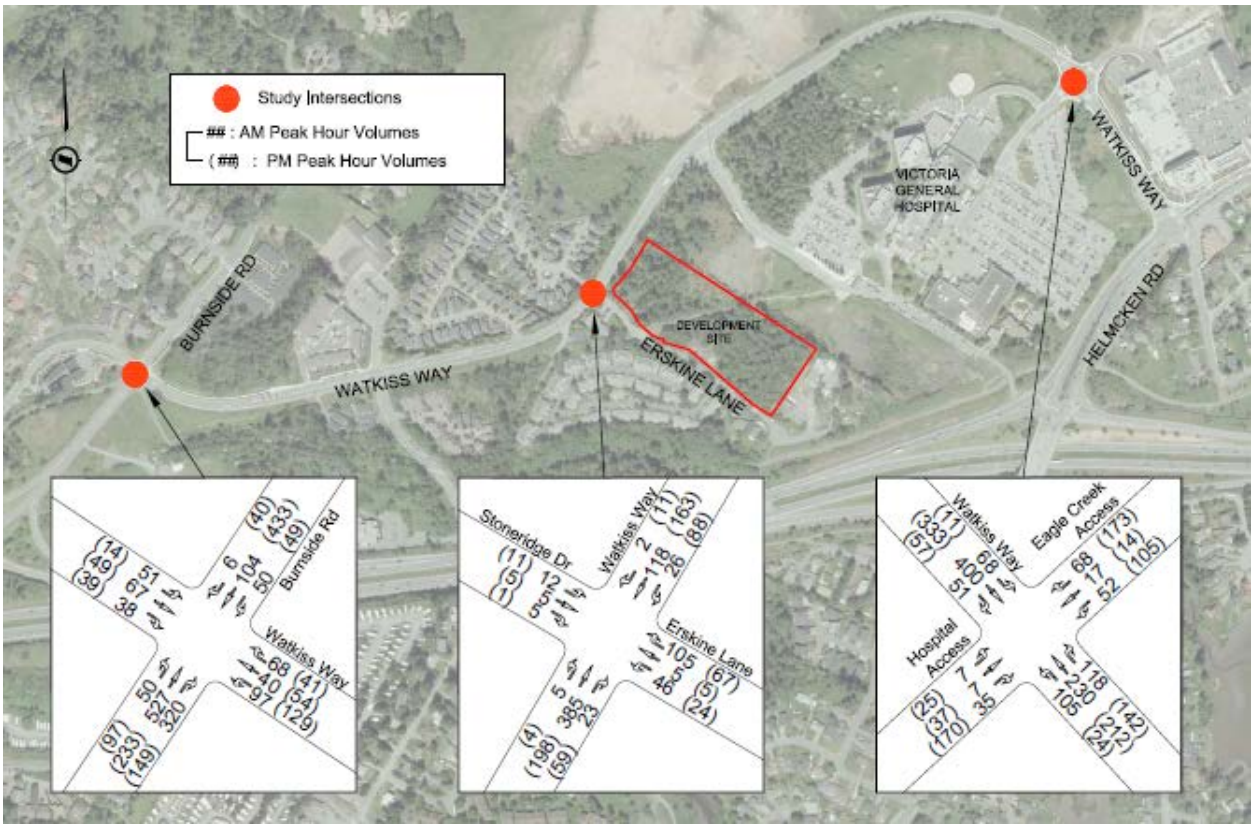


Figure 13: 2022 Post Development Volumes

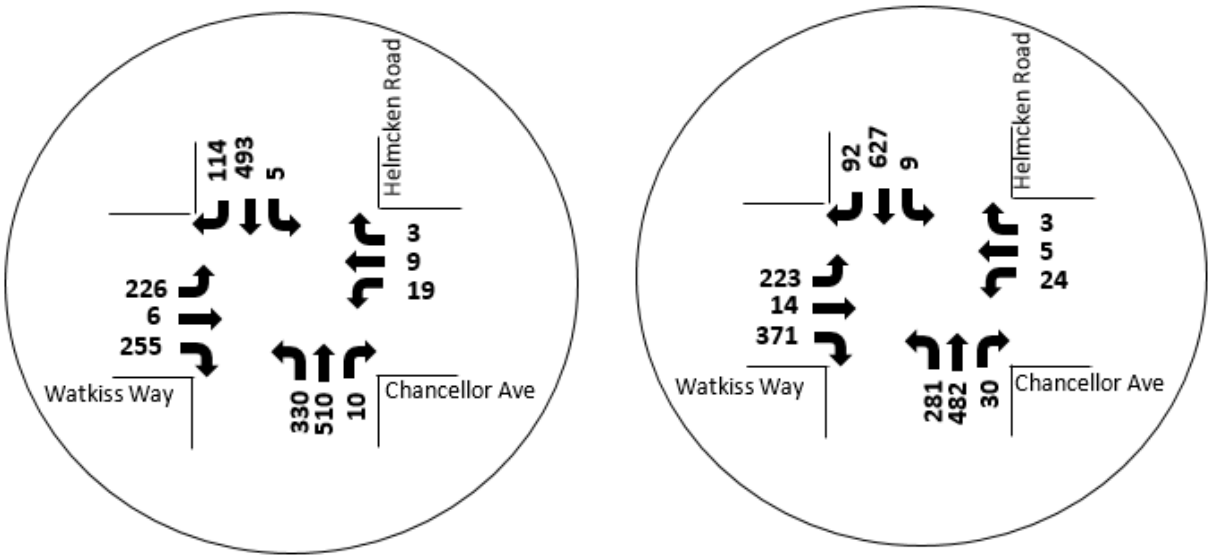
TABLE 9: 2022 POST DEVELOPMENT TRAFFIC CONDIITONS

Intersection	Movement	2022 AM Peak Hour			2022 PM Peak Hour		
		LOS	Delay (s)	95th Queue (m)	LOS	Delay (s)	95th Queue (m)
Burnside Rd W / Watkiss Way (Signalized) EB/WB=Watkiss Way NB/SB=Burnside Rd	EBLTR	B	18	30	B	13	25
	WBLTR	C	31	35	D	36	50
	NBLT	B	15	65	A	7	60
	NBR	A	0	35	A	0	20
	SBLTR	A	8	35	B	11	70
Watkiss Way / Erskine Ln EB/WB=Watkiss Way NB/SB=Stoneridge Dr-Erskine Ln	EBL	A	8	5	A	8	5
	EBTR	A	0	5	A	0	5
	WBL	A	9	10	A	8	15
	WBTR	A	0	10	A	0	15
	NBLTR	C	23	25	C	19	15
	SBLTR	C	21	15	C	20	10
Watkiss Way / Hospital - Mall Access	EBLTR	B	17	75	B	11	25
	WBLT	A	9	20	A	8	15
	WBR	A	0	0	A	1	15

Intersection	Movement	2022 AM Peak Hour			2022 PM Peak Hour		
		LOS	Delay (s)	95th Queue (m)	LOS	Delay (s)	95th Queue (m)
EB/WB=Watkiss Way NB/SB=Hospital-Mall Access	NBLTR	A	9	5	B	17	40
	SBLTR	A	9	10	B	12	30

4.4.1 HELMCKEN / WATKISS INTERSECTION

The following are the AM and PM peak hour post development traffic volumes at Helmcken Road / Watkiss Way.



Left = AM / Right = PM

Figure 14: 2022 Post Development Helmcken Road/Watkiss Way Traffic

TABLE 10: 2022 POST DEVELOPMENT TRAFFIC CONDITIONS AT WATKISS/HELMCKEN

Movement	2022 AM Peak Hour			2022 PM Peak Hour		
	LOS	Delay (s)	95th Queue (m)	LOS	Delay (s)	95th Queue (m)
EBL/T	D	27.9	60	**E**	**74.1**	100
EBR	A	9.7	50	C	33.2	85
WBL	C	24.7	10	D	45.5	15
WBT/R	B	15.7	5	C	29.0	10
NBL	**E**	**76.8**	110	**F**	**125.7**	120
NBT/R	B	12.6	340	B	13.2	255
SBL	D	46.4	5	**E**	**75.0**	15
SBT	C	28.2	135	C	31.0	210
SBR	A	4.2	30	A	2.1	30

The addition of the 9 Erskine Lane development traffic does not change the LOS. The northbound left turn delays will increase due to the movement operating at a failing condition (under background and post development conditions). The northbound left queues, in the PM, will increase and extend beyond the available storage by several vehicles (similar to 2022 AM background conditions). The queue lengths could be mitigated by adjusting the signal timing; however, the change in signal timing would take green time from the heavily queued southbound movement. The northbound through queues are higher post development due to the minor spillback of the left turn lane. As volumes, overall, are expected to drop on the corridor with the completion of the McKenzie Interchange a change in signal timing due to the development is not recommended.

4.5 2032 POST DEVELOPMENT CONDITIONS

The 2032 AM and PM peak hour conditions are summarized in **Table 11**, and traffic volumes are shown in **Figure 15.** All intersections the Watkiss Way Corridor operate at LOS D or better in the AM and PM peak hours. The addition of site traffic adds on a few seconds of delay to some movements; however, the level of service for most movements are unchanged compared to background conditions. The northbound/southbound movements on Erskine Lane/Stoneridge Drive at Watkiss Way will drop to a LOS D in the long term (from LOS C). The eastbound queue at the roundabout will increase to 170m (from 110m); however, it will operate at a LOS C. Therefore this queue will be ‘rolling’.

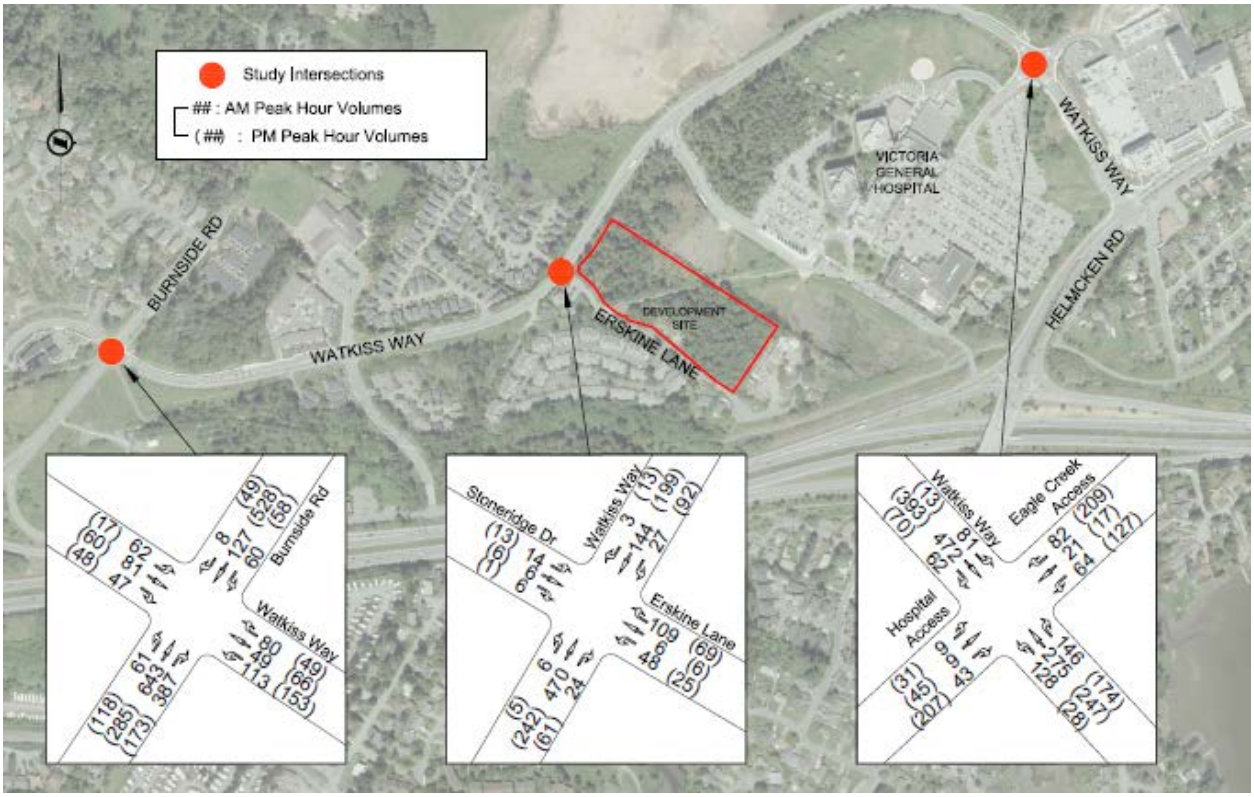


Figure 15: 2032 Post Development Volumes

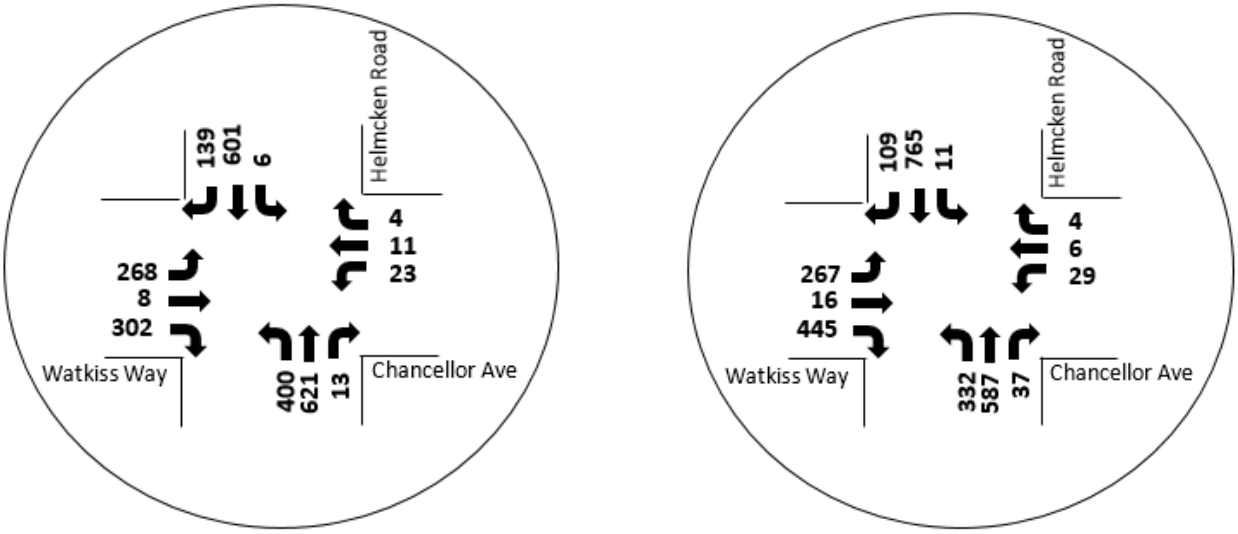
TABLE 11: 2032 POST DEVELOPMENT TRAFFIC CONDITIONS

Intersection	Movement	2032 AM Peak Hour			2032 PM Peak Hour		
		LOS	Delay (s)	95th Queue (m)	LOS	Delay (s)	95th Queue (m)
Burnside Rd W / Watkiss Way (Signalized) EB/WB=Watkiss Way NB/SB=Burnside Rd	EBLTR	C	23	40	B	14	30
	WBLTR	D	51	45	D	49	60
	NBLT	C	16	95	B	13	75
	NBR	A	0	55	A	2	30
	SBLTR	B	12	55	B	18	90
Watkiss Way / Erskine Ln EB/WB=Watkiss Way NB/SB=Stoneridge Dr-Erskine Ln	EBL	A	8	10	A	8	5
	EBTR	A	0	10	A	0	5
	WBL	A	9	15	A	9	20
	WBTR	A	0	15	A	0	20
	NBLTR	D	34	25	C	23	20
	SBLTR	D	29	15	C	24	10
Watkiss Way / Hospital - Mall Access EB/WB=Watkiss Way	EBLTR	C	30	170	B	15	55
	WBLT	B	10	25	A	9	20
	WBR	A	0	0	A	1	20

Intersection	Movement	2032 AM Peak Hour			2032 PM Peak Hour		
		LOS	Delay (s)	95th Queue (m)	LOS	Delay (s)	95th Queue (m)
NB/SB=Hospital-Mall Access	NBLTR	A	10	5	C	34	80
	SBLTR	B	11	15	B	18	55

4.5.1 HELMCKEN / WATKISS INTERSECTION

Figure 15 is the 2032 post development traffic volumes.



Left = AM / Right = PM

Figure 16: 2032 Post Development Helmcken Road/Watkiss Way Traffic

TABLE 12: 2032 POST DEVELOPMENT TRAFFIC CONDITIONS AT WATKISS/HELMCKEN

Movement	2032 AM Peak Hour			2032 PM Peak Hour		
	LOS	Delay (s)	95th Queue (m)	LOS	Delay (s)	95th Queue (m)
EBL/T	D	39.3	70	**F**	**96.0**	100
EBR	B	16.3	65	**E**	**66.9**	80
WBL	C	24.6	10	D	49.4	20
WBT/R	B	14.3	5	C	27.4	15
NBL	**F**	**149.4**	115	**F**	**188.4**	110
NBT/R	B	14.9	295	B	14.3	345
SBL	D	48.3	10	**E**	**76.5**	15
SBT	D	42.8	415	D	43.2	305
SBR	A	6.2	30	A	3.3	30

In the long term, the addition of the development traffic does not change any of the LOS. However, if traffic volumes the worst case as projected the intersection should be reviewed to balance northbound left turn queues with southbound queues. Any adjustment in signal timing would require taking green time from one movement and moving it to another and any change in timing, even by 1 second may significantly impact the movement the time is taken from.

4.6 LEFT TURN LANE REVIEW

A left-turn lane warrant was conducted in the PM peak hour at Erskine Lane / Watkiss Way for the westbound-left turn movement at the intersection. Although there is no reported operational issue, the number of vehicles turning left is significant (92 vehicles) and is approximately 30% of westbound traffic on Watkiss Way in the PM peak hour. The left-turn warrant indicates that a 15m left turn lane is required, though the warrant is barely met as shown in **Figure 17.** It is recommended that a left turn lane be added on Watkiss Way with the development.

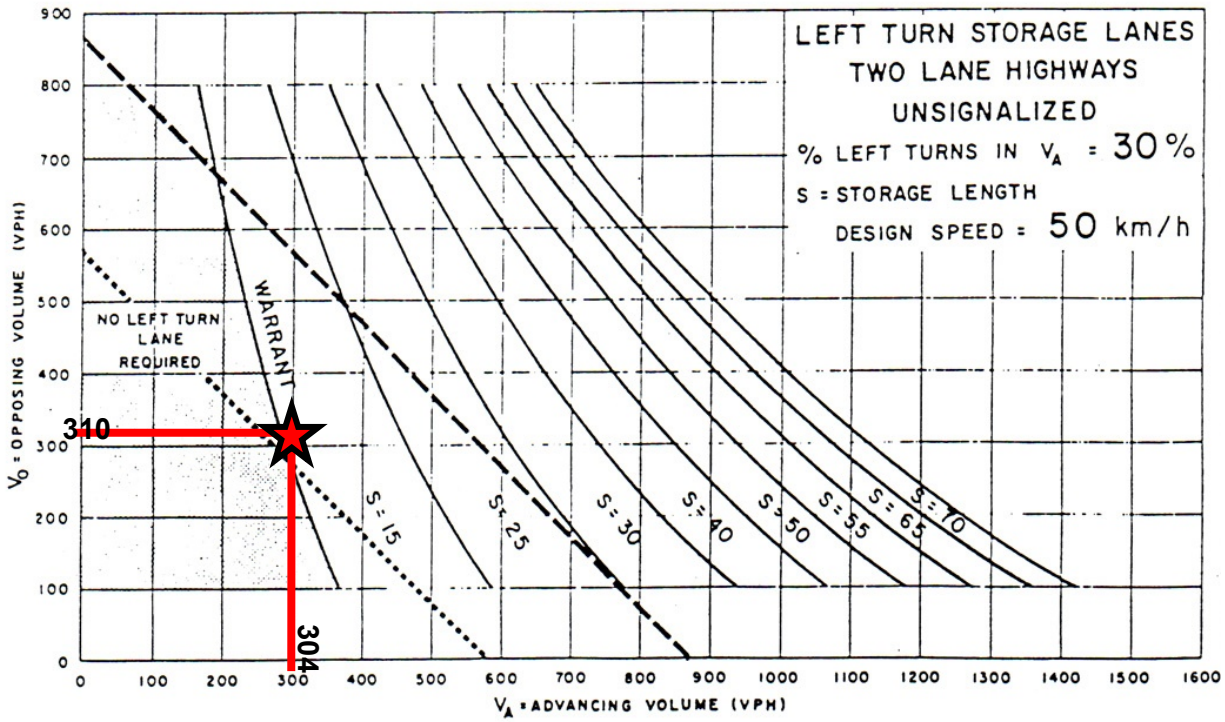


Figure 17: Left-turn Lane Warrant

4.7 ERSKINE LANE / WATKISS ROAD

In 2032 during the AM peak hour the northbound (turning out of Erskine Lane) and southbound (turning out of Stoneridge Drive) will operate at a LOS D. This level of service will occur for one hour per day if traffic grows as projected. A review of three changes to traffic control were explored for this intersection to understand the potential impacts to changing the traffic control. Three options were reviewed: maintaining existing stop control on Erskine Lane/Stoneridge

Drive, a roundabout, and a traffic signal. **Tables 13 and 14** outline the LOS and queue lengths for each options.

TABLE 13: AM PEAK HOUR 2032 POST DEVELOPMENT OPTION COMPARISON

Intersection	Movement	Existing Stop		Signal		Roundabout	
		LOS	Queue (m)	LOS	Queue (m)	LOS	Queue (m)
Watkiss Way / Erskine Ln / Stoneridge Dr EB/WB=Watkiss Way NB/SB=Erskine Ln / Stoneridge Dr	EBL	A	0	A	5	n/a	n/a
	EBTR	A	0	B	60	A	25
	WBL	A	5	A	5	n/a	n/a
	WBTR	A	0	A	20	A	10
	NB	D	35	B	10	A	10
	SB	D	10	B	10	A	5

TABLE 14: PM PEAK HOUR 2032 POST DEVELOPMENT OPTION COMPARISON

Intersection	Movement	Existing Stop		Signal		Roundabout	
		LOS	Queue (m)	LOS	Queue (m)	LOS	Queue (m)
Watkiss Way / Erskine Ln / Stoneridge Dr EB/WB=Watkiss Way NB/SB=Erskine Ln / Stoneridge Dr	EBL	A	10	A	5	n/a	n/a
	EBTR	A	0	A	40	A	15
	WBL	A	10	A	15	n/a	n/a
	WBTR	A	0	A	25	A	15
	NB	C	25	A	10	A	5
	SB	C	25	A	5	A	5

The signal and roundabout option have similar traffic operations in terms of LOS/delay operating at a LOS A/B during the AM and PM peak hours in the long term with the development. The signal will operate with LOS B for the side street in the AM while the roundabout will operate at a LOS A. The introduction of a signal will increase the queues on Watkiss Road to up to 60m (approximately 8 vehicles stopped at the signal) while the roundabout queues will be up to 25m (3 vehicles). This is compared to no queues on Watkiss Road, as with the stop signs on the side streets, Watkiss Road traffic is not currently stopped. Both the signal and the roundabout improve the AM conditions on Erskine/Stoneridge from LOS D to LOS A/B and in the PM from LOS C to LOS A.

The roundabout has the least impact to traffic on Watkiss Road and provides the same or slightly better operations than a signal. Both the signal and the roundabout have the opportunity to provide crosswalks on all four legs. While a signal will provide for controlled crosswalks (with pedestrian signals), pedestrians at roundabout crosswalks only have to deal with one direction of traffic at a time and have a refuge area to wait in the middle of the roadway.

While there is available right-of-way for a roundabout it would require significant works to relocate sidewalks and utility poles as well as loss of mature vegetation that could expose residents' backyards to Watkiss Way.

The adjacent development at 7 Erskine Lane was required to contribute to upgrading the intersection of Watkiss Way / Erskine Lane to a signal. Based on existing volume, the 7 Erskine volume, and the 9 Erskine volumes on the Erskine leg of the intersection each contributes the following percentage of traffic:

- Existing = 20%
- 7 Erskine = 15%
- 9 Erskine = 65%

4.8 REVISION TO SITE PLAN

In August 2020, a revision was made to the site plan which shows the reduced number of units for Lot B, effectively reducing two buildings by one floor (from six to five storeys). The development will now consist of 336 dwelling units in four mid-rise buildings (two of which remain six storeys and two of which are now reduced to five stories). Trip generation rates were re-estimated using the 10th Edition of the ITE Trip Generation Manual. **Table 15** shows the updated estimated trips generated by the proposed development. They equate to 121 weekday AM peak hour trips and 148 weekday PM peak hour trips. Based on the revised site plan, the estimated site trips compared to Table 8 show 13 trips lower in the AM peak hour and 18 trips lower in the PM peak hour.

TABLE 15: PEAK HOUR DEVELOPMENT TRIPS

Description	Units	Weekday AM			Weekday PM		
		In	Out	Total	In	Out	Total
Multi-Family Housing (Mid-Rise)	336	32	89	121	90	58	148

An analysis of the 2022 Post Development traffic was completed with the updated development trips and a comparison at the intersection of Watkiss/Helmcken was completed. The changes in LOS and Delay in the AM peak hour conditions are summarized in **Table 16**

TABLE 16: COMPARISON OF PEAK HOUR DEVELOPMENT TRIPS

Movement	2022 AM Peak Hour	2022 AM Peak Hour (August 2020 Site Plan Update)

	LOS	Delay (s)	LOS	Delay (s)
EBL/T	D	37.9	D	37.8
EBR	A	9.7	A	9.5
WBL	C	24.7	C	24.8
WBT/R	B	15.7	B	15.8
NBL	**E**	**76.8**	**E**	**75.5**
NBT/R	B	12.6	B	12.4
SBL	D	46.4	D	46.2
SBT	C	28.2	C	27.9
SBR	A	5.6	A	5.5

Upon review, the reduction in units (approximately 10%) will make a negligible difference as it pertains to traffic conditions previously analyzed.

5.0 TRAFFIC CALMING

Watkiss Way currently has approximately 5,000 vehicles per day on the corridor which by 2032 is projected to reach 8,000 vpd. At this level of volume the roadway is operating near an arterial road level (from a collector road) or as the Transportation Master Plan states a Major Roadway. The higher the road classification (arterial is the highest) the more the focus is on the mobility of traffic over access and calming traffic (by reducing volumes).

On an arterial roadway the main way to impact vehicle speeds and calm traffic is to change the road cross section to introduce more urban elements (such as sidewalks, medians, and landscaping) to visually narrow the roadway, along with physical narrowing of the lanes (to 3.3m) as well as added density (increased natural surveillance). The Town has DCC plans for this section of Watkiss Way that include narrowed lanes, medians with landscaping, and sidewalk. With the development adding a left turn lane for turning onto Erskine Lane there is an opportunity to narrow the lanes along the development frontage on Watkiss Way.

The short length of Erskine Road and the lack of connection to other roadways reduces the potential need for traffic calming since motorists on the street have limited distance speed. In addition any speeding issues that may occur would be due to residents of the street and would be better dealt with through education than traffic calming devices. The volume of traffic on the street would not be impacted by traffic calming devices and therefore should not be implemented.

6.0 ACCESS REVIEW

6.1 ACCESS SPACING

The proposed first site access is located on Erskine Lane 55m south of Watkiss Way. The provided 55m spacing exceeds the TAC's minimum corner clearance of 15m for local roads from a stop-controlled major intersection. Therefore the location of the driveway access is appropriate. The spacing between the driveways exceeds 5m and therefore is also appropriate.

6.2 SIGHT DISTANCES

The sight distance at all the proposed accesses (on Erskine Lane) were reviewed to ensure sufficient sight distance is available for motorists turning into and out of the site. A 30 km/h speed limit sign is posted on Erskine Lane.

Sight distances are met for the access located south of the hospital trail. At the first access the measured sight distance to the right (north) is 50m which does not meet the required intersection sight distance (65m) for left turns from stop for 30 km/h. However, there is no reason for vehicles to turn left out of the site as a left turn would take drivers to a dead-end. If a rare vehicle turns left the approaching vehicle on Erskine Lane has sufficient sight distance to stop or slow for a turning vehicle. **Table 17** provides a summary of sight distances at Access 1 for 30 km/h.

TABLE 17: SIGHT DISTANCES AT ACCESS 1 BASED ON 30KM/H

Movement	Measured Sight Distance	Required Intersection Sight Distance	Sight Distance Met?
Left Turn from Stop	100m (looking left) 50m (looking right)	65m (looking left) 65m (looking right)	Yes **No**
Right Turn from Stop	100m (looking left)	55m (looking left)	Yes
Through Traffic (on Erskine Lane)	50m+ (southbound) 50m+ (northbound)	35m (SSD for 30 km/h) 50m (SSD for 40 km/h)	Yes Yes

7.0 ACTIVE TRANSPORTATION

7.1 PEDESTRIANS AND CYCLISTS

Currently, Erskine Lane does not have any pedestrian infrastructure, however the site benefits from proximity to two off-street multi-use pathways (i.e. Hospital trail & Galloping Goose Trail) that offer connections to all the key amenities in the neighbourhood, such as access to the Watkiss Way transit stops, the Victoria General Hospital and the Eagle Creek Village commercial area. The Hospital trail is a worn gravel pathway, over a CRD utility right-of-way that can be utilized by pedestrians, but is not fully accessible in its current condition. The developer should improve the trail to the Town's trail standard. The Town will need to secure agreement from the CRD to allow for the improvement to the trail; however, having active surveillance

along a utility right-of-way can benefit the CRD in the early detection of pipe breaks. The use of gravel allows for the CRD easily access and maintain their utilities with the right-of-way. The improvement should be along the right-of-way to the bus stop at Talcott.

There is a short section of sidewalk on the northwest side of Watkiss Way between the two sections of Stoneridge Drive and northeast to the bus stop. There is an additional shoulder (separate from the bicycle lanes) on the south side of Watkiss Way for pedestrians. A sidewalk is planned for the Watkiss Way frontage and together with the narrower lanes on Watkiss Way will support the traffic calming of this section of roadway. Pedestrians will be able to utilize this sidewalk to the existing bus stop along with the Hospital trail and Galloping Goose as safe, separated alternatives to walking along Watkiss Way. No cycling infrastructure is existing along Erskine Lane, but there are bicycle (painted) lanes on Watkiss Way in the Saanich and View Royal sections. There is a connection to the Galloping Goose Trail at the end of Erskine Lane.

The proposed development is expected to add pedestrians around the area due to the addition of the multi-family residential units. A sidewalk along the development's Erskine Lane frontage would aid in linking the site to Watkiss Way, the Hospital trail, and the Galloping Goose Trail. The Hospital trail provides a parallel pedestrian pathway to using Watkiss Way, connecting Hospital Way, Game Road, and the intersection of Watkiss Way and Talcott Road. The Galloping Goose crosses Talcott Road, south of the Hospital trail, which allows pedestrians and cyclists to connect to the Galloping Goose as well as at the end of Erskine Lane.

Since Erskine Lane is a dead-end roadway less than 300m in length vehicle speeds and volumes are not expected to be significant enough to require separation between bicycles and vehicles. Bicycles will continue to share the roadway on Erskine Lane.

7.2 TRANSIT

There are three routes (# 14, 22 and 39) within walking distance (within 300m) from the subject site. For the transit route #14 and #22, the closest bus stop is on Hospital Way (Victoria General Hospital) north of the development site (via pedestrian trail) and provides service to Downtown Victoria several times per hour on weekdays. Transit users from the site can utilize the hospital trail (Game Road) between Erskine Lane and Victoria General Hospital to access the bus stops. For the transit route #39, the closest bus stop is on Watkiss Way east of Erskine Lane and provides service to the University of Victoria via Camosun College (Interurban Campus) one or two times per hour. The Galloping Goose connection at the end of Erskine Lane puts the transit stops at the Helmcken Road Interchange within 800m of the site. The stops at the Interchange include the #47, 48, 50, 51, 61, and 65 buses. The proximity to these transit routes will draw residents who want to utilize alternative modes of transportation.

8.0 TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) refers to policies, programs and services that influence whether, why, when, where and how people travel.[1] TDM initiatives typically aim to reduce vehicle trips and parking demand while encouraging alternative travel options such as walking, cycling, public transit, and shared rides. This site is in an ideal location to implement TDM to support a reduction of single-occupant vehicle trips to and from the site and encourage use of alternative modes. The following outlines the TDM planned by the developer.

8.1 ELECTRIC BICYCLES

Electric Bikes (E-bikes) are an emerging transportation phenomenon that are gaining popularity worldwide. With supportive cycling infrastructure in place, E-bikes have the potential to substitute or completely replace almost all trips taken by combustion engine vehicles which can help to address congestion issues and mitigate parking challenges in urban areas. Two barriers facing prospective E-bike users is the lack of secure parking which is critical for minimizing E-bike theft and cost.

The Developer is providing two electrical bicycles to be shared by the complex. Access to electrical bicycles allows residents to experience an e-bicycle without having to outlay the costs which can be high. E-bicycles also support longer commuter trips as well as increase the ability to carry heavier grocery items or other goods. As part of a larger strategy to discourage vehicle ownership for future residents, the applicant should consider designing up to 10% of the long-term bicycle parking spaces to accommodate electric bikes.

8.2 SECURE BICYCLE PARKING

Research has reported that bicycle parking supply is a determinant of cycling for current and potential cyclists. A lack of bicycle parking and/or inadequate bicycle parking discourages cycling. Higher quality bicycle parking facilities are associated with more bicycle use. Further, more convenient bicycle parking is also associated with more cycling. Convenience includes easy access to bicycles, e.g. short distances between bicycle parking and actual trip origins or destinations.[2] Secure bicycle parking could especially benefit the residents of this development, with direct access to the Galloping Goose trail.

8.3 CARPOOLING

An informal rideshare program could be implemented on site that will allow residents to identify if they require a ride or if they can provide a ride. This will be particularly useful for those residents who work in proximity to each other and have similar shifts. An informal program could be implemented internally, with a sign-up sheet in the lobby, or residents can be encouraged to sign up for carpool.ca.

[1] Definition based on Transport Canada, TDM for Canadian Communities, March 2011

[2] Heinen, E & R. Buehler. (2019). Bicycle parking: a systematic review of scientific literature on parking behaviour, parking preferences, and their influence on cycling and travel behaviour, Transport Reviews, DOI: 10.1080/01441647.2019.1590477

8.4 CARSHARE

Carsharing is a form of car rental service for the sharing of vehicles for varying lengths of time. Carshares are usually co-operative and require users to register as a member to use vehicles and pay associated fees. An external carshare program could be considered for the site for those residents who may occasionally need access to a vehicle, but may not be able to pay the costs associated with vehicle ownership. External carshare programs such as Modo, would not be reserved exclusively for residents at the site, but shared with other Modo members in the area. Although, Modo is not currently operating in View Royal, the developer could facilitate a conversation with Modo Carshare Corporation (the current managing corporation of the carshare program in Victoria) and the Town of View Royal to encourage the program to be expanded to the area. Given the significant population growth in the area (e.g., 7 Erskine Lane, Eagle Creek Village, Eagle Creek Nest), there may be a growing user base that would benefit from carsharing.

Research has shown that carsharing programs have a significant impact on reducing vehicle ownership, thereby reducing site trips and lowering parking demand. Currently, there are no Modo vehicles near the site, but the developer is planning to provide two carshare vehicles. At this time it has not been confirmed if these are going to be shared vehicles for the development or part of Modo.

8.5 TDM IMPACT ON TRAFFIC

This study is based on standard ITE Trip Generation rates and does not account for the potential reduction in vehicle trips due to the planned TDM. The planned TDM along with the close proximity / easy access to the Galloping Goose, multiple transit routes heading in all directions, and the Eagle Creek commercial amenities is expected to reduce vehicle trips by at least 10% reduction in the trips generated by this development. This equates to a reduction of 16 vehicles during the peak hours and 55 vehicles per day.

At this time it is unknown if the demographics of this site will draw hospital workers; however, due to its close proximity to the hospital it is expected a portion of the residents will be employed at Victoria General. The close proximity of the site, along with the Hospital trail will allow hospital workers to walk to cycle to/from work which would further reduce the vehicle traffic generated by the site.

9.0 CONCLUSIONS

The development will not significantly impact the traffic operations at the three Town intersections. All movements will operate at LOS D or better in the long-term in both the background and post development conditions. A 15m left turn lane on Watkiss Way at Erskine Lane should be implemented with the development. A change in traffic control is not required in the short term; however, in the long term the side streets drop to a LOS D at Watkiss Way/Erskine Lane. Therefore this development should contribute funding for their portion of the traffic signal (65% of the Erskine Lane leg cost).

At the Watkiss Way / Helmcken Road intersection the addition of the development does not impact the levels of service. However, queues are an existing challenge on Helmcken Road and are expected to grow based on the existing traffic growing at 2% per year and this development. The opening of the McKenzie Interchange is expected to mitigate the existing volumes, and therefore reduce the projected background traffic, as traffic will shift to the free-flow conditions at the interchange over the stop and go traffic on Burnside Road, Helmcken Road, and Watkiss Way (due to the signals). Reduction in the background volumes will improve existing queues and mitigate queuing impacts due to development in the Watkiss-Helmcken-Burnside area. In addition, the proposed TDM program (two car share vehicles, two shared e-bikes, and secure bicycle parking) along with the proximity to the Galloping Goose, transit and amenities at Eagle Creek the projected traffic volumes for this site are conservative and are expected to be at least 10% less than utilized for this worst case analysis.

The proposed first site access location does not meet the TAC's intersection sight distance for left turns from stop for a design speed of 30 km/h; however, since the road to the left does not connect to another road it is unlikely that any vehicles will turn left. If a vehicle is approaching from the south and a vehicle does turn left the approaching vehicle has sufficient sight distance to stop for a turning vehicle. The sight lines for a right turning vehicle are met. Therefore, the proposed access location is acceptable from a sight distance safety perspective.

A sidewalk should be provided along the Erskine Lane development frontage to provide a better connect to the Hospital trail, and Galloping Goose Trail. A sidewalk along the Watkiss Way frontage would upgrade this section of Watkiss to an urban (sidewalk) standard. Along with narrowing the lanes on Watkiss Way (due to the proposed left turn lane) the change in cross section will support traffic calming of this section of Watkiss Way. The developer should contribute to upgrading the Hospital trail to a gravel pathway, subject to the CRD's agreement. No new bicycle facilities are required since there are bicycle lanes on Watkiss Way and the volume of traffic on Erskine Way does not necessitate the need for separate facilities on Erskine Way.

Traffic calming is not required on Erskine Lane due to the short length of the street and the lack of connectivity to other streets. Traffic calming on Erskine Lane would not reduce traffic (as all traffic would be due to land uses on the street) and there is limited ability to speed due to the length.

A review was completed with the reduction in proposed units (approximately ~10%) from 372 units to 336 units. Upon analysis review it has been determined that this reduction will make a negligible difference as it pertains to overall traffic impact and the recommendations made below are still valid.

10.0 RECOMMENDATIONS

- The developer will provide a sidewalk along the Erskine Lane and Watkiss Way development frontages.
- The developer to implement TDM strategies (car share vehicles (2) and electric bicycle share (2)) to reduce vehicle traffic and encourage active modes.
- The developer to provide a left turn lane on Watkiss Way at Erskine Lane.
- The developer to contribute towards the signalization of Erskine Lane / Watkiss Way.
- The developer to provide funds for upgrading the Hospital trail to at least a 3m gravel pathway.

The Town should work with the CRD to determine and acceptable arrangement for the implementation of the formal gravel trail on the CRD's right-of-way (known as Hospital trail).

APPENDIX A: SYNCHRO BACKGROUND

SYNCHRO MODELLING SOFTWARE DESCRIPTION

The traffic analysis was completed using Synchro (Signal and stop-controlled intersections), SimTraffic traffic modeling software and SIDRA (for roundabout intersections). Results were measured in delay, level of service (LOS) and 95th percentile queue length. Synchro is based on the Highway Capacity Manual (HCM 2010) methodology. SimTraffic integrates established driver behaviours and characteristics to simulate actual conditions by randomly "seeding" or positioning vehicles travelling throughout the network. The simulation is run five times (five different random seedings of vehicle types, behaviours and arrivals) to obtain statistical significance of the results. SIDRA provides results using HCM 2010 methodology as well. SIDRA and Synchro uses measures of effectiveness to return the results of the analysis.

Levels of Service

Traffic operations are typically described in terms of levels of service, which rates the amount of delay per vehicle for each movement and the entire intersection. Levels of service range from LOS A (representing best operations) to LOS E/F (LOS E being poor operations and LOS F being unpredictable/disruptive operations). LOS E/F are generally unacceptable levels of service under normal everyday conditions.

The hierarchy of criteria for grading an intersection or movement not only includes delay times, but also takes into account traffic control type (stop signs or traffic signal). For example, if a vehicle is delayed for 19 seconds at an unsignalized intersection, it is considered to have an average operation, and would therefore be graded as an LOS C. However, at a signalized intersection, a 19 second delay would be considered a good operation and therefore it would be given an LOS B. The table below indicates the range of delay for LOS for signalized and unsignalized intersections.

Table A1: LOS Criteria, by Intersection Traffic Control

Level of Service	Unsignalized Intersection Average Vehicle Delay (sec/veh)	Signalized Intersection Average Vehicle Delay (sec/veh)
A	Less than 10	Less than 10
B	10 to 15	11 to 20
C	15 to 25	20 to 35
D	25 to 35	35 to 55
E	35 to 50	55 to 80
F	More than 50	More than 80

Phase I Environmental Site Assessment

9 Erskine Lane,
View Royal, British Columbia

Prepared for:

WestUrban Developments Ltd.
1-1170 Shoppers' Row
Campbell River, BC V9W 2C8

Attn: Frank Limshue
Development Manager

July 25, 2019

Pinchin File: 243564.000

Issued To:	**WestUrban Developments Ltd.**
Contact:	**Frank Limshue** **Development Manager**
Issued On:	**July 25, 2019**
Pinchin File:	**243564.000**
Issuing Office:	**Richmond, BC**
Primary Contact:	**Rio Roessaptono, M.Eng., P.Eng., Project Manager,** **604.238.2908** **rroessaptono@pinchin.com**

Author: Jessica Pagotto, B.Sc.
Senior Project Coordinator
250.551.6875
jpagotto@pinchin.com

Reviewer: Tadd Berger, M.Sc., EP, P.Ag., CSAP
Operations Manager; Practice Leader
604.238.2938
tberger@pinchin.com

EXECUTIVE SUMMARY

Pinchin Ltd. (Pinchin) was retained on June 7, 2019 through an Authorization to Proceed, Limit of Liability and Terms of Engagement signed by Frank Limshue of WestUrban Developments Ltd. (Client) to conduct a Phase I Environmental Site Assessment (ESA) of the property located at 9 Erskine Lane, View Royal, British Columbia (hereafter referred to as the Site).

The Site is developed with a two-storey single-family residential dwelling (Site Building A), and a detached garage (Site Building B).

Pinchin was advised by the Client that the purpose of the Phase I ESA was to assess potential issues of environmental concern in relation to the potential acquisition and future redevelopment of the Site.

The Phase I ESA was completed in general accordance with the Canadian Standards Association (CSA) document entitled *"Phase I Environmental Site Assessment, CSA Standard Z768-01"* dated November 2001 (reaffirmed 2016) and the general requirements of the BC Contaminated Sites Regulation (CSR), including a review of readily-available historical records, a review of readily-accessible regulatory records, a Site reconnaissance, interviews, an evaluation of information and reporting, subject to the limitations outlined in Section 8.0 of this report.

Based on the results of the Phase I ESA completed by Pinchin, the following could result in potential subsurface impacts at the Site:

- On-Site metal impacted fill resulting for landfilling on 7 Erskine Lane; and
- Metal and hydrocarbon impacted soils on 7 Erskine Lane resulting from historical welding, machine shops, boat building/repair, paint removal, landfilling and sandblasting.

Based on information reviewed in Section 3.6, it is Pinchin's understanding that the owner of 7 Erskine Lane intends to conduct independent remediation both on their property and on-Site in an effort to obtain a Certificate of Compliance (CoC) for both properties. It is proposed that remedial activities and closure soil sampling will be conducted prior to the redevelopment of each property. Pinchin notes that a CoC would be required prior to the redevelopment of the Site and would also improve environmental quality by reducing risks to human health and the environment. As such, Pinchin is not recommending a Phase II ESA at this time. However, progress towards obtaining a CoC for 7 Erskine and the affected portions of the Site should be monitored.

Given the year of construction of the Site Buildings (i.e., approximately 1940s), there is a potential for friable and non-friable asbestos-containing materials (ACMs) to be present in the Site Buildings. Pinchin did not conduct an asbestos survey as part of this Phase I ESA, nor was any destructive or intrusive sampling or inspection conducted as part of this Phase I ESA. The Site Representative advised Pinchin

that no asbestos surveys have been previously conducted at the Site, and that an Asbestos Management Program has not been developed for or implemented at the Site.

This Executive Summary is subject to the same standard limitations as contained in the report and must be read in conjunction with the entire report.

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1.0 INTRODUCTION

1.1 Background

Pinchin Ltd. (Pinchin) was retained on June 7, 2019 through an Authorization to Proceed, Limit of Liability and Terms of Engagement signed by Frank Limshue of WestUrban Developments Ltd. (Client) to conduct a Phase I Environmental Site Assessment (ESA) of the property located at 9 Erskine Lane, View Royal, British Columbia (hereafter referred to as the Site).

The Site is developed with a two-storey single-family residential dwelling (Site Building A), and a detached garage (Site Building B).

Pinchin was advised by the Client that the purpose of the Phase I ESA was to assess potential issues of environmental concern in relation to the potential acquisition and future redevelopment of the Site.

1.2 Scope of Work

The Phase I ESA was completed in general accordance with the Canadian Standards Association (CSA) document entitled "*Phase I Environmental Site Assessment, CSA Standard Z768-01*" dated November 2001 (reaffirmed 2016) and the general requirements of the BC Contaminated Sites Regulation (CSR), including a review of readily available historical and regulatory records, a Site reconnaissance, interviews, an evaluation of information and reporting, all subject to the limitations outlined in Section 8.0 of this report.

Pinchin conducted a Site reconnaissance on June 12, 2019, and was accompanied by Ms. Joanne Adams, part owner of the Site since their family acquired the Site in 1963, and hereafter referred to as the Site Representative.

In addition, Pinchin reviewed the following documents as provided by the Client:

- Report entitled "*Draft PSI, DSI and Remediation Plan, 7 Erskine Lane, View Royal, BC*" prepared for 1132785 BC Ltd., prepared by Islander Engineering (Islander) and dated April 2018 (2018 Islander Draft PSI, DSI and Remediation Plan Report);
- Memo entitled "*Scenario 5 Release Request –Rezoning and Development Permit Application Approved Professional Opinion Letter for 7 Erskine Lane, View Royal, PID: 018-361-790*" prepared for the Ministry of Environment and Climate Change Strategy Land Remediation Section, prepared by TRI Environmental Consulting Inc. (TRI) and dated April 25, 2018 (2018 TRI Scenario 5 Release Request); and
- Report entitled *"Authorization Agreement, Proposed Remediation for 7 Erskine Lane, View Royal, BC"* between 1132785 BC Ltd. (Dustin Lamoureux), owner of 7 Erskine Lane

and Darlene Grigull, Executrix of the Site and dated May 29, 2018 (2018 Proposed Remediation Agreement).

2.0 SITE DESCRIPTION

2.1 Site Location and Physical Description

As indicated on Figure 1 (Key Map), the Site is located immediately east of the intersection of Erskine Lane and Watkiss Way, in View Royal, British Columbia. Pinchin notes that View Royal is a town in Greater Victoria. A right-of-way for a municipal water line transects the Site, separating it into a north and south portion. The Site is situated in an area that predominantly consists of commercial and residential land uses. Figure 2 illustrates the Site and surrounding area.

A summary of the physical description of the Site, including the Site Buildings, is provided below:

Topic	Details
Latitude and Longitude	48° 27' 54.27" North and 123° 26' 10.24" West.
Approximate Site Area	2.1 hectares (5.3 acres).
Buildings on-Site	Site Building A: Located on the south-central portion of the Site. Site Building B: Located on the south-central portion of the Site.
Approximate Year of Construction and Significant Additions or Renovations	1940s.
Number of Floors (Including ground level)	Site Building A: Two, in addition to one subsurface level. Site Building B: One.
Subsurface Levels	Site Building A: One. Site Building B: None observed and none reported by the Site Representative.
Approximate Footprint Areas of Buildings	Site Building A: 115 square metres (m^2) (1,215 square feet (ft^2)). Site Building B: 20 m^2 (200 ft^2).
Approximate Total Areas of Buildings	Site Building A: 345 m^2 (3,645 ft^2). Site Building B: 20 m^2 (200 ft^2).
Heating / Cooling	Site Building A: Oil-fuelled forced air furnace. Site Building B: None observed and none reported by the Site Representative.

Topic	Details
Elevators	None observed and none reported by the Site Representative.
Emergency Generators	None observed and none reported by the Site Representative.
Landscaped / Grassed/Bare Ground Areas	The majoring of the Site is occupied by forested land.
Paved or Other Sealed Surface Materials	None observed.

2.2 Topographic, Geologic and Hydrogeological Setting

Topic	Findings
Topography of Site and Surrounding Area	The Site is generally at a higher elevation than the surrounding properties. There is a regional slope down to the south-southwest.
Site Grade Relative to the Adjoining Properties	The adjoining property to the north of the northern portion of the Site is approximately 2 meters (m) higher in elevation than the Site. The adjoining property to the north of the south portion of the Site is between approximately 1 m and 10 m lower in elevation than the Site. The adjoining property to the east of the Site is between approximately 0 m and 4 m higher in elevation than the Site, with a gradual slope downgradient beyond the adjacent property. The adjoining property to the south of the Site is between approximately 0 m and 10 m lower in elevation than the Site. The adjoining property to the west of the Site is between approximately 0 m and 5 m lower in elevation than the Site.
Subsurface Soils	Based on the findings of the 2018 Islander Draft PSI, DSI and Remediation Plan Report, the subsurface generally consists of sandy gravel with crushed rock, sandy silt, silty sand and clay.
Fill Materials	Based on information reviewed in Section 3.6, landfilling has been identified at 7 Erskine Lane (adjacent property to the east). Metal impacted fill has also been identified to be encroaching onto the Site by approximately 5 to 6 m. Refer to Section 3.6 for further discussion on fill materials.
Bedrock Type	Westcoast Crystalline Complex; quartz diorite, tonalite, hornblende-plagioclase gneiss, quartz-feldspar gneiss, amphibolite, diorite, agmatite, gabbro, marble and metasediments (iMap BC).
Inferred Bedrock Depth	During the Site reconnaissance Pinchin observed bedrock outcrops to the north and east of the Site.

Topic	Findings
Inferred Groundwater Depth	Based on the findings of the 2018 Islander Draft PSI, DSI and Remediation Plan Report groundwater is located between 5 meters below ground surface (mbgs) and 6 mbgs.
Nearest Open Water Body	Craigflower Creek is located approximately 130 m southwest of the Site.
Inferred Groundwater Flow Direction	South-southwest based on topography and the nearest body of water.

2.3 Site Operations

Site Building A is a two-storey single-family dwelling with a basement. Site Building B is a detached garage and is located adjacent to the west of Site Building A. A pool and pump house are located to the south of the Site Buildings. A diesel aboveground storage tank (AST) and a propane AST are located on the exterior of Site Building A. A municipal water line divides the Site into north and south portions. The remainder of the Site is treed land.

Further details regarding on-Site operations are provided in Section 5.0.

3.0 HISTORICAL RECORDS REVIEW

3.1 Site Interviews and Records

The Site Representative advised Pinchin of the following with respect to the historical occupancy and operations at the Site:

- The Site Buildings were constructed in approximately 1940 with minor interior renovations in subsequent years;
- Occupants of the Site Buildings have always been residents;
- No dry cleaning operations have historically taken place at the Site;
- No retail fuel outlets (RFOs) have operated at the Site; and
- The adjacent property to the east (7 Erskine Lane) has submitted a Notification about Likely or Actual Substance Migration pertaining to landfilling which has encroached onto the Site. Refer to Section 3.6 for further discussion on the environmental impacts resulting from on-property activities at 7 Erskine Lane.

Pinchin also interviewed Mr. Josh Bartley from Islander Engineering Ltd. Mr. Bartley is the lead engineer overseeing the environmental investigations both at 7 Erskine Lane as well as on-Site.

3.2 Aerial Photographs and Satellite Imagery

Copies of aerial photographs dated 1932, 1946, 1949, 1956, 1964, 1968, 1974, 1979, 1986, 1992, 1997 and 2005 were obtained from the UBC Geographic Information Centre (GIC) in Vancouver, BC and reviewed by Pinchin. In addition, Pinchin reviewed Google Earth™ satellite imagery dated 2010, 2015 and 2018.

A summary of information inferred with respect to the Site is provided in the following table:

Year of Photograph	Site
1932	The Site appears to be occupied by undeveloped forested land.
1946 to 1968	The Site appears to be occupied by a building similar in size and configuration to the current Site Building A as well as forested land.
1974	Similar to 1968; however, the Site appears to be separated into north and south portions by the present-day municipal water line. Site Building A is constructed on the south portion of the Site.
1979 to 2018	Similar to 1974. A building similar in size and configuration to the current the Site Building B appears to have been constructed. A pool also appears to be located to the south of the Site Buildings.

A summary of information inferred with respect to the surrounding area is provided in the following table:

Year of Photograph	North	East	South	West
1932 to 1946	Undeveloped forested and agricultural land.	Undeveloped forested and agricultural land.	Erskine Lane followed by undeveloped forested and agricultural land.	Undeveloped forested and agricultural land.
1949 to 1968	Similar to 1946.	An agricultural property followed by single-family residential dwellings and Highway 1.	Erskine Lane followed by few single-family residential dwellings and undeveloped land.	Similar to 1946.

Year of Photograph	North	East	South	West
1974	Similar to 1968.	A commercial property with an exterior storage yard used for boats and vehicles. This is followed by single-family residential dwellings and Highway 1.	Similar to 1968.	Similar to 1968.
1979	Undeveloped forested land followed by a property which appears to be under development.	Similar to 1974.	Similar to 1974.	Similar to 1974.
1986	Undeveloped forested followed by a portion of Hospital Way. This is followed by an inferred hospital.	Similar to 1979.	Similar to 1979.	Similar to 1979.
1992	Undeveloped forested and gravelled land followed by a portion of Hospital Way. This is followed by an inferred hospital.	Similar to 1986.	Similar to 1986.	Similar to 1986.
1997	Similar to 1992; however, Hospital Way has been fully constructed.	Similar to 1992.	Similar to 1992 with the construction of additional single-family residential dwellings.	Watkiss Way followed by agricultural and undeveloped land.

Year of Photograph	North	East	South	West
2005 to 2015	Similar to 1997.	Similar to 1997.	Similar to 1997.	Watkiss Way followed by single-family residential dwellings and undeveloped land.
2018	Similar to 2015.	Similar to 2015.	Similar to 2015.	Similar to 2015; however, the majority of the previously observed undeveloped land appears to be occupied by agricultural land.

Based on information reviewed in Sections 3.4 and 3.6, Jenkins Marine Ltd. (boat repair/servicing facility), has operated to the east of the Site since the 1970s (also identified as 7 Erskine Lane). Pinchin has identified that the commercial property with an exterior storage yard used for boats and vehicles to be Jenkins Marine Ltd. This property appeared to be occupied by Jenkins Marine Ltd. in the 1974 to 2018 aerials photographs. Refer to Section 3.6 for further discussion on the environmental impacts resulting from on-property activities at 7 Erskine Lane.

3.3 Fire Insurance Plans

The Catalogue of Canadian Fire Insurance Plans 1875-1975 does not list the Site or surrounding area. Therefore, no Fire Insurance Plans (FIPs) could be obtained for review.

3.4 City Directories

City directories for the years 1940 to 1999 were reviewed by Pinchin at the Vancouver Public Library, in Vancouver, British Columbia. It should be noted that no city directories were available for the City of Victoria subsequent to 1999. A summary of information obtained with respect to the Site is provided in the following table:

Year(s)	Occupant Listings for Site Address
1940 t0 1960	Not listed
1970 to 1999	Residential

In general, the city directories indicated that the surrounding area has historically consisted of commercial and residential land uses since 1940. No historical dry cleaning operations, RFOs or other operations of potential environmental concern were identified, with the exception of the following:

- Jenkins Marine Ltd. (boat repair/servicing facility) and Don's Boat Transport, were listed at 5 Erskine Lane from 1975 until 1999. Pinchin notes that 5 Erskine Lane is located approximately 60 m southeast of the Site and is situated hydraulically down to transgradient of the Site relative to the inferred groundwater flow direction. Based on information reviewed in Section 3.6, Pinchin notes that 5 Erskine Lane and 7 Erskine Lane may have historically comprised a lager property. Refer to Section 3.6 for further discussion on the environmental impacts resulting from on-property activities at 7 Erskine Lane.

3.5 Land Titles

A copy of the current land title was obtained by Pinchin from BC Online. Based on information obtained from BC Online, the Site is described as "Lot B, Section 93, Esquimalt District Plan 26648, Except Part in Plan VIP62088". The land title indicated that "Beverley Adams" was listed as the registered owner of the Site at the time of this assessment. No liens or other encumbrances indicating potential environmental concern were noted within the current title.

A copy of the current land title is included in Appendix I.

3.6 Previous Environmental Reports

2018 Islander Draft PSI, DSI and Remediation Plan Report

Islander conducted a series of investigations at 7 Erskine Lane in order to supplement previous investigations in the overall effort to obtain a Certificate of Compliance (CoC) for the property. According to the report, Areas of Potential Environmental Concern (APECs) were identified at the property resulting from previous on-property activities under the ownership of Jenkins Marine. The APECs included:

- Welding or machine shops;
- Dry docks, ship building or boat repair and maintenance, including pain removal from hulls;
- Construction demolition material, including without limitation asphalt and concrete landfilling; and
- Sand blasting waste disposal.

Pinchin notes that the main on-property building, located approximately 10 m east of the Site, contains a repair shop, fabrication bay and storage bay. The landfilling was identified throughout the property and adjacent to the east of the southern portion of the Site. The landfilling was also identified to be encroaching onto the Site by approximately 5 to 6 m.

It was reported that the proposed future redevelopment plans for the property included a multi-tenant residential complex with a single level of underground parking. As such, High Density Residential land use standards, which include intake of contaminated soil, groundwater used for drinking water, toxicity to soil invertebrates and plants and groundwater used for freshwater and marine aquatic life, were considered applicable to the property. Pinchin notes that the future redevelopment plans for the Site are similar to that of 7 Erskine Lane. Therefore, these standards are also considered applicable to the Site.

Test pitting and drilling were conducted on the property between April and August 2017. Three boreholes were installed on the property (IEL-BH131-MW, IEL-BH130-MW and IEL-BH127- MW), one of which was installed near the eastern Site boundary (IEL-BH130-MW), in the location of the identified fill. Several test pits were also dug along the eastern Site boundary as well as on-Site. Submitted soil samples were analyzed for light and heavy extractable petroleum hydrocarbons (LEPH and HEPH), polycyclic aromatic hydrocarbons (PAH), volatile petroleum hydrocarbons (VPH), volatile organic compounds (VOCs), metals and leachate quality (TCLP). Select metals, LEPH, HEPH and benzene concentrations were reported above the applicable CSR standards on the property. A metal exceedance was reported within the Site boundaries. In addition, several soil samples exceeded CSR Protocol 11 Upper Cap Concentrations for Human Health and Ecological Heath, including locations adjacent to the Site boundary. No exceedances of the Hazardous Waste Regulation (HWR) Schedule 4 Table 1 standards for leachate quality were reported

Submitted groundwater samples were analyzed for LEPH, HEPH, PAH, VPH, VOCs, dissolved metals and glycols. Concentrations in groundwater met the applicable CSR standards. It was reported that the groundwater wells were dry in the summer months and two of the three wells had groundwater present in the winter months. Given that the property has a moderate steep slope to the south-southwest, it was inferred that groundwater flow is in a similar direction.

No direct soil vapour sampling was completed; however, soil vapour concentrations were estimated using detectable parameters in soil. No parameters for groundwater were detectable, however soil vapour concentrations were estimated using detection limits for those parameters detected in soils. Estimates were made using recommended partitioning equations, as described in Exhibit 2 of Health Canada's Federal Contaminated Risk Assessment in Canada: Guidance for Soil Vapour Intrusion Assessment at Contaminated Sites. Estimated soil vapour concentrations meet applicable standards for the property without the application of any attenuating factors.

Following the investigations, contaminated soils were identified in the following two areas:

- Placed Fill Soils (approximately 1500m^3): along the south slope and along the toe of the slope of the property near the south and west sides and extending west onto the Site; and
- Surficial Soils (approximately 750m^3): primarily near the historical boat fabrication areas. The main contamination in this area is metals with one location indicating a shallow hydrocarbon impact. In the northeast portion of the property, the surficial contamination is bounded vertically by shallow bedrock.

It was reported that contaminated soils would be removed from the property during redevelopment, which was projected to begin in the summer of 2018.

2018 TRI Scenario 5 Release Request

TRI completed a Scenario 5 Release Request as part of a rezoning and development permit application for 7 Erskine Lane. TRI reviewed the historical investigations completed at the property and concluded that the extent of contamination in the fill areas have been estimated from the placement of the fill which can be visually distinguished by elevation and stratigraphy.

As it pertains specifically to the Site, TRI reported that soil contamination extends onto the Site and is associated with the metal impacted fill soil. The extent of the fill soil is visible by depth, colour and texture and it appears visually to only exceed the western property line by approximately 6 m. Only metal contamination was identified in samples collected from soils along the property's western property boundary. TRI reported that there remains a need for horizontal and vertical delineation through soil analyses on-Site. Ten soil samples reported metal concentrations of one or more of arsenic, copper, lead or zinc above either or both of the Human Health or Ecological Upper Cap Concentrations listed in Protocol 11. Six of the samples are present at less than one meter below grade and four at depths greater than one meter below grade. Two of the samples are located on the western property line between the property the Site; however, these samples are located at depths greater than one meter below grade.

TRI reported that hydrocarbon impacts associated with the fill layers have been horizontally and vertically delineated and are present within the property boundaries. However, it was reported that there is incomplete analytical delineation of one petroleum hydrocarbon sample exceeding the standards in the surficial soils located west of the main fabrication building, both horizontally to the west and vertically. TRI reported that there are plans to finalize the delineation during proposed the excavation and disposal of the impacted soils.

TRI reported that there is a commitment from the property owner to pursue independent remediation and to procure a CoC for their property as well as the Site.

2018 Proposed Remediation Agreement

The Proposed Remediation Agreement between Dustin Lamoureux of 1132785 BC Ltd. (owner of 7 Erskine Lane) and Darlene Grigull (Executrix of the Site) was established as part of the proposed re-development of 7 Erskine Lane. According to the agreement, former on-property activities at 7 Erskine Lane have included boat maintenance and repair as well as landfilling with soils of unknown origin. These activities have resulted in on-property subsurface contamination as well as subsurface contamination at the shared Site boundary (approximately 6 m into the Site from the shared boundary). It is proposed that as part of the re-development process, subsurface contamination at the property and Site will be remediated. The proposed scope of work for this remediation will include 5 m from the Site boundary into the Site and will include:

- Sediment and erosion control measures;
- Grubbing and shrubbery removal as needed;
- Excavation and removal of approximately 100 m^3 of contamination soil;
- Collection of surficial soil samples following the excavation to confirm sufficient contaminated soil removal; and
- Placement of clean fill soils in the excavation.

The agreement also includes a Notice of Likely or Actual Migration dated April 2018 between the source property and the Site. The notice reports the presence of benzene, arsenic, antimony, cadmium, copper, molybdenum, lead and zinc in fill materials encroaching onto the Site.

Based on a review of the above-noted reports, Pinchin notes that following:

- Metal impacted fill soil has been identified on-Site. The extent of the fill soil is visible by depth, colour and texture and it appears visually to only encroach onto the Site by approximately 6 m. However, the vertical and horizontal extent of the metal impacted fill has not been fully delineated;
- Metal and hydrocarbon contamination in soil have been identified on the property located adjacent to the east of the Site. While full delineation has not been achieved on the property, hydrocarbon impacted soil has been reportedly delineated within the property boundaries. Groundwater and soil vapour impacts have not been identified;
- Ten soil samples reported metal concentrations of one or more of arsenic, copper, lead or zinc above either or both of the Human Health or Ecological Upper Cap

Concentrations listed in Protocol 11. Six of the samples are present at less than one meter below grade and four at depths greater than one meter below grade. Two of the samples are located on the western property line between the property the Site; however, these samples are located at depths greater than one meter below grade; and

- No exceedances of the HWR Schedule 4 Table 1 standards for leachate quality were reported.

Based on the information reviewed above, as well as Pinchin's telephone correspondence with Islander, there is an agreement with the owner of 7 Erskine Lane to pursue independent remediation and to obtain a CoC for their property as well as the Site. Remedial activities on-Site will include excavation and closure soil sampling in order to confirm remediation has been achieved.

Pinchin notes that a CoC would be required for the future redevelopment of the Site and would certify that the Site has been satisfactorily remediated to meet the applicable standards set by the Environmental Management Act and CSR. A CoC for the Site and 7 Erskine Lane would also improve environmental quality by reducing risks to human health and the environment.

3.7 Historical Summary

Based on the results of the historical review, the following could result in potential subsurface impacts at the Site:

- Jenkins Marine Ltd., located at 7 Erskine Lane, which has operated adjacent to the east of the Site since the 1970s and has resulted in subsurface impacts in soil, both on-property and at the Site.

4.0 REGULATORY INFORMATION AND CORRESPONDENCE

4.1 Site Regulatory Information

The Client provided Pinchin with a copy of the following regulatory information:

- A Notice of Likely or Actual Substance Migration from a Neighbouring Property dated April 2018 was submitted for off-site migration from 7 Erskine Lane (source property) and the Site. The notice identifies the presence of benzene, arsenic, antimony, cadmium, copper, molybdenum, lead and zinc in fill materials encroaching onto the Site.

4.2 Local and Municipal Government

The Town of View Royal Fire Department was contacted to request copies of any records pertaining to the installation or removal of storage tanks. The Town indicated that it does not maintain records related to storage tanks.

4.3 British Columbia Ministry of Environment and Climate Change Strategy Water Resource Atlas

A search of existing wells in the area on the British Columbia Ministry of Environment and Climate Change Strategy (MOECCS) Water Resource Atlas well database indicated that there were six wells located within a 500 m radius of the Site; four of unknown use and two of private domestic use. The nearest well is located approximately 90 m south of the Site. The search results are located in Appendix II.

4.4 ERIS and British Columbia Ministry of Environment and Climate Change Strategy Site Registry

Pinchin submitted a request to Environmental Risk Information Service Ltd. (ERIS) for a review of the following databases, as they pertain to the Site and surrounding properties:

- *"Authorization Management System (formerly WASTE)";*
- *"Compliance and Enforcement Summary";*
- *"Contaminated Sites on Federal Land";*
- *"Inventory of PCB Storage Sites";*
- *"Scott's Manufacturing Directory";*
- *"National Pollutant Release Inventory";*
- *"Waste Receivers Summary";*
- *"Receivers - Special Waste Information System (SWIS)";*
- *"Waste Generators Summary";*
- *"Generators - Special Waste Information System (SWIS)";*
- *"Waste Disposal Site Inventory";*
- *"National Environmental Emergencies System (NEES)";*
- *"Hazardous Waste Facilities";*
- *"BC Oil and Gas Commission Incidents";*
- *"Surrey Tank Construction Permits";*
- *"Site Registry"; and*
- *"Retail Fuel Storage Tanks".*

A copy of the ERIS report is provided in Appendix III. Based on a review of the information obtained from the above-noted sources, Pinchin notes the following:

- The Site was listed in the Site Registry (ID 21587). According to the detailed report, a Notice of Likely or Actual Substance Migration from a Neighbouring Property dated April 2018 was submitted for off-site migration from 7 Erskine Lane (ID 21586) (the source property to the east) and the Site. The Site is identified as a non-high risk. Refer to Section 3.6 for further discussion on the environmental impacts resulting from on-property activities at 7 Erskine Lane;
- 7 Erskine Lane is listed in the Site Registry (ID 21586). According to the detailed report, a Notice of Independent Remediation Initiation and a Notice of Likely or Actual Substance Migration from a Neighbouring Property were submitted to the MOECCS in May 2018. The affected parcel is the Site (ID 21587). The property was identified as high risk. The property was issued a freeze release under Scenario 5 in July 2018. The MOECCS noted that remediation on the property was to be completed within five years of the issuance of the freeze release. Refer to Section 3.6 for further discussion on the environmental impacts resulting from on-property activities at 7 Erskine Lane;
- Jenkins Marine Ltd., located a 5 Erskine Lane, is listed in Scott's Manufacturing Directory for boat building. This business is also listed in the unplottable summary for the generation of used waste oil absorbent products. Pinchin notes that 5 Erskine Lane is located approximately 60 m southeast of the Site and is situated hydraulically down to transgradient of the Site relative to the inferred groundwater flow direction. Based on information reviewed in Section 3.6, Pinchin notes that 5 Erskine Lane and 7 Erskine Lane may have historically comprised a lager property. Refer to Section 3.6 for further discussion on the environmental impacts resulting from on-property activities at 7 Erskine Lane; and
- The remaining properties, including those listed in the unplottable summary, are located more than 100 m from the Site. Based on distance, these properties did not warrant further discussion.

4.5 Regulatory Information Summary

Based on Pinchin's review of the regulatory information reviewed, the following could result in potential subsurface impacts at the Site:

- Jenkins Marine Ltd., located at 7 Erskine Lane, which has operated adjacent to the east of the Site since the 1970s and has resulted in subsurface impacts in soil, both on-property and at the Site.

5.0 SITE RECONNAISSANCE

Pinchin (see Appendix IV for assessor qualifications) conducted a Site reconnaissance on June 12, 2019, and was accompanied by the Site Representative. The Site reconnaissance included a walk-through of accessible areas of the interior of the Site Buildings and exterior areas. At the time of the Site reconnaissance, the ground surface was dry, and the weather was clear. The Site reconnaissance was documented with notes and photographs. The results of the Site reconnaissance are discussed below. Photographs of some of the features noted during the Site reconnaissance are attached in Appendix V.

5.1 Hazardous Materials

Topic	Findings
Chemicals	Chemicals typically used for general purpose cleaning, body aesthetics and building maintenance (e.g., window cleaners, hair dye, bleach, paints, deodorizers, etc.) were noted on-Site at the time of the Site reconnaissance. Chemicals observed on-Site were stored within manufacturer-supplied containers in various locations throughout Site Building A. Pool chemicals are stored in the pump house. Diesel stored in a steel AST is located adjacent to Site Building A.
Compressed Gases	Propane (500-pound (lb) tank), used to fuel the on-Site dryer, is located adjacent to Site Building A. 20-lb cylinders of propane are stored in Site Building B. Based on the nature of propane gas, it is Pinchin's opinion that the storage of this compressed gas is unlikely to result in potential subsurface impacts at the Site.
Hazardous Waste	None observed and none reported by the Site Representative.

No spills or evidence of historical spills (i.e., staining) were observed in the chemical storage areas noted above. The interior floor slabs were was observed to be in good condition (i.e., no cracking or pitting) and the exterior ground surface in the vicinity of the diesel AST (a concrete slab surrounded by bare ground), was also in good condition. No floor drains or catch basins were present in the vicinity of the chemical storage areas.

5.2 Storage Tanks

5.2.1 Aboveground Storage Tanks

The following ASTs were observed on-Site:

Size	Construction Material	Single or Double Wall	Age	Product Stored	Location
250 litres	Steel	Single	Unknown	Diesel	Adjacent to Site Building A.
500 lbs	Steel	Single	Unknown	Propane	Adjacent to Site Building A.

Based on the nature of propane gas, it is Pinchin's opinion that the storage of this compressed gas is unlikely to result in potential subsurface impacts at the Site.

No spills or evidence of historical spills (i.e., staining) were observed in the vicinity of the diesel AST. The ground surface in the vicinity of the diesel AST (a concrete slab surrounded by bare ground), was also in good condition. No floor drains or catch basins were present in the vicinity of the diesel AST. Based on this, it is Pinchin's opinion that the diesel AST is unlikely to result in potential subsurface impacts at the Site.

5.2.2 Underground Storage Tanks

No evidence of underground storage tanks (USTs) (i.e., fill/vent pipes) was observed on-Site, and none were reported by the Site Representative. However, Pinchin notes that the Site Representative has not been associated with the Site since its development. Although USTs are commonly associated with buildings of this age (i.e., approximately 1940s), Pinchin was unable to confirm or refute the presence of former on-Site USTs. No evidence of former USTs was observed by Pinchin.

5.3 Water and Wastewater

Topic	Findings
Water Supply Source	Capital Regional District. Water is obtained by the CRD from the Sooke watershed. Groundwater is not used as a source of potable water.
Water Use	Water is primarily used for domestic-related activities.
Sanitary/Process Wastewater Receptor	A septic tank and associated septic bed are located on-Site; however, at the time of the Site reconnaissance, the Site Representative could not confirm the location. The Site Representative advised Pinchin that the septic system is strictly utilized for sanitary effluent. It was reported that the septic system is cleaned every five years by Coast VI.
Pits, Sumps or Lagoons	None observed and none reported by the Site Representative.

Topic	Findings
Grease Traps	A grease trap is associated with the septic tank in order to filter grease from kitchen drains prior to entering the septic tank.
Oil/Water Separators	None observed and none reported by the Site Representative.
Storm Water Flow and Receptor	Storm water would likely run overland to percolate naturally through the soil.
Wells	None observed and none reported by the Site Representative.
Watercourses, Ditches or Standing Water	None observed and none reported by the Site Representative.

5.4 Hydraulic Equipment

No evidence of hydraulic equipment (i.e., hydraulic hoists, elevators, compactors, dock levels, etc.) was identified at the Site during the Site reconnaissance.

5.5 Polychlorinated Biphenyls

The use of polychlorinated biphenyls (PCBs) as dielectric fluids in electrical equipment such as transformers, fluorescent lamp ballasts, and capacitors was common up to about 1980. The Federal PCB Regulations, SOR/2008-273, regulate the manufacture, import, export, sale, use and processing of PCBs. In addition, these regulations aim to eliminate the use of high level PCBs (greater than 500 milligrams per kilogram (mg/kg)), as well as low level PCBs (50-500 mg/kg) on or within 100 m of a “Sensitive Site” (e.g., drinking water treatment facility, feed/food processing plant, child care facility, schools, hospitals, etc.), by December 31, 2009. Light ballasts, pole top transformers, and other electrical equipment with low level PCBs (50-500 mg/kg) in non-sensitive sites are aimed to be eliminated by December 31, 2025.

Given the year of construction of the Site Buildings (i.e., approximately 1940s), there is a potential that the electrical equipment observed on-Site may contain PCBs. No transformers were observed on-Site. No hydraulic equipment was observed on-Site.

Typical buildings of this age may contain PCBs in paint, caulking and window putties. Testing for the presence of PCBs in these materials is beyond the scope of this Phase I ESA. The potential presence of PCBs in these materials could result in future costs if extensive renovation requiring removal of these materials or demolition activities are undertaken at the Site. The extent of such potential issues could not be assessed as part of this Phase I ESA.

5.6 Asbestos-Containing Materials

Asbestos-containing materials (ACMs) are commonly found in building construction materials (particularly in older buildings constructed prior to 1985). Friable asbestos (friable is defined as a material that can be crumbled, powdered or pulverized by hand pressure) was widely used in sprayed fireproofing until 1973, and in decorative or finishing plasters, and thermal systems insulation until the early 1980s. Non-friable or manufactured asbestos products were widely used in building construction including in vinyl floor tiles, sheet flooring, ceiling tiles, pipe gaskets, roofing materials, asbestos cement boards, and numerous other products until the mid-1980s. A very limited number of non-friable asbestos products in limited quantities are still in use currently in building construction.

Given the year of construction of the Site Buildings (i.e., approximately 1940s), there is a potential for friable and non-friable ACMs to be present in the Site Buildings. Pinchin did not conduct an asbestos survey as part of this Phase I ESA, nor was any destructive or intrusive sampling or inspection conducted as part of this Phase I ESA. The Site Representative advised Pinchin that no asbestos surveys have been previously conducted at the Site, and that an Asbestos Management Program (AMP) has not been developed for or implemented at the Site.

The potential presence of ACMs could result in management issues and future costs if renovation or demolition activities are undertaken at the Site. The extent of such potential issues could not be assessed as part of this Phase I ESA.

5.7 Lead-Containing Paints

Lead was commonly used as an additive in paints with no restricted level up until the mid-1970s. This included architectural paints used on interior and exterior surfaces, primers and coatings for anti-corrosive purposes, consumer paints, and paint on furniture and other household items. Beginning in 1976, the federal government limited the amount of lead in consumer paints to 5,000 parts per million (ppm) and steadily reduced the lead content, primarily in the interest of public safety. In 2005, the limit was reduced to 600 ppm and in 2010, the limit was further reduced to 90 ppm, however, there is no restriction on lead in paints used for anti-corrosion purposes (e.g., steel primers and exterior coatings) and road and line markings. In June 2016, these exemptions were removed and as of this date, any paint sold should not contain more than 90 ppm, even if sold for anti-corrosion purposes.

Pinchin did not conduct an assessment of lead in painted surfaces as part of this Phase I ESA, and the Site Representative advised Pinchin that no surveys have been previously conducted at the Site. Prior to any demolition or renovation activities, a designated substance survey (including lead) would be required. During Pinchin's Site reconnaissance, painted surfaces (where observed) were in good condition (i.e., no peeling or flaking).

5.8 Ozone-Depleting Substances

The bulk storage of ozone-depleting substances (ODSs) was not observed. The Site Representative reported that the bulk storage of ODSs has not been carried out at the Site.

Residential refrigeration units were observed on-Site. These units may include refrigerants, such as R22 or R12, that are noted within the phase-out schedules for elimination in both Provincial and Federal regulations. No other sources of ODSs were observed at the time of the Site reconnaissance.

5.9 Radon

Radon is a radioactive gas formed by naturally occurring radioactive breakdown of uranium in soil, rocks and even groundwater. Radon is invisible and odourless and, as such, cannot be detected by humans. Furthermore, radon escapes from the ground and mixes with outdoor air forming concentrations that are too low to be of concern; however, if radon enters a building the concentrations can increase to higher levels. Health Canada has developed guidelines for acceptable levels of radon in dwellings and public buildings and has indicated that radon levels should not exceed 200 Becquerel per cubic metre (Bq/m^3); however, there are currently no regulations governing acceptable levels of radon within buildings, and no requirements for testing or mitigation if levels are found to exceed the current Health Canada guidelines. Testing for radon in the Site Buildings was beyond the scope of this Phase I ESA. The Site Representative reported that no radon surveys have been carried out at the Site.

5.10 Mould or Microbial Contamination

The presence of mould or other microbiological contamination in buildings has become a concern to building tenants and owners due to potential health effects on occupants and users. Provincial Ministries of Labour have recently issued guidelines on enforced regulations to protect the health of construction workers who are exposed to mould in the course of building renovation. The presence of water leaks or high humidity can cause the growth or amplification of mould within building environments.

A comprehensive inspection for mould, which would require intrusive testing, was not performed as part of this Phase I ESA. Visible mould or water-damaged areas were not observed at the time of the Site reconnaissance. The Site Representative was not aware of the presence of mould in the Site Buildings. In addition, the Site Representative was not aware of any historical leaks in the Site Buildings or past flooding events.

5.11 Air Emissions

Topic	Findings
Washroom Vents	Washroom vent exhausts are discharged through roof stacks.
Kitchen Vents	Kitchen exhausts are discharged through roof stacks.
Heating/Cooling	Site Building A: Oil-fuelled forced air furnace. Site Building B: None observed and none reported by the Site Representative.
Emergency Generators	None observed and none reported by the Site Representative.
Process Vents	None observed and none reported by the Site Representative.
Odours	No strong, pungent or noxious odours were identified.
Permits / Approvals	The Site Representative advised Pinchin that Site Owner (Beverley Adams), does not hold any permits/approvals for the Site, as related to air emissions or discharges.

5.12 Staining and Stressed Vegetation

No evidence of historical chemical discharges or releases (i.e., staining or stressed vegetation) was observed during the Site reconnaissance. The Site Representative reported that no known historical chemical spills have occurred on-Site.

5.13 Non-Hazardous Wastes

Topic	Findings
Non-hazardous Wastes	Domestic refuse is deposited in plastic bins. The domestic refuse is removed for off-Site disposal weekly by the Town of View Royal.
Recyclables	Recyclables (i.e., cans, bottles, newsprint, plastics, and cardboard) are stored in plastic totes and are removed to an off-Site recycling facility bi-weekly by the Town of View Royal.

6.0 ACTIVITIES ON ADJACENT PROPERTIES

The Site is located in an urban area that predominantly consists of residential and commercial land use. A description of the adjacent properties is summarized in the following table, based on Pinchin's observations from the Site and publicly accessible locations:

	North	East	South	West
Operation or Activity	Undeveloped forested and gravelled land (a quarry). This is followed by Hospital Way and a hospital.	Jenkins Marine followed by single-family residential dwellings and Highway 1.	Erskine Lane followed by single-family residential dwellings.	Watkiss Way followed by single-family residential dwellings and agricultural land.
Direction with Respect to Inferred Groundwater Flow	Upgradient.	Down to transgradient.	Downgradient.	Down to transgradient.
Visible Emissions	None observed.	None observed.	None observed.	None observed.
Visible Outdoor Storage of Hazardous Materials	None observed.	Steel drums were observed adjacent to the Site boundary.	None observed.	None observed.

Based on Pinchin's observations of the adjacent properties at the time of the Site reconnaissance, the following could result in potential subsurface impacts at the Site:

- Jenkins Marine Ltd., located at 7 Erskine Lane, which has operated adjacent to the east of the Site since the 1970s and has resulted in subsurface impacts in soil, both on-property and at the Site.

7.0 FINDINGS AND RECOMMENDATIONS

Based on the results of the Phase I ESA completed by Pinchin, the following could result in potential subsurface impacts at the Site:

- On-Site metal impacted fill resulting for landfilling on 7 Erskine Lane; and
- Metal and hydrocarbon impacted soils on 7 Erskine Lane resulting from historical welding, machine shops, boat building/repair, paint removal, landfilling and sandblasting.

Based on information reviewed in Section 3.6, it is Pinchin's understanding that the owner of 7 Erskine Lane intends to conduct independent remediation both on their property and on-Site in an effort to obtain a Certificate of Compliance (CoC) for both properties. It is proposed that remedial activities and closure soil sampling will be conducted prior to the redevelopment of each property. Pinchin notes that a CoC would be required prior to the redevelopment of the Site and would also improve environmental quality by reducing risks to human health and the environment. As such, Pinchin is not recommending a Phase II

ESA at this time. However, progress towards obtaining a CoC for 7 Erskine and the affected portions of the Site should be monitored.

Given the year of construction of the Site Buildings (i.e., approximately 1940s), there is a potential for friable and non-friable ACMs to be present in the Site Buildings. Pinchin did not conduct an asbestos survey as part of this Phase I ESA, nor was any destructive or intrusive sampling or inspection conducted as part of this Phase I ESA. The Site Representative advised Pinchin that no asbestos surveys have been previously conducted at the Site, and that an AMP has not been developed for or implemented at the Site.

8.0 TERMS AND LIMITATIONS

This Phase I ESA was performed in order to identify potential issues of environmental concern associated with the Site located at 9 Erskine Lane, View Royal, British Columbia, at the time of the Site reconnaissance. This Phase I ESA was performed in general compliance with currently acceptable practices for environmental site investigations, and specific Client requests, as applicable to this Site.

This report was prepared for the exclusive use of WestUrban Developments Ltd. (Client), subject to the terms, conditions and limitations contained within the duly authorized proposal for this project. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, is the sole responsibility of such third parties. Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted.

If additional parties require reliance on this report, written authorization from Pinchin will be required. Such reliance will only be provided by Pinchin following written authorization from Client. Pinchin disclaims responsibility of consequential financial effects on transactions or property values, or requirements for follow-up actions and costs. No other warranties are implied or expressed. Furthermore, this report should not be construed as legal advice. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law.

The information provided in this report is based upon analysis of available documents, records and drawings, and personal interviews. In evaluating the Site, Pinchin has relied in good faith on information provided by other individuals noted in this report. Pinchin has assumed that the information provided is factual and accurate. In addition, the findings in this report are based, to a large degree, upon information provided by the current owner/occupant. Pinchin accepts no responsibility for any deficiency, misstatement or inaccuracy contained in this report as a result of omissions, misinterpretations or fraudulent acts of persons interviewed or contacted, or contained in reports that were reviewed. The scope of work for this Phase I ESA did not include an intrusive investigation for designated substances (i.e., asbestos, mould, etc.) and, therefore, these materials may be present in concealed areas.

Pinchin makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and these interpretations may change over time.

The CSA document entitled "*Phase I Environmental Site Assessment, CSA Standard Z768-01*" dated November 2001 (reaffirmed 2016), does not apply to environmental auditing or environmental management systems. Therefore, with respect to Site operations and conditions, compliance with applicable Federal, Provincial or Municipal acts, regulations, laws and/or statutes was not evaluated as part of the Phase I ESA.

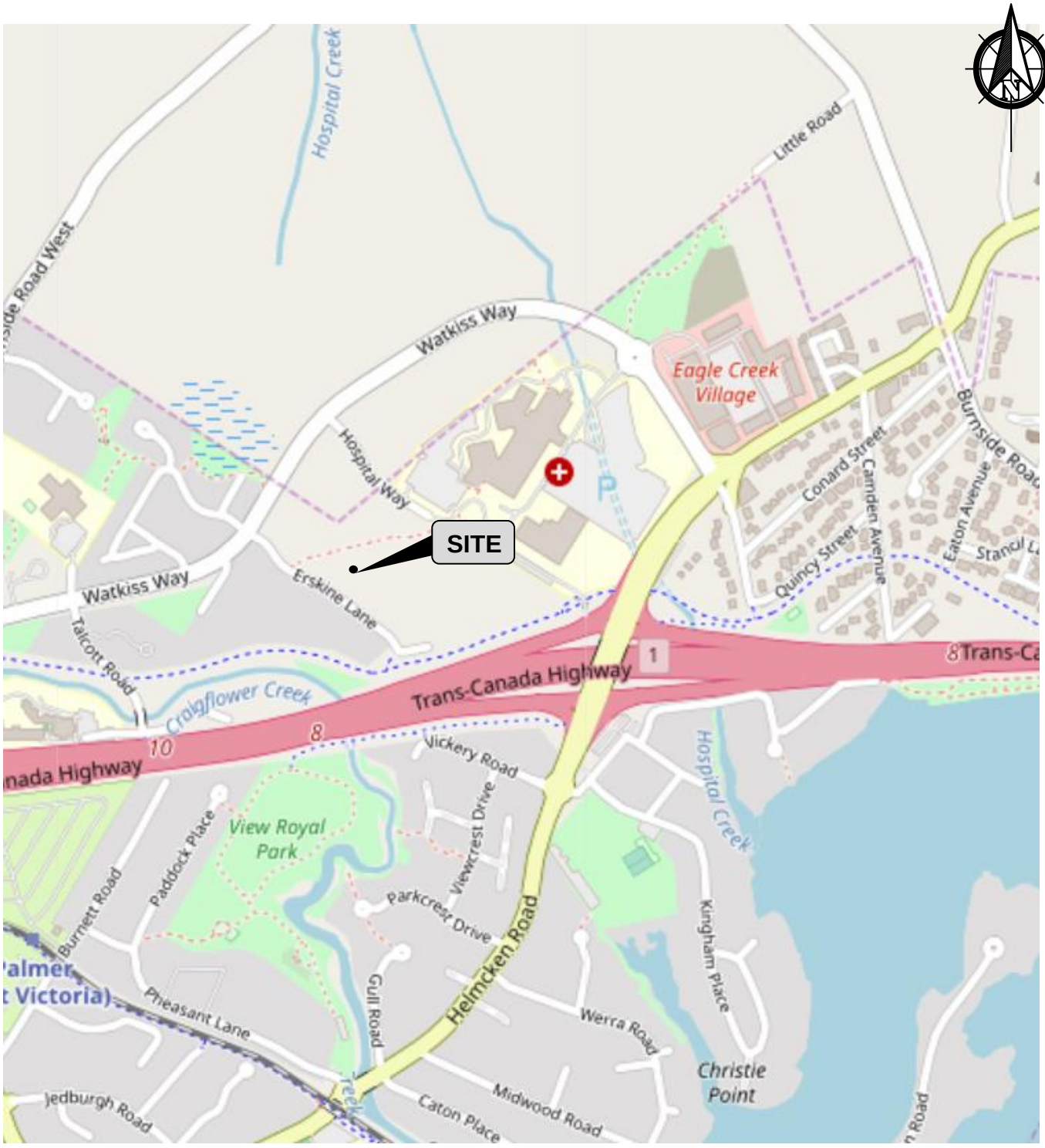
9.0 REFERENCES

1. BC Centre for Disease control website radon contamination: http://www.bccdc.ca/healthenv/Contaminants/Radon/default.htm
2. Health Canada. *"Cross-Canada Survey of Radon Concentrations in Homes – Final Report*", dated March 2012.
3. BC Online Site Registry.
4. British Columbia Ministry of the Environment On-Line Water Resource Atlas.
5. Canadian Standards Association (CSA) Standard. CSA Z768-01, Phase I Environmental Site Assessment, Canadian Standards Association International, November 2001, reaffirmed 2012.
6. City of Capital Regional District Online GIS.
7. ERIS report entitled "9 Erskine Lane, View Royal, British Columbia", and dated June 12, 2019 (ERIS Project # 20190607238).
8. Google™ Earth.
9. Report entitled "*Draft PSI, DSI and Remediation Plan, 7 Erskine Lane, View Royal, BC*" prepared for 1132785 BC Ltd., prepared by Islander and dated April 2018.
10. Memo entitled "*Scenario 5 Release Request –Rezoning and Development Permit Application Approved Professional Opinion Letter for 7 Erskine Lane, View Royal, PID: 018-361-790*" prepared for the Ministry of Environment and Climate Change Strategy Land Remediation Section, prepared by TRI and dated April 25, 2018.
11. Report entitled "*Authorization Agreement, Proposed Remediation for 7 Erskine Lane, View Royal, BC"* between 1132785 BC Ltd. (Dustin Lamoureux), owner of 7 Erskine Lane and Darlene Grigull, Executrix of the Site and dated May 29, 2018.

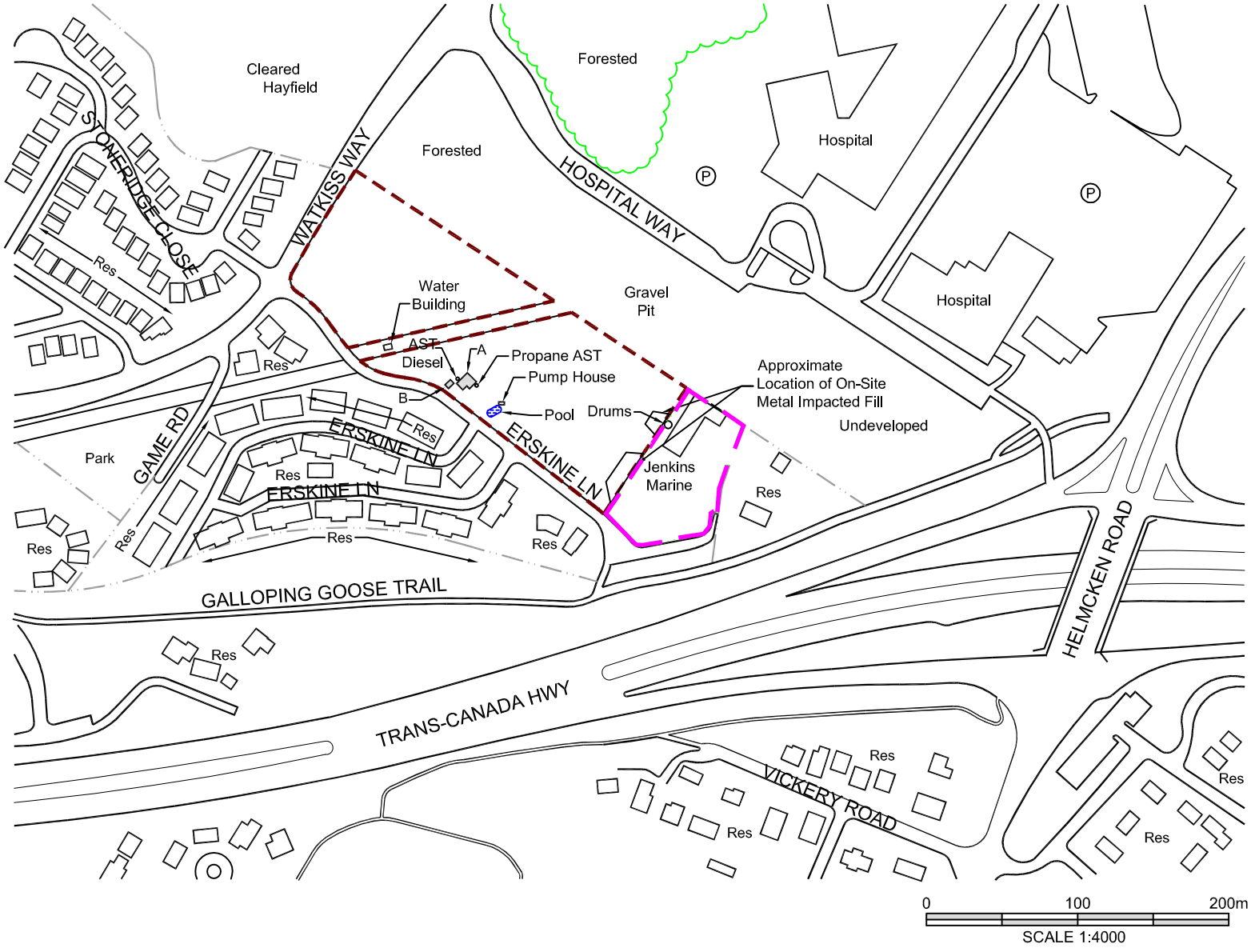
12. Ministry of Environment, Environmental Management Act, Contaminated Sites Regulation (BC Reg375/96). 2019.

13. UBC Geographic Information Centre.

FIGURES



PINCHIN	CLIENT NAME:	WESTURBAN DEVELOPMENTS LTD.				
	PROJECT NAME:	PHASE I ENVIRONMENTAL SITE ASSESSMENT				
	LOCATION:	9 ERSKINE LANE, VIEW ROAYL, BRITISH COLUMBIA				
	TITLE:	KEY MAP				
	DATE: JUNE 2019	PROJECT #: 243564	IMAGE SOURCE: OPEN STREET MAPS	DRAWN BY: JP	CHECKED BY: TB	FIGURE NO.: 1



LEGEND

- Subject Property
- Other Property Line
- APEC : Historical welding, machine shops, boat building/repair, paint removal, land filling and sandblasting resulting in petroleum and metal impacted soils on-property and metal impacted fill on-Site
- APEC — Area of Potential Environmental Concern
- Roadway
- Site Building
- Off-Site Building
- (P) Parking Lot
- Res — Residential
- AST — Aboveground Storage Tank
- IGWF — Inferred Groundwater Flow

PINCHIN

WESTURBAN DEVELOPMENTS LTD.

PHASE I ENVIRONMENTAL SITE ASSESSMENT

9 ERSKINE LANE, VIEW ROYAL, BRITISH COLUMBIA

SITE AND SURROUNDING LAND USE PLAN

DATE: JULY 2019	FIGURE: 2
PROJECT NO: 243564	
DRAWN BY: VM/DM	CHECKED BY: J. PAGOTTO
SOURCE : PINCHIN SITE SURVEY AND GOOGLE EARTH	

PA2019070281

APPENDIX I
Current Land Title of the Site

TITLE SEARCH PRINT 2019-06-07, 14:00:02

File Reference: 243564 Requestor: Jasmine Koh

Declared Value $ 621800

CURRENT INFORMATION ONLY - NO CANCELLED INFORMATION SHOWN

Land Title District VICTORIA
Land Title Office VICTORIA

Title Number EW106420
From Title Number EW106419

Application Received 2004-08-10

Application Entered 2004-08-23

Registered Owner in Fee Simple
Registered Owner/Mailing Address: BEVERLEY ADAMS
9 ERSKINE LANE
VICTORIA, BC
V8Z 1R7
IN TRUST DDEW106420

Taxation Authority View Royal, Town of

Description of Land
Parcel Identifier: 002-364-531
Legal Description:
LOT B, SECTION 93, ESQUIMALT DISTRICT, PLAN 26648, EXCEPT PART IN PLAN VIP62088

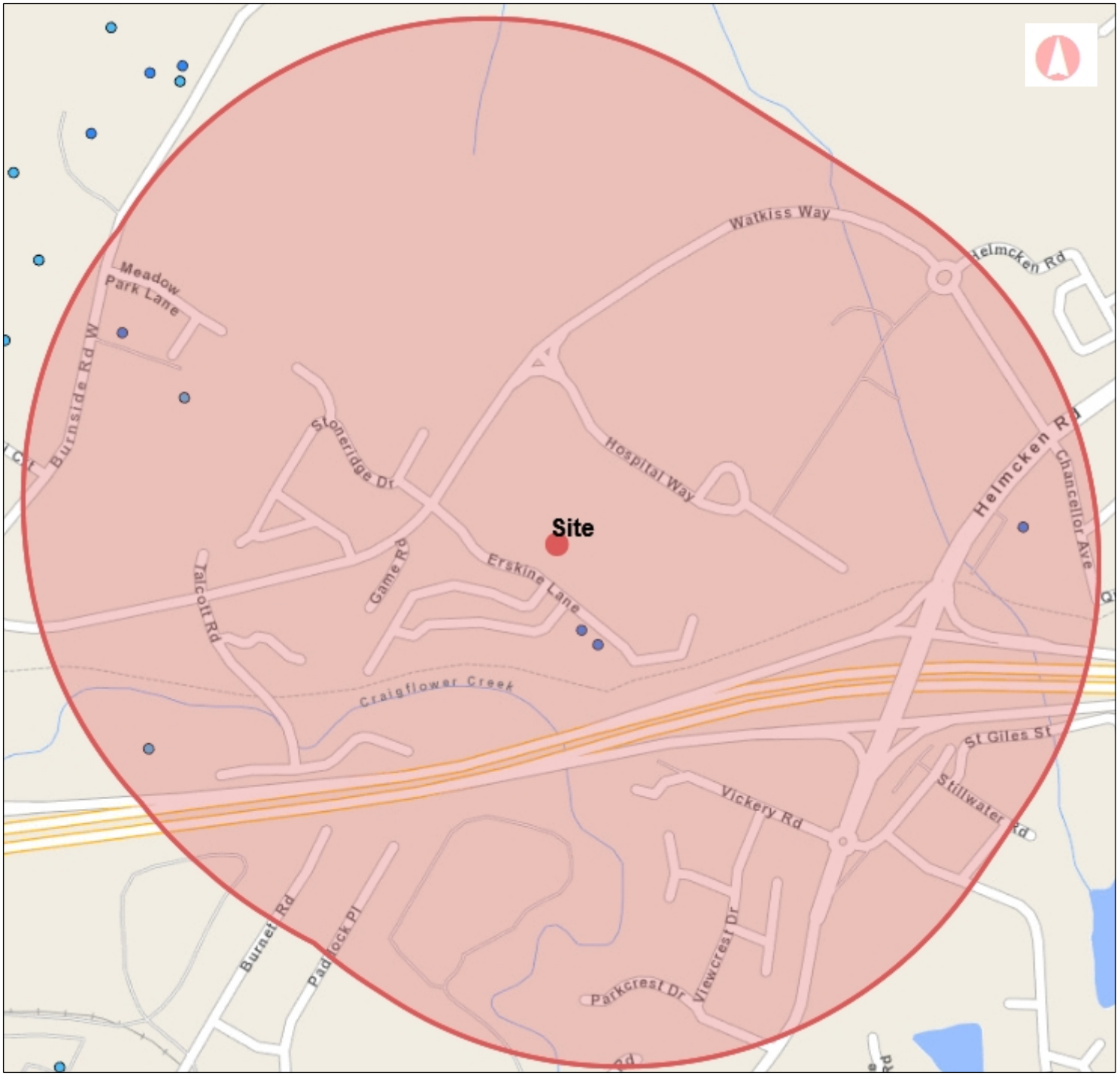
Legal Notations NONE

Charges, Liens and Interests
Nature: UNDERSURFACE RIGHTS
Registration Number: M76301
Registered Owner: HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA
Remarks: INTER ALIA
AFB 3.257.3685 DD 35249

Nature: EASEMENT
Registration Number: 105260G
Registration Date and Time: 1943-03-11 14:47
Remarks: INTER ALIA
THAT PART FORMERLY THE NORTHERLY 5 FEET OF LOT 2, PLAN 4206, APPURTENANT TO LOT 1, PLAN 4206

Duplicate Indefeasible Title	NONE OUTSTANDING
Transfers	NONE
Pending Applications	NONE

APPENDIX II
BC MOECCS Water Resource Atlas Search Result



BC Water Resource Atlas

Legend

- Water Wells - Private Dome:
- Provincial Groundwater Obs Active
- Provincial Groundwater Obs Inactive
- Water Wells - Artesian
- Water Wells - All

0 0.20 0.41 km

1: 10,000

Copyright/Disclaimer

Datum: NAD83

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Key Map of British Columbia

APPENDIX III
ERIS Report

ENVIRONMENTAL RISK INFORMATION SERVICES

DATABASE REPORT

Project Property:	*243564, 9 Erskine Lane, View Royal, British Columbia* *9 Erskine Lane* *View Royal BC V8Z 1R7*
Project No:	*243564*
Report Type:	*Custom BC Standard Report Plus*
Order No:	*20190607238*
Requested by:	*Pinchin Ltd.*
Date Completed:	*June 12, 2019*

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

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Executive Summary

Property Information:

Project Property: *243564, 9 Erskine Lane, View Royal, British Columbia*
9 Erskine Lane View Royal BC V8Z 1R7

Project No: *243564*

Coordinates:

Latitude:	*48.46524*
Longitude:	*-123.435924*
UTM Northing:	*5,368,103.58*
UTM Easting:	*467,775.51*
UTM Zone:	*UTM Zone 10U*

Elevation: *90 FT*
27.49 M

Order Information:

Order No: *20190607238*
Date Requested: *June 7, 2019*
Requested by: *Pinchin Ltd.*
Report Type: *Custom BC Standard Report Plus*

Historical/Products:

Executive Summary: Report Summary

Database	Name	Searched	Search Radius	Project Property	Within 0.50 km	0.50 km to 1.00 km	Total
AMS	Authorization Management System (formerly WASTE)	Y	0.50	0	0	-	0
ARIS	Assessment Report Indexing System	N	0.50	-	-	-	-
AUWR	Automobile Wrecking & Supplies	N	0.50	-	-	-	-
BOGW	BC Oil and Gas Wells	N	0.50	-	-	-	-
CDRY	Dry Cleaning Facilities	N	0.50	-	-	-	-
CHEM	Chemical Register	N	0.50	-	-	-	-
CNG	Compressed Natural Gas Stations	N	0.50	-	-	-	-
COAL	Coal Tar Sites	N	0.50	-	-	-	-
CONV	Compliance and Enforcement Summary	Y	0.50	0	0	-	0
DIS	Wastewater Discharge Inventory	N	0.50	-	-	-	-
EEM	Environmental Effects Monitoring	N	0.50	-	-	-	-
EHS	ERIS Historical Searches	N	0.50	-	-	-	-
EIIS	Environmental Issues Inventory System	N	0.50	-	-	-	-
EM	Environmental Monitoring Locations	N	0.50	-	-	-	-
FCON	Federal Convictions	N	0.50	-	-	-	-
FCS	Contaminated Sites on Federal Land	Y	0.50	0	0	-	0
FISH	Commercial Fisheries	N	0.50	-	-	-	-
FOFT	Fisheries & Oceans Fuel Tanks	N	0.50	-	-	-	-
GEN	Waste Generators Summary	Y	0.50	0	1	-	1
GEN2	Generators - Special Waste Information System (SWIS)	Y	0.50	0	2	-	2
GHG	Greenhouse Gas Emissions from Large Facilities	N	0.50	-	-	-	-
HWF	Hazardous Waste Facilities	Y	0.50	0	0	-	0
IAFT	Indian & Northern Affairs Fuel Tanks	N	0.50	-	-	-	-
LUM	Lumber Mills	N	0.50	-	-	-	-
MINE	Canadian Mine Locations	N	0.50	-	-	-	-
MNR	Minerals Deposits Database	N	0.50	-	-	-	-
NATE	National Analysis of Trends in Emergencies System (NATES)	N	0.50	-	-	-	-
NCPL	Non-Compliance Reports	N	0.50	-	-	-	-
NDFT	National Defense & Canadian Forces Fuel Tanks	N	0.50	-	-	-	-
NDSP	National Defense & Canadian Forces Spills	N	0.50	-	-	-	-
NDWD	National Defence & Canadian Forces Waste Disposal Sites	N	0.50	-	-	-	-
NEBI	National Energy Board Pipeline Incidents	N	0.50	-	-	-	-
NEBP	National Energy Board Wells	N	0.50	-	-	-	-
NEES	National Environmental Emergencies System (NEES)	Y	0.50	0	0	-	0

Database	Name	Searched	Search Radius	Project Property	Within 0.50 km	0.50 km to 1.00 km	Total
NPCB	National PCB Inventory	N	0.50	-	-	-	-
NPRI	National Pollutant Release Inventory	Y	0.50	0	0	-	0
OG INCIDENTS	BC Oil and Gas Commission Incidents	N	0.50	-	-	-	-
OGWW	Oil and Gas Wells	N	0.50	-	-	-	-
PAP	Canadian Pulp and Paper	N	0.50	-	-	-	-
PCB	Inventory of PCB Storage Sites	Y	0.50	0	1	-	1
PCFT	Parks Canada Fuel Storage Tanks	N	0.50	-	-	-	-
PES	Pesticide Register	N	0.50	-	-	-	-
PRAI	Private Aggregate Inventory	N	0.50	-	-	-	-
PUAI	Public Aggregate Inventory	N	0.50	-	-	-	-
REC	Waste Receivers Summary	Y	0.50	0	1	-	1
REC2	Receivers - Special Waste Information System (SWIS)	Y	0.50	0	0	-	0
RST	Retail Fuel Storage Tanks	Y	0.50	0	0	-	0
SCT	Scott's Manufacturing Directory	Y	0.50	0	1	-	1
SREG	Site Registry	Y	1.00	1	1	1	3
STNK	Surrey Tank Construction Permits	Y	0.50	0	0	-	0
TCFT	Transport Canada Fuel Storage Tanks	N	0.50	-	-	-	-
VTNK	Vancouver Heating Oil Underground Storage Tanks	N	0.50	-	-	-	-
WDS	Waste Disposal Site Inventory	Y	0.50	0	0	-	0
WWIS	Water Well Information System	N	0.50	-	-	-	-
	Total:			1	7	1	9

Executive Summary: Site Report Summary - Project Property

Map Key	DB	Company/Site Name	Address	Dir/Dist (m)	Elev diff (m)	Page Number
1	SREG	9 Erskine Lane, View Royal, Victoria	9 ERSKINE LANE VIEW ROYAL No Entry VICTORIA BC ***Site ID*	*Updated:*** 21587 | 19-Jul-2018	-/0.0	0.00	13

Executive Summary: Site Report Summary - Surrounding Properties

Map Key	DB	Company/Site Name	Address	Dir/Dist (m)	Elev Diff (m)	Page Number
2	SREG	7 Erskine Lane, View Royal	7 ERSKINE LANE (VIEW ROYAL) VICTORIA BC ***Site ID*	*Updated:*** 21586 | 19-Jul-2018	SE/100.0	3.22	14
3	SCT	Jenkins Marine Ltd.	5 Erskine Lane Victoria BC V8Z 1R7	ESE/165.3	5.81	20
4	GEN2	VICTORIA GENERAL HOSPITAL	1 HOSPITAL WAY, VICTORIA, BC BC	NE/190.4	-4.35	20
4	GEN2	VANCOUVER GENERAL HOSPITAL	#1 HOSPITAL WAY, VICTORIA, BC BC	NE/190.4	-4.35	21
4	PCB	CAPITAL HEALTH REGION	1 HOSPITAL WAY VICTORIA BC V8Z 6R5	NE/190.4	-4.35	21
4	REC	CAPITAL HEALTH REGION	1 Hospital Way Victoria BC V8Z 6R5	NE/190.4	-4.35	22
5	GEN	Capital Health Region	35 Helmcken Road, Victoria BC	NE/364.1	-7.41	23
6	SREG	E & N Rail Trail, Victoria	E & N RAIL TRAIL - ADJACENT TO CRAIGFLOWER CREEK No Entry VICTORIA BC ***Site ID*	*Updated:*** 17447 | 08-May-2015	S/995.3	-12.12	23

Executive Summary: Summary By Data Source

GEN - Waste Generators Summary

A search of the GEN database, dated 1993-Sep 30, 2017 has found that there are 1 GEN site(s) within approximately 0.50 kilometers of the project property.

Lower Elevation	Address	Direction	Distance (m)	Map Key
Capital Health Region	35 Helmcken Road, Victoria BC	NE	364.10	5

GEN2 - Generators - Special Waste Information System (SWIS)

A search of the GEN2 database, dated Jan 2011-Dec 2014 has found that there are 2 GEN2 site(s) within approximately 0.50 kilometers of the project property.

Lower Elevation	Address	Direction	Distance (m)	Map Key
VANCOUVER GENERAL HOSPITAL	#1 HOSPITAL WAY, VICTORIA, BC BC	NE	190.39	4
VICTORIA GENERAL HOSPITAL	1 HOSPITAL WAY, VICTORIA, BC BC	NE	190.39	4

PCB - Inventory of PCB Storage Sites

A search of the PCB database, dated 1989, May 1993-2010* has found that there are 1 PCB site(s) within approximately 0.50 kilometers of the project property.

Lower Elevation	Address	Direction	Distance (m)	Map Key
CAPITAL HEALTH REGION	1 HOSPITAL WAY VICTORIA BC V8Z 6R5	NE	190.39	4

REC - Waste Receivers Summary

A search of the REC database, dated 1992-2010* has found that there are 1 REC site(s) within approximately 0.50 kilometers of the project property.

Lower Elevation	Address	Direction	Distance (m)	Map Key
CAPITAL HEALTH REGION	1 Hospital Way Victoria BC V8Z 6R5	NE	190.39	4

SCT - Scott's Manufacturing Directory

A search of the SCT database, dated 1992-Mar 2011* has found that there are 1 SCT site(s) within approximately 0.50 kilometers of the project property.

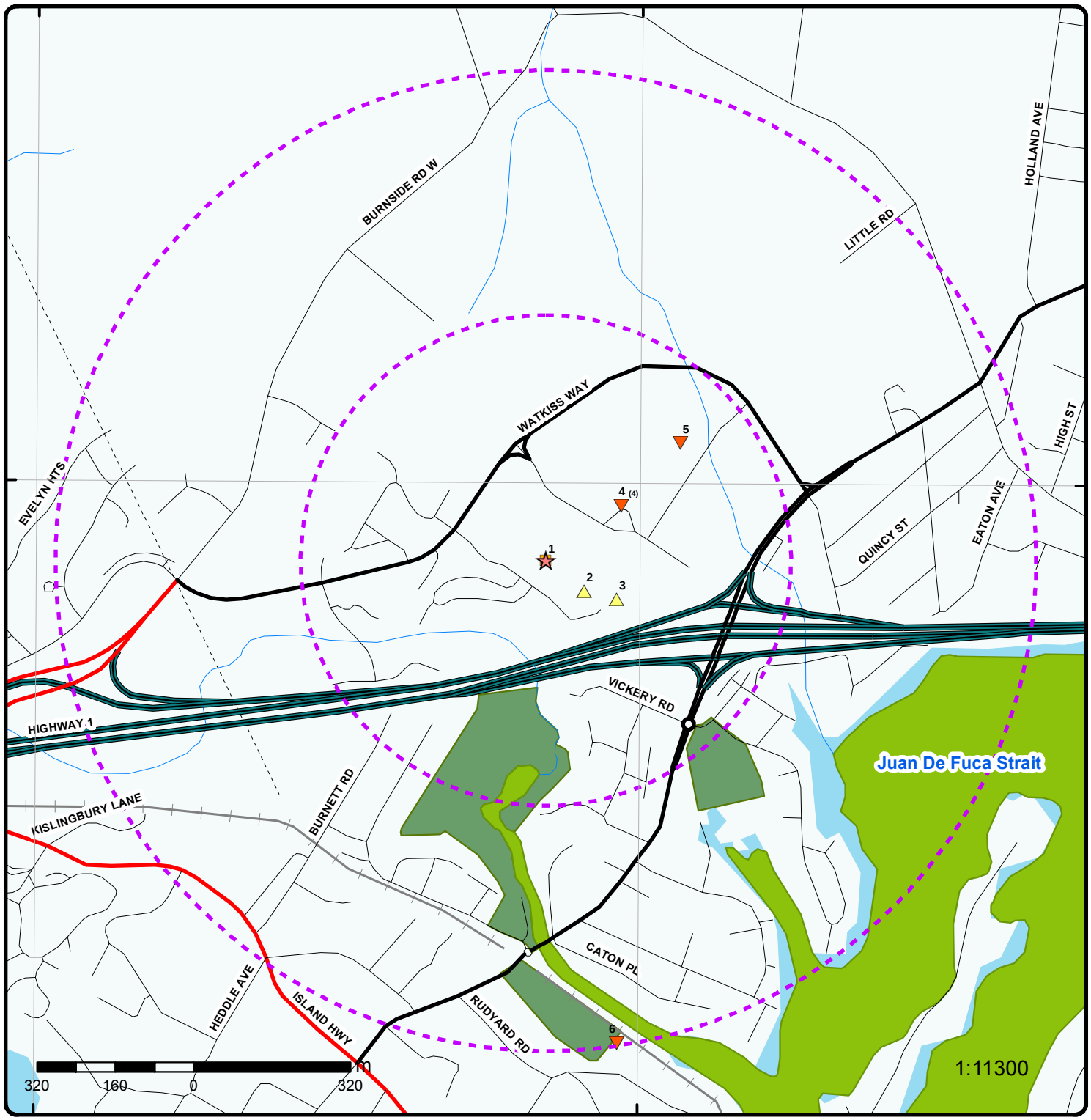
Equal/Higher Elevation	Address	Direction	Distance (m)	Map Key
Jenkins Marine Ltd.	5 Erskine Lane Victoria BC V8Z 1R7	ESE	165.26	3

SREG - Site Registry

A search of the SREG database, dated Apr 30, 2019 has found that there are 3 SREG site(s) within approximately 1.00 kilometers of the project property.

Equal/Higher Elevation	Address	Direction	Distance (m)	Map Key
9 Erskine Lane, View Royal, Victoria	9 ERSKINE LANE VIEW ROYAL No Entry VICTORIA BC ***Site ID* | *Updated:*** 21587 | 19-Jul-2018	-	0.00	1
7 Erskine Lane, View Royal	7 ERSKINE LANE (VIEW ROYAL) VICTORIA BC ***Site ID* | *Updated:*** 21586 | 19-Jul-2018	SE	100.01	2

Lower Elevation	Address	Direction	Distance (m)	Map Key
E & N Rail Trail, Victoria	E & N RAIL TRAIL - ADJACENT TO CRAIGFLOWER CREEK No Entry VICTORIA BC ***Site ID* | *Updated:*** 17447 | 08-May-2015	S	995.28	6



Map : 1 Kilometer Radius

Order No: 20190607238

Address: 9 Erskine Lane, View Royal, BC, V8Z 1R7

ENVIRONMENTAL RISK INFORMATION SERVICES

- Project Property
- Buffer Outline
- Eris Sites with Higher Elevation
- Eris Sites with Same Elevation
- Eris Sites with Lower Elevation
- Eris Sites with Unknown Elevation
- Expressway
- Principal Highway
- Secondary Highway
- Major Road
- Local road
- Trail
- Proposed Road
- Ferry Route/Ice Road
- Industrial and Resource - Regions
- Main Line
- Sidetrack
- Transit Line
- Abandoned Line
- National Park
- Provincial or Territorial Park
- Other Park
- Golf Course or Driving Range
- Park or Sports Field
- Other Recreation Area

Source: © 2015 DMTI Spatial Inc.

123°27'W

123°25'30"W

48°28'30"N

48°28'30"N

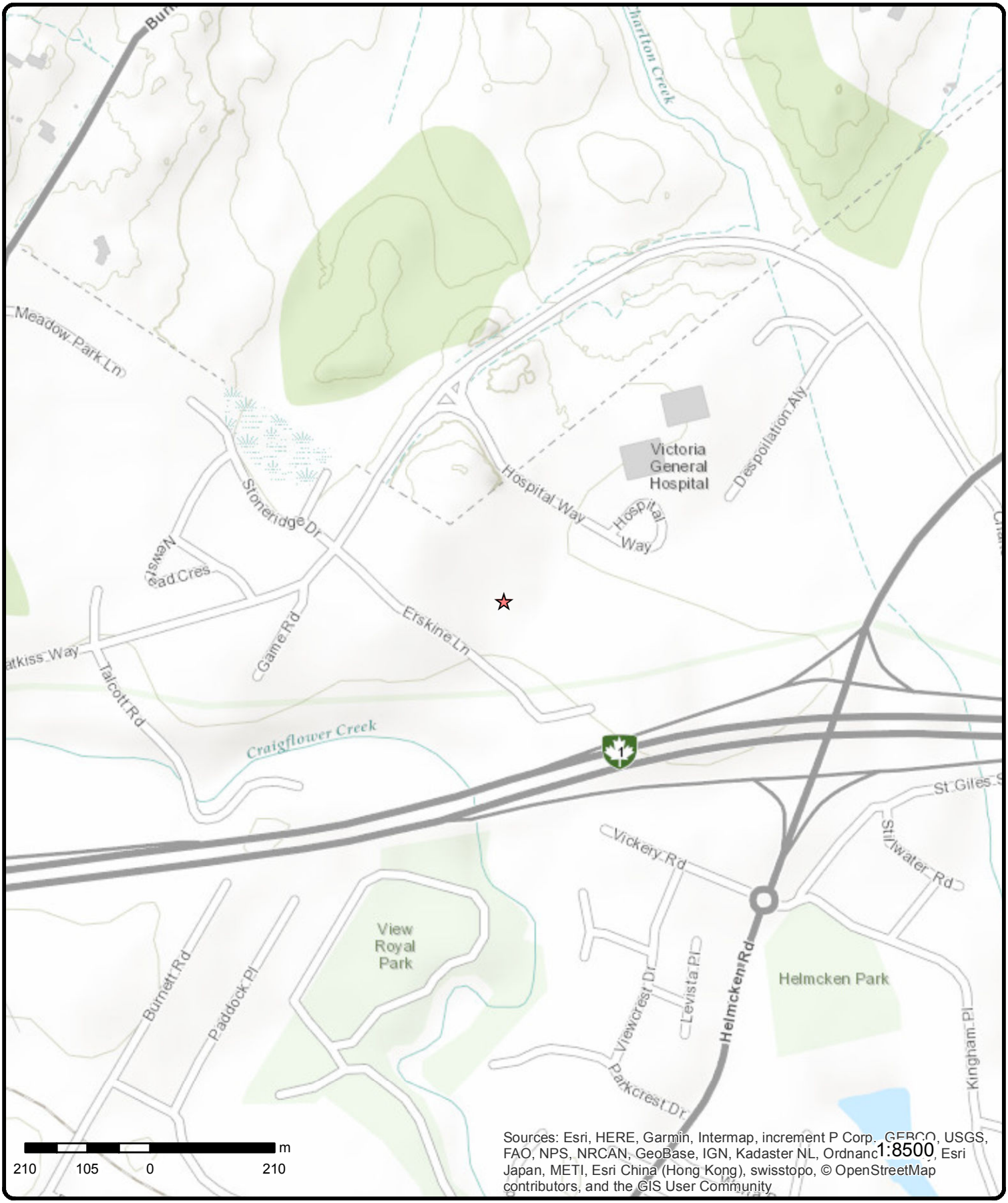
Aerial (2013)

Address: 9 Erskine Lane, View Royal, BC, V8Z 1R7

Source: ESRI World Imagery

Order No: 20190607238

ERIS ENVIRONMENTAL RISK INFORMATION SERVICES



Topographic Map

Address: 9 Erskine Lane, View Royal, BC, V8Z 1R7

Source: ESRI World Topographic Map

Order No: 20190607238

ERIS ENVIRONMENTAL RISK INFORMATION SERVICES

Detail Report

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
1	1 of 1	-/0.0	27.5 / 0.00	9 Erskine Lane, View Royal, Victoria 9 ERSKINE LANE VIEW ROYAL No Entry VICTORIA BC	SREG

Site ID:	21587	**Registered:**	07-May-2018
Victoria File No:	26250-20/21587	**Updated:**	19-Jul-2018
Regional File No:	No File	**Detail Removed:**	16-Jul-2018
Region:		**Postal Code:**	V8Z 1R7
Record Status:	NOT ASSIGNED	**Latitude DMS:**	48d 27m 54.4s
Status as of:	April 2019	**Longitude DMS:**	123d 26m 08.9s
Cleanup Status:		**Latitude:**	48.465111
Category:	Not Applicable	**Longitude:**	123.435806

Location Desc: LATS/LONGS CONFIRMED USING GOOGLE EARTH AND LTSA
Site Note:

Registry Notations

Event ID: 90416
Notation Type and Act: NOTIFICATION RECEIVED ABOUT LIKELY OR ACTUAL SUBSTANCE MIGRATION FROM NEIGHBOURING SITE. Environmental Management Act: General
Initiated Date: 02-May-2018
Approved Date: 02-May-2018
Region: Nanaimo, Vancouver Island
Ministry Contact: SAMWAYS, JENNIFER
Notation Notes: Source Parcel 7 Erskine Lane, View Royal Victoria
Site: 21586
Required Actions: No Actions Entered
Requirement Due Date:
Requirement Received Date:

Participant: Islander Engineering Ltd **Role:** SUBMITTED BY

Registry Notations

Event ID: 91151
Notation Type and Act: SITE RISK CLASSIFIED - SITE IS NON-HIGH RISK. Environmental Management Act: General
Initiated Date: 06-Apr-2018
Approved Date: 06-Apr-2018
Region: Nanaimo, Vancouver Island
Ministry Contact: YAN, PETER
Notation Notes: Source Parcel 7 Erskine Lane, View Royal Victoria
Site: 21586
Required Actions: No Actions Entered
Requirement Due Date:
Requirement Received Date:

Participant: Islander Engineering Ltd **Role:** SUBMITTED BY

Site Participants

Participant: Site Information Advisor **Start Date:** May-02-2018
Participation Type: EMP **End Date:**
Notes:

Participants Role: Ministry Contact

Site Participants

Participant: Yan, Peter
Participation Type: EMP
Notes:
Start Date: Apr-06-2018
End Date:

Participants Role: Ministry Contact

Site Participants

Participant: Islander Engineering Ltd
Participation Type: ORG
Notes:
Start Date: Apr-06-2018
End Date:

Participants Role: Environmental Consultant/Contractor

Site Participants

Participant: Adams, Beverly
Participation Type: PER
Notes:
Start Date: May-02-2018
End Date:

Participants Role: Property Owner

Associated Sites

Associated Site ID: 21586
Notes: SOURCE PARCEL 21586
AFFECTED PARCEL 21587
Effective Date: 5/2/2018

Parcel Descriptions

Date Added: 5/2/2018
LTO PID(s): 002-364-531
Land Description:
Crown Land PIN#:
Crown Land File#:

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2 | **1 of 1** | **SE/100.0** | **30.7 / 3.22** | **7 Erskine Lane, View Royal**
7 ERSKINE LANE (VIEW ROYAL)
VICTORIA BC | **SREG**

Site ID: 21586
Victoria File No: 26250-20/21586
Regional File No: No File
Region:
Record Status: NOT ASSIGNED
Status as of: April 2019
Cleanup Status:
Category: Not Applicable
Location Desc: LATS/LONGS CONFIRMED USING GOOGLE EARTH AND LTSA
Site Note:
Registered: 07-May-2018
Updated: 19-Jul-2018
Detail Removed: 16-Jul-2018
Postal Code: No Entry
Latitude DMS: 48d 27m 52.5s
Longitude DMS: 123d 26m 05.5s
Latitude: 48.464583
Longitude: 123.434861

Registry Notations

Event ID: 91146
Notation Type and Act: RELEASE OF APPROVING AUTHORITY UNDER ACCEPTANCE OF INDEPENDENT REMEDIATION ISSUED.
Environmental Management Act: General
Initiated Date: 13-Jul-2018

Approved Date: 13-Jul-2018
Region: Nanaimo, Vancouver Island
Ministry Contact: HANEMAYER, VINCENT (SURREY) C
Notation Notes: Release Of Soil Removal, Zoning And Development Applications Under Scenario 5 (Site Redevelopment)
Required Actions: No Actions Entered
Requirement Due Date:
Requirement Received Date:

Registry Notations

Event ID: 91147
Notation Type and Act: REQUIREMENT(S) IMPOSED UNDER EMA SECTION 54(3)(D). Environmental Management Act: General
Initiated Date: 13-Jul-2018
Approved Date: 13-Jul-2018
Region: Nanaimo, Vancouver Island
Ministry Contact: HANEMAYER, VINCENT (SURREY) C
Notation Notes: No Notes Entered
Required Actions: A Statement By An Approved Professional Must Be Submitted Annually To The Director Within 30 Days Of The Anniversary Of The 13 July, 2018 Release Letter.
Requirement Due Date:
Requirement Received Date:

Registry Notations

Event ID: 91148
Notation Type and Act: REQUIREMENT(S) IMPOSED UNDER EMA SECTION 54(3)(D). Environmental Management Act: General
Initiated Date: 13-Jul-2018
Approved Date: 13-Jul-2018
Region: Nanaimo, Vancouver Island
Ministry Contact: HANEMAYER, VINCENT (SURREY) C
Notation Notes: No Notes Entered
Required Actions: Remediation Must Be Completed Within Five Years Of The 13 July, 2018 Release Letter.
Remediation Must Be Confirmed According To Applicable Legislation And Ministry Guidance. Within 90 Days Of Completing Remediation, A Report Summarizing Confirmation Of Remediation Shall Be Submitted To The Director.
Requirement Due Date:
Requirement Received Date:

Registry Notations

Event ID: 91117
Notation Type and Act: SITE PROFILE REVIEWED - FURTHER INVESTIGATION REQUIRED BY THE MINISTRY. Environmental Management Act: General
Initiated Date: 11-Jul-2018
Approved Date: No Entry
Region: Nanaimo, Vancouver Island
Ministry Contact: HANEMAYER, VINCENT (SURREY) C
Notation Notes: Auto Inserted From Site Profile
Required Actions: Detailed Site Investigation
Requirement Due Date:
Requirement Received Date:

Registry Notations

Event ID: 91116
Notation Type and Act: SITE PROFILE RECEIVED. Environmental Management Act: General
Initiated Date: 28-Jun-2018
Approved Date: No Entry
Region: Nanaimo, Vancouver Island
Ministry Contact: HANEMAYER, VINCENT (SURREY) C
Notation Notes: Notation Generated In Site Profile On 2018-07-10 By Vchanema
Required Actions: No Actions Entered
Requirement Due Date:

Requirement Received Date:

Participant: Islander Engineering Ltd ***Role:*** SITE PROFILE SUBMITTED BY

Registry Notations

Event ID: 90414
Notation Type and Act: NOTICE OF INDEPENDENT REMEDIATION INITIATION SUBMITTED. Environmental Management Act: General
Initiated Date: 02-May-2018
Approved Date: 02-May-2018
Region: Nanaimo, Vancouver Island
Ministry Contact: SAMWAYS, JENNIFER
Notation Notes: Start: 2018-05-15
Required Actions: No Actions Entered
Requirement Due Date:
Requirement Received Date:

Participant: Islander Engineering Ltd ***Role:*** SUBMITTED BY

Registry Notations

Event ID: 90415
Notation Type and Act: NOTIFICATION RECEIVED ABOUT LIKELY OR ACTUAL SUBSTANCE MIGRATION TO NEIGHBOURING SITE. Environmental Management Act: General
Initiated Date: 02-May-2018
Approved Date: 02-May-2018
Region: Nanaimo, Vancouver Island
Ministry Contact: SAMWAYS, JENNIFER
Notation Notes: Affected Parcel: 9 Erskine Lane, View Royal (Victoria, Bc)
Site: 21587
Required Actions: No Actions Entered
Requirement Due Date:
Requirement Received Date:

Participant: Islander Engineering Ltd ***Role:*** SUBMITTED BY

Registry Notations

Event ID: 91152
Notation Type and Act: SITE RISK CLASSIFIED - AFFECTED SITE IS NON-HIGH RISK. Environmental Management Act: General
Initiated Date: 06-Apr-2018
Approved Date: 06-Apr-2018
Region: Nanaimo, Vancouver Island
Ministry Contact: YAN, PETER
Notation Notes: Affected Parcel: 9 Erskine Lane, View Royal (Victoria, Bc)
Site: 21587
Required Actions: No Actions Entered
Requirement Due Date:
Requirement Received Date:

Participant: Islander Engineering Ltd ***Role:*** SUBMITTED BY

Registry Notations

Event ID: 91118
Notation Type and Act: SITE RISK CLASSIFIED - SITE IS HIGH RISK. Environmental Management Act: General
Initiated Date: 06-Apr-2018
Approved Date: 06-Apr-2018
Region: Nanaimo, Vancouver Island
Ministry Contact: HANEMAYER, VINCENT (SURREY) C
Notation Notes: No Notes Entered
Required Actions: If There Are Confirmed To Be Immediate Risks Associated With The High Risk Conditions, The Ministry Should Be Notified Immediately Of These Conditions And A Plan And Schedule For The Implementation Of Any Required

Mitigative Or Risk Management Measures Should Be Provided.

Requirement Due Date:
Requirement Received Date:

Participant: Islander Engineering Ltd ***Role:*** SUBMITTED BY

Site Participants

Participant: Islander Engineering Ltd ***Start Date:*** Apr-01-2018
Participation Type: ORG ***End Date:***
Notes:

Participants Role: Site Profile Contact

Participants Role: Environmental Consultant/Contractor

Participants Role: Site Profile Completor

Site Participants

Participant: Site Information Advisor ***Start Date:*** May-02-2018
Participation Type: EMP ***End Date:***
Notes:

Participants Role: Ministry Contact

Site Participants

Participant: Hanemayer, Vincent (Surrey) C ***Start Date:*** Apr-06-2018
Participation Type: EMP ***End Date:***
Notes:

Participants Role: Main Ministry Contact

Site Participants

Participant: 1132785 Bc Ltd ***Start Date:*** May-02-2018
Participation Type: ORG ***End Date:***
Notes:

Participants Role: Property Owner

Site Participants

Participant: Yan, Peter ***Start Date:*** Apr-06-2018
Participation Type: EMP ***End Date:***
Notes:

Participants Role: Ministry Contact

Documents on File

Document or Report Title: Draft - Psi, Dsi & Remediation Plan, 7 Erskine Lane, View Royal, Bc
Authored Date: 01-Apr-2018
Submitted Date: 28-Jun-2018

Document Entry Notes:

Nothing Noted

Participant and Role: Islander Engineering Ltd - Author

Associated Sites

Associated Site ID: 21587 ***Effective Date:*** 5/2/2018
Notes: SOURCE PARCEL 21586
AFFECTED PARCEL 21587

Suspected Land Use - Notes

Land Use Description: Sandblasting Waste Disposal
Notes: Inserted For Site Profile Dated 2018-04-06

Suspected Land Use - Notes

Land Use Description: Welding Or Machine Shops (Repair Or Fabrication)
Notes: Inserted For Site Profile Dated 2018-04-06

Suspected Land Use - Notes

Land Use Description: Dry Docks, Ship Building Or Boat Repair Incl. Paint Removal
Notes: Inserted For Site Profile Dated 2018-04-06

Suspected Land Use - Notes

Land Use Description: Const. Demo. Material Incl. Concrete And Ashpalt, Landfillin
Notes: Inserted For Site Profile Dated 2018-04-06

Parcel Descriptions

Date Added: 5/2/2018 ***Crown Land PIN#:***
LTO PID(s): 018-361-790 ***Crown Land File#:***
Land Description:

Current Site Profile Information

Date Entered: May-02-2018
Date Completed: Apr-06-2018
Decision Date: Jul-11-2018
Date Received: Jun-28-2018
Date Registrar Recorded: Jun-28-2018
Date Answer Completed: Apr-06-2018
Reg Date Entered: Jul-10-2018
Investigation?: Yes
Local Authority: Town Of View Royal
Local Authority Date Recorded: Jun-28-2018
Site Profile Comments: No Comment

Site Profile Note All Questions

Important Note:

SPECIAL NOTE REGARDING SITE PROFILE QUESTIONS
In the bulk data provided by the Ministry of the Environment, the Current Site Profile information for any given site ONLY INCLUDES QUESTIONS TO WHICH THE ANSWER IS YES. Here, for informational purposes only, we provide the list of ALL current site profile questions.

All Questions:

AREAS OF POTENTIAL CONCERN
- Petroleum, Solvent Or Other Polluting Substance Spills To The Environment Greater Than 100 Litres?
- Residue Left After Removal Of Piled Materials Such As Chemicals, Coal, Ore, Smelter Slag, Air Quality Control System Baghouse Dust?
- Discarded Barrels, Drums Or Tanks?
- Contamination Resulting From Migration Of Substances From Other Properties?

FILL MATERIALS

- Fill Dirt, Soil, Gravel, Sand Or Like Materials From A Contaminated Site Or From A Source Used For Any Of The Activities Listed Under Schedule 2?
- Discarded Or Waste Granular Materials Such As Sand Blasting Grit, Asphalt Paving Or Roofing Material, Spent Foundry Casting Sands, Mine Ore, Waste Rock Or Float?
- Dredged Sediments, Or Sediments And Debris Materials Originating From Locations Adjacent To Foreshore Industrial Activities, Or Municipal Sanitary Or Stormwater Discharges?

WASTE DISPOSAL

- Materials Such As Household Garbage, Mixed Municipal Refuse, Or Demolition Debris?
- Waste Or Byproducts Such As Tank Bottoms, Residues, Sludge, Or Flocculation Precipitates From Industrial Processes Or Wastewater Treatment?
- Waste Products From Smelting Or Mining Activities, Such As Smelter Slag, Mine Tailings, Or Cull Materials From Coal Processing?
- Waste Products From Natural Gas And Oil Well Drilling Activities, Such As Drilling Fluids And Muds?
- Waste Products From Photographic Developing Or Finishing Laboratories; Asphalt Tar Manufacturing; Boilers, Incinerators Or Other Thermal Facilities (Eg. Ash); Appliance, Small Equipment Or Engine Repair Or Salvage; Dry Cleaning Operations (Eg. Solvents); For From The Cleaning Or Repair Of Parts Of Boats, Ships, Barges, Automobiles Or Trucks, Including Sandblasting Grit Or Paint Scrapings? *[1]

*[1] Note prior to 2009, question 5 was worded as follows: "Waste Products From Photographic Developing Or Finishing Laboratories; Asphalt Tar Manufacturing; Boilers, Incinerators Or Other Thermal Facilities (Eg. Ash); Appliance, Small Equipment Or Engine Repair Or Salvage; Dry Cleaning Operations (Eg. Solvents); Or Automobile And Truck Parts Cleaning Or Repair?"

TANKS OR CONTAINERS USED OR STORED, OTHER THAN TANKS USED FOR RESIDENTIAL HEATING FUEL*[2]

- Underground Fuel Or Chemical Storage Tanks Other Than Storage Tanks For Compressed Gases? *[2A]
- Above Ground Fuel Or Chemical Storage Tanks Other Than Storage Tanks For Compressed Gases? *[2B]

*[2] Note prior to 2009, this section was referred to "Tanks Or Containers Used Or Stored".
*[2A] Note prior to 2009, question 1 was worded as follows: "Underground Fuel Or Chemical Storage Tanks?"
*[2B] Note prior to 2009, question 2 was worded as follows: "Above Ground Fuel Or Chemical Storage Tanks? "

HAZARDOUS WASTES OR HAZARDOUS SUBSTANCES *[3]

- Pcb-Containing Electrical Transformers Or Capacitors Either At Grade, Attached Above Ground To Poles, Located Within Buildings, Or Stored?
- Waste Asbestos Or Asbestos Containing Materials Such As Pipe Wrapping, Blown-In Insulation Or Panelling Buried?
- Paints, Solvents, Mineral Spirits Or Waste Pest Control Products Or Pest Control Product Containers Stored In Volumes Greater Than 205 Litres?

*[3] Note, prior to 2009, this section was referred to "Special (Hazardous) Wastes Or Substances".

LEGAL OR REGULATORY ACTIONS OR CONSTRAINTS

- Government Orders Or Other Notifications Pertaining To Environmental Conditions Or Quality Of Soil, Water, Groundwater Or Other Environmental Media?
- Liens To Recover Costs, Restrictive Covenants On Land Use, Or Other Charges Or Encumbrances, Stemming From Contaminants Or Wastes Remaining Onsite Or From Other Environmental Conditions?
- Government Notifications Relating To Past Or Recurring Environmental Violations At The Site Or Any Facility Located On The Site?

Site Profile Note - Questions

Category Precursor: Is there currently or to the best of your knowledge has there previously been on the site any deposit of:
Category and Question: Fill Materials - Discarded Or Waste Granular Materials Such As Sand Blasting Grit, Asphalt Paving Or Roofing Material, Spent Foundry Casting Sands, Mine Ore, Waste Rock Or Float? Yes

Site Profile Note - Questions

Category Precursor: Is there currently or to the best of your knowledge has there previously been on the site any deposit of:
Category and Question: Fill Materials - Fill Dirt, Soil, Gravel, Sand Or Like Materials From A Contaminated Site Or From A Source Used For Any Of The Activiities Listed Under Schedule 2? Yes

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
3	1 of 1	ESE/165.3	33.3 / 5.81	Jenkins Marine Ltd. 5 Erskine Lane Victoria BC V8Z 1R7	SCT

Established: 01-JAN-67
Plant Size (ft²): 65340
Employment:

--Details--
Description: Boat Building
SIC/NAICS Code: 336612

Description: Boat Building
SIC/NAICS Code: 336612

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
4	1 of 4	NE/190.4	23.1 / -4.35	VICTORIA GENERAL HOSPITAL 1 HOSPITAL WAY, VICTORIA, BC BC	GEN2

Waste Manifests - 2012

Manifest No:	BJ029294	**Date Shipped:**	08-08-2012
TDG Code:	UN3261	**Date Received:**	08-13-2012
TDG Class:	8.0-CORROSIVE	**Copy 3 Date:**	09-07-2012
TDG Group:	II-Dangerous	**Qty Shipped:**	10 KG
Packing Code:	07-Other	**Qty Rcvd:**	10 KG
Handling Code:	01-Storage	**Trans Lic No:**	LT0976
Waste Receiver:	BC ENVIRONMENTAL FIELD SERVICES	**Waste Trans:**	STERICYCLE, ULC
Receiving Addr:	104-1772 BROADWAY STREET, PORT COQUITLAM, BC	**Trans Addr:**	100-1407 KEBET WAY, PORT COQUITLAM, BC
Waste Name:	WASTE CORROSIVE ACIDIC, ORGANIC N.O.S.		

Manifest No:	BJ029294	**Date Shipped:**	08-08-2012
TDG Code:	UN1992	**Date Received:**	08-13-2012
TDG Class:	3.0-FLAMMABLE	**Copy 3 Date:**	09-07-2012
TDG Group:	II-Dangerous	**Qty Shipped:**	10 L
Packing Code:	07-Other	**Qty Rcvd:**	10 L
Handling Code:	01-Storage	**Trans Lic No:**	LT0976
Waste Receiver:	BC ENVIRONMENTAL FIELD SERVICES	**Waste Trans:**	STERICYCLE, ULC
Receiving Addr:	104-1772 BROADWAY STREET, PORT COQUITLAM, BC	**Trans Addr:**	100-1407 KEBET WAY, PORT COQUITLAM, BC
Waste Name:	Flammable liquids, poisonous, n.o.s.		

Manifest No:	BJ029294	**Date Shipped:**	08-08-2012
TDG Code:	UN2811	**Date Received:**	08-13-2012
TDG Class:	6.1-POISONOUS	**Copy 3 Date:**	09-07-2012
TDG Group:	II-Dangerous	**Qty Shipped:**	400 KG
Packing Code:	01-Drum	**Qty Rcvd:**	400 KG
Handling Code:	01-Storage	**Trans Lic No:**	LT0976
Waste Receiver:	BC ENVIRONMENTAL FIELD SERVICES	**Waste Trans:**	STERICYCLE, ULC
Receiving Addr:	104-1772 BROADWAY STREET, PORT COQUITLAM, BC	**Trans Addr:**	100-1407 KEBET WAY, PORT COQUITLAM, BC
Waste Name:	POISONOUS SOLIDS, N.O.S.		

Manifest No:	BJ029294	**Date Shipped:**	08-08-2012
TDG Code:	UN3262	**Date Received:**	08-13-2012
TDG Class:	8.0-CORROSIVE	**Copy 3 Date:**	09-07-2012
TDG Group:	II-Dangerous	**Qty Shipped:**	10 KG
Packing Code:	07-Other	**Qty Rcvd:**	10 KG
Handling Code:	01-Storage	**Trans Lic No:**	LT0976

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB

Waste Receiver:	BC ENVIRONMENTAL FIELD SERVICES	**Waste Trans:**	STERICYCLE, ULC
Receiving Addr:	104-1772 BROADWAY STREET, PORT COQUITLAM, BC	**Trans Addr:**	100-1407 KEBET WAY, PORT COQUITLAM, BC
Waste Name:	WASTE CORROSIVE SOLID, INORGANIC		

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4 **2 of 4** **NE/190.4** **23.1 / -4.35** **VANCOUVER GENERAL HOSPITAL**
#1 HOSPITAL WAY, VICTORIA, BC
BC
GEN2

Waste Manifests - 2011

Manifest No:	BH302602	**Date Shipped:**	04-28-2011
TDG Code:	UN3139	**Date Received:**	04-29-2011
TDG Class:	5.2-OXIDIZING & ORGANIC	**Copy 3 Date:**	05-04-2011
TDG Group:	II-Dangerous	**Qty Shipped:**	5 KG
Packing Code:	01-Drum	**Qty Rcvd:**	5 KG
Handling Code:	01-Storage	**Trans Lic No:**	LT0956
Waste Receiver:	R S ENVIRONMENTAL FIELD SERVICES OF B.C. INC.	**Waste Trans:**	R S ENVIRONMENTAL FIELD SERVICES OF B.C. INC.
Receiving Addr:	104 - 1772 BROADWAY ST, PORT COQUITLAM, BC	**Trans Addr:**	104 - 1772 BROADWAY ST, PORT COQUITLAM, BC
Waste Name:	OXIDIZING SUBSTANCES, LIQUID, N.O.S.		

Manifest No:	BH302602	**Date Shipped:**	04-28-2011
TDG Code:	UN2810	**Date Received:**	04-29-2011
TDG Class:	6.1-POISONOUS	**Copy 3 Date:**	05-04-2011
TDG Group:	II-Dangerous	**Qty Shipped:**	65 KG
Packing Code:	01-Drum	**Qty Rcvd:**	65 KG
Handling Code:	01-Storage	**Trans Lic No:**	LT0956
Waste Receiver:	R S ENVIRONMENTAL FIELD SERVICES OF B.C. INC.	**Waste Trans:**	R S ENVIRONMENTAL FIELD SERVICES OF B.C. INC.
Receiving Addr:	104 - 1772 BROADWAY ST, PORT COQUITLAM, BC	**Trans Addr:**	104 - 1772 BROADWAY ST, PORT COQUITLAM, BC
Waste Name:	POISONOUS LIQUID, N.O.S.		

Manifest No:	BH302602	**Date Shipped:**	04-28-2011
TDG Code:	UN1760	**Date Received:**	04-29-2011
TDG Class:	8.0-CORROSIVE	**Copy 3 Date:**	05-04-2011
TDG Group:	II-Dangerous	**Qty Shipped:**	5 KG
Packing Code:	07-Other	**Qty Rcvd:**	5 KG
Handling Code:	01-Storage	**Trans Lic No:**	LT0956
Waste Receiver:	R S ENVIRONMENTAL FIELD SERVICES OF B.C. INC.	**Waste Trans:**	R S ENVIRONMENTAL FIELD SERVICES OF B.C. INC.
Receiving Addr:	104 - 1772 BROADWAY ST, PORT COQUITLAM, BC	**Trans Addr:**	104 - 1772 BROADWAY ST, PORT COQUITLAM, BC
Waste Name:	CORROSIVE LIQUIDS, N.O.S.		

Manifest No:	BH302602	**Date Shipped:**	04-28-2011
TDG Code:	UN2811	**Date Received:**	04-29-2011
TDG Class:	6.1-POISONOUS	**Copy 3 Date:**	05-04-2011
TDG Group:	III-Moderately Dangerous	**Qty Shipped:**	60 KG
Packing Code:	01-Drum	**Qty Rcvd:**	60 KG
Handling Code:	01-Storage	**Trans Lic No:**	LT0956
Waste Receiver:	R S ENVIRONMENTAL FIELD SERVICES OF B.C. INC.	**Waste Trans:**	R S ENVIRONMENTAL FIELD SERVICES OF B.C. INC.
Receiving Addr:	104 - 1772 BROADWAY ST, PORT COQUITLAM, BC	**Trans Addr:**	104 - 1772 BROADWAY ST, PORT COQUITLAM, BC
Waste Name:	POISONOUS SOLIDS, N.O.S.		

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4 **3 of 4** **NE/190.4** **23.1 / -4.35** **CAPITAL HEALTH REGION**
1 HOSPITAL WAY
VICTORIA BC V8Z 6R5
PCB

BCG NO: BCG00316 **Status Date:** 14-NOV-00
Status: ACTIVE **Region:** VANCOUVER ISLAND

--Details--
Waste Description: POLYCHLORINATED BIPHENYLS
Storage: 0 KG
Waste in 30 Days: 813 KG
Generating Description: GENERATED ONE TIME ONLY
Handling Description: STORAGE

Waste Description: POLYCHLORINATED BIPHENYLS
Storage: 12 L
Waste in 30 Days: 0 L
Generating Description: GENERATED CONTINUOUSLY
Handling Description: STORAGE

Waste Description: POLYCHLORINATED BIPHENYLS
Storage: 205 L
Waste in 30 Days: 0 L
Generating Description: GENERATED ONE TIME ONLY
Handling Description: STORAGE

Waste Description: POLYCHLORINATED BIPHENYLS
Storage: 541 L
Waste in 30 Days: 0 L
Generating Description: GENERATED ONE TIME ONLY
Handling Description: STORAGE

Waste Description: POLYCHLORINATED BIPHENYLS
Storage: 0 KG
Waste in 30 Days: 1376 KG
Generating Description: GENERATED ONE TIME ONLY
Handling Description: STORAGE

Waste Description: POLYCHLORINATED BIPHENYLS
Storage: 0 KG
Waste in 30 Days: 3588 KG
Generating Description: GENERATED ONE TIME ONLY
Handling Description: STORAGE

Waste Description: POLYCHLORINATED BIPHENYLS
Storage: 0 KG
Waste in 30 Days: 3818 KG
Generating Description: GENERATED ONE TIME ONLY
Handling Description: STORAGE

Waste Description: POLYCHLORINATED BIPHENYLS
Storage: 0 KG
Waste in 30 Days: 8575 KG
Generating Description: GENERATED ONE TIME ONLY
Handling Description: STORAGE

4	4 of 4	NE/190.4	23.1 / -4.35	CAPITAL HEALTH REGION 1 Hospital Way Victoria BC V8Z 6R5	REC

Company NO: BCG00316
Year: 2007
Region: VANCOUVER ISLAND

--Details--
Type of Waste: Fuel oil or Gas oil

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB

5 | **1 of 1** | **NE/364.1** | **20.1 / -7.41** | **Capital Health Region**
35 Helmcken Road, Victoria
BC | **GEN**

Generator No:	BCG00316	**Status Date:**	14-Nov-2000
Status:	Active	**Registration Dt:**	13-Jan-1995
Region:	VANCOUVER ISLAND		
Mailing Addr:	1 Hospital Way, Victoria		
Waste Generation Site:	35 Helmcken Road, Victoria		
Comments:	FORMERLY GREATER VICTORIA HOSPITAL SOCIETY(GVHS)		

--Details--

Business Type:		**Generation Code:**	
Physical State:		**Handling Code:**	
Amount in Storage:		**Amount per 30 Days:**	
TDG PIN No:		**TDG Class:**	
Certified By Name:		**Date Certifier Signed:**	
Waste:	Infectious substances, human, n.o.s.		

Business Type:	GENERAL HOSPITALS	**Generation Code:**	Continuously
Physical State:	Solid	**Handling Code:**	Thermal Treatment
Amount in Storage:		**Amount per 30 Days:**	12000 KG
TDG PIN No:	UN2814	**TDG Class:**	6.2
Certified By Name:	Wolfgang Lehwald	**Date Certifier Signed:**	02-Jan-1992
Waste:	Infectious Substances, Human, N.O.S.		

6 | **1 of 1** | **S/995.3** | **15.4 / -12.12** | **E & N Rail Trail, Victoria**
E & N RAIL TRAIL - ADJACENT TO
CRAIGFLOWER CREEK No Entry
VICTORIA BC | **SREG**

Site ID:	17447	**Registered:**	05-Dec-2014
Victoria File No:	26250-20/17447	**Updated:**	08-May-2015
Regional File No:	No File	**Detail Removed:**	07-May-2015
Region:		**Postal Code:**	N/A
Record Status:	NOT ASSIGNED	**Latitude DMS:**	48d 27m 23.0s
Status as of:	April 2019	**Longitude DMS:**	123d 26m 02.0s
Cleanup Status:		**Latitude:**	48.456389
Category:	Unranked	**Longitude:**	123.433889
Location Desc:	LATS/LONGS PROVIDED BY CONSULTANT		
Site Note:	There are no Associated Sites for this site.		

Registry Notations

Event ID:	77343
Notation Type and Act:	NOTICE OF INDEPENDENT REMEDIATION COMPLETION SUBMITTED. Environmental Management Act: General
Initiated Date:	07-May-2015
Approved Date:	07-May-2015
Region:	Nanaimo, Vancouver Island
Ministry Contact:	SAMWAYS, JENNIFER
Notation Notes:	Completed: 2014-03-25
Required Actions:	No Actions Entered
Requirement Due Date:	
Requirement Received Date:	

Participant:	Mcelhanney Consulting Services Ltd	**Role:**	SUBMITTED BY

Registry Notations

Event ID: 75472
Notation Type and Act: NOTICE OF INDEPENDENT REMEDIATION INITIATION SUBMITTED. Environmental Management Act: General
Initiated Date: 03-Dec-2014
Approved Date: 03-Dec-2014
Region: Nanaimo, Vancouver Island
Ministry Contact: SAMWAYS, JENNIFER
Notation Notes: Start: 2014-12-03
Required Actions: No Actions Entered
Requirement Due Date:
Requirement Received Date:

Participant: Mcelhanney Consulting Services Ltd ***Role:*** SUBMITTED BY

Registry Notations

Event ID: 75532
Notation Type and Act: SITE RISK CLASSIFIED - SITE IS NON-HIGH RISK. Environmental Management Act: General
Initiated Date: 02-Dec-2014
Approved Date: 02-Dec-2014
Region: Nanaimo, Vancouver Island
Ministry Contact: O'GRADY, TYLER
Notation Notes: No Notes Entered
Required Actions: No Actions Entered
Requirement Due Date:
Requirement Received Date:

Participant: Mcelhanney Consulting Services Ltd ***Role:*** SUBMITTED BY

Site Participants

Participant: Site Information Advisor ***Start Date:*** Dec-03-2014
Participation Type: EMP ***End Date:***
Notes:

Participants Role: Ministry Contact

Site Participants

Participant: Capital Regional District ***Start Date:*** Dec-03-2014
Participation Type: ORG ***End Date:***
Notes:

Participants Role: Property Owner

Site Participants

Participant: O'Grady, Tyler ***Start Date:*** Dec-02-2014
Participation Type: EMP ***End Date:***
Notes:

Participants Role: Ministry Contact

Site Participants

Participant: Mcelhanney Consulting Services Ltd ***Start Date:*** Dec-02-2014
Participation Type: ORG ***End Date:***
Notes:

Participants Role: Environmental Consultant/Contractor

Parcel Descriptions

Date Added:	12/4/2014	***Crown Land PIN#:***	
LTO PID(s):	024-635-987	***Crown Land File#:***	
Land Description:	LOT 1 SECTIONS 8 AND 27 ESQUIMALT DISTRICT PLAN VIP69799		

Unplottable Summary

Total: 4 Unplottable sites

DB	Company Name/Site Name	Address	City	Postal
GEN2	QUANTUM FACILITIES INC.	GOLDSTREAM PARK HWY 1, VICTORIA, BC	BC	
GEN2	JENKINS MARINE	D JETTY COLWOOD-WILDERT RD, VICTORIA, BC	BC	
GEN2	QUANTUM FACILITIES INC.	GOLDSTREAM PARK HWY 1, VICTORIA, BC	BC	
SCT	Northern Lights Candles 2008	RR 1 Site 9 C-5 Sany Bay	Victoria BC	V0L 1W0

Unplottable Report

Site: ***QUANTUM FACILITIES INC.***
GOLDSTREAM PARK HWY 1, VICTORIA, BC BC

Database: ***GEN2***

Waste Manifests - 2012

Manifest No:	BH835841	***Date Shipped:***	01-06-2012
TDG Code:	BC0007	***Date Received:***	01-06-2012
TDG Class:	9.0-MISCELLANEOUS	***Copy 3 Date:***	01-16-2012
TDG Group:	III-Moderately Dangerous	***Qty Shipped:***	588 L
Packing Code:	03-Bulk	***Qty Rcvd:***	588 L
Handling Code:	01-Storage	***Trans Lic No:***	LT0029
Waste Receiver:	NEWALTA CORPORATION	***Waste Trans:***	MCRAE'S ENVIRONMENTAL SERVICES LTD.
Receiving Addr:	1080 MAUGHAN RD, NANAIMO, BC	***Trans Addr:***	7783 PROGRESS WAY, DELTA, BC
Waste Name:	(L17 OILY WATER SLUDGE/DEBRIS)CERAMIC BEADS, WASTE OIL FILTER CAKE, ALUMINIUM, SAND		

Site: ***JENKINS MARINE***
D JETTY COLWOOD-WILDERT RD, VICTORIA, BC BC

Database: ***GEN2***

Waste Manifests - 2014

Manifest No:	BJ912234	***Date Shipped:***	01-20-2014
TDG Code:	BC0007	***Date Received:***	01-21-2014
TDG Class:	9.0-MISCELLANEOUS	***Copy 3 Date:***	03-28-2014
TDG Group:	III-Moderately Dangerous	***Qty Shipped:***	200 L
Packing Code:	03-Bulk	***Qty Rcvd:***	197 L
Handling Code:	03-Chemical Treatment	***Trans Lic No:***	LT0765
Waste Receiver:	TERVITA ENVIRONMENTAL SERVICES LTD.	***Waste Trans:***	TERVITA ENVIRONMENTAL SERVICES LTD.
Receiving Addr:	825 ADMIRALS ROAD, VICTORIA, BC	***Trans Addr:***	13511 VULCAN WAY, RICHMOND, BC
Waste Name:	(L17 OILY WATER SLUDGE/DEBRIS)CERAMIC BEADS, WASTE OIL FILTER CAKE, ALUMINIUM, SAND		

Site: ***QUANTUM FACILITIES INC.***
GOLDSTREAM PARK HWY 1, VICTORIA, BC BC

Database: ***GEN2***

Waste Manifests - 2012

Manifest No:	BH835841	***Date Shipped:***	01-06-2012
TDG Code:	BC0001	***Date Received:***	01-06-2012
TDG Class:	9.0-MISCELLANEOUS	***Copy 3 Date:***	01-16-2012
TDG Group:	III-Moderately Dangerous	***Qty Shipped:***	20 L
Packing Code:	03-Bulk	***Qty Rcvd:***	20 L
Handling Code:	01-Storage	***Trans Lic No:***	LT0029
Waste Receiver:	NEWALTA CORPORATION	***Waste Trans:***	MCRAE'S ENVIRONMENTAL SERVICES LTD.
Receiving Addr:	1080 MAUGHAN RD, NANAIMO, BC	***Trans Addr:***	7783 PROGRESS WAY, DELTA, BC
Waste Name:	LEACHABLE TOXIC -L17 OIL,COMPRESSION OIL,GEAR, HYDRAULIC. GREASE, AQUACENT,PREMIUM SOLVENT		

Site: ***Northern Lights Candles 2008***
RR 1 Site 9 C-5 Sany Bay Victoria BC V0L 1W0

Database: ***SCT***

Established:	3/1/2008
Plant Size (ft²):	1200
Employment:	

--Details--

Description:	All Other Miscellaneous Manufacturing
SIC/NAICS Code:	339990

Appendix: Database Descriptions

Environmental Risk Information Services (ERIS) can search the following databases. The extent of historical information varies with each database and current information is determined by what is publicly available to ERIS at the time of update. ***Note:*** *Databases denoted with " * " indicates that the database will no longer be updated. See the individual database description for more information.*

Authorization Management System (formerly WASTE): Provincial AMS

AMS is the Ministry of Environment's waste permit administration system. It maintains data related to the administration of permits issued under the Environmental Management Act and registrations under various regulations where the regulation requires a discharger to register. It will include information such as companies or individuals permitted to discharge waste; type of business and locations at which waste disposal is permitted; the types, amounts and frequency of waste products that are permitted to be discharged at given locations; issue date and more. This was previously referred to as the "WASTE" database.

Government Publication Date: 1957-Sep 30, 2018

Assessment Report Indexing System: Provincial ARIS

Within British Columbia, the "Mineral Tenure Act Regulation", requires that results of mineral exploration and development programs be submitted to the British Columbia Ministry of Employment and Investment, where they are then maintained and housed by the Geological Survey Branch. The assessment reports provided by the Geological Survey Branch contain summary information for reports approved to November 1998; on geology, geophysics, geochemistry, drilling, prospecting and physical work.

Government Publication Date: Mar 31, 2019

Automobile Wrecking & Supplies: Private AUWR

This database provides an inventory of known locations that are involved in the scrap metal, automobile wrecking/recycling, and automobile parts & supplies industry. Information is provided on the company name, location and business type.

Government Publication Date: 1999-Jan 31, 2019

BC Oil and Gas Wells: Provincial BOGW

The BC Oil and Gas Wells database was collected from the BC Oil and Gas Commission and is a comprehensive database that includes information regarding well number, well name, operator name, location, depth, status, as well as drill date and type. Please note that this database will not be updated, information on wells drilled after January 2006 can be found in the Oil and Gas Wells (OGW) database under the 'Private Source Database' section.

Government Publication Date: 1918-Jan 2006*

Dry Cleaning Facilities: Federal CDRY

List of dry cleaning facilities made available by Environment and Climate Change Canada. Environment and Climate Change Canada's Tetrachloroethylene (Use in Dry Cleaning and Reporting Requirements) Regulations (SOR/2003-79) are intended to reduce releases of tetrachloroethylene to the environment from dry cleaning facilities.

Government Publication Date: Jan 2004-Dec 2017

Chemical Register: Private CHEM

This database includes a listing of locations of facilities within the Province or Territory that either manufacture and/or distributes chemicals.

Government Publication Date: 1999-Jan 31, 2019

Compressed Natural Gas Stations: Private CNG

Canada has a network of public access compressed natural gas (CNG) refuelling stations. These stations dispense natural gas in compressed form at 3,000 pounds per square inch (psi), the pressure which is allowed within the current Canadian codes and standards. The majority of natural gas refuelling is located at existing retail gasoline that have a separate refuelling island for natural gas. This list of stations is made available by the Canadian Natural Gas Vehicle Alliance.

Government Publication Date: Dec 2012 - Mar 2019

Coal Tar Sites: Provincial COAL

This one-time study is an inventory of all known and historical coal tar sites, identifying sites that produced coal tar and other related tars during the mid 1800's to the mid 1900's.

Government Publication Date: 1992*

Compliance and Enforcement Summary: Provincial CONV

This database summarizes orders, tickets and convictions issued by the Ministry of the Environment under applicable ministry and federal legislation. Orders are issued when action is required to prevent or stop actual or potential impact to the environment. Tickets apply to all tickets paid, deemed guilty by non-payment or expiry, or contested in court and found guilty by a judge. Convictions apply to all court convictions of ministry legislation as well as federal legislation where the ministry has taken action. This reporting summary began in January 2006, replacing Non-Compliance Reports by the former Ministry of Water, Land & Air Protection. See the Non-Compliance Reports (NCPL) database below for more information. This database is part of a larger COORS (Conservation Officer On-Line Reporting System) database controlled by the Ministry of Environment in BC.

Government Publication Date: 1990-Dec 2018

Wastewater Discharge Inventory: Provincial DIS

This inventory contains information regarding direct dischargers of toxic pollutants for the following operations: Industrial; Commercial; Agricultural; Mining; Municipal; Urban; Aquaculture; and Pulp & Paper, operating under provincial permits. Please note that this program was discontinued and therefore the database will not be updated.

Government Publication Date: 1957-1995*

Environmental Effects Monitoring: Federal EEM

The Environmental Effects Monitoring program assesses the effects of effluent from industrial or other sources on fish, fish habitat and human usage of fisheries resources. Since 1992, pulp and paper mills have been required to conduct EEM studies under the Pulp and Paper Effluent Regulations. This database provides information on the mill name, geographical location and sub-lethal toxicity data.

Government Publication Date: 1992-2007*

ERIS Historical Searches: Private EHS

ERIS has compiled a database of all environmental risk reports completed since March 1999. Available fields for this database include: site location, date of report, type of report, and search radius. As per all other databases, the ERIS database can be referenced on both the map and "Statistical Profile" page.

Government Publication Date: 1999-Apr 30, 2019

Environmental Issues Inventory System: Federal EIIS

The Environmental Issues Inventory System was developed through the implementation of the Environmental Issues and Remediation Plan. This plan was established to determine the location and severity of contaminated sites on inhabited First Nation reserves, and where necessary, to remediate those that posed a risk to health and safety; and to prevent future environmental problems. The EIIS provides information on the reserve under investigation, inventory number, name of site, environmental issue, site action (Remediation, Site Assessment), and date investigation completed.

Government Publication Date: 1992-2001*

Environmental Monitoring Locations: Provincial EM

List of environmental monitoring locations included in the Environmental Monitoring System (EMS) maintained by BC's Ministry of the Environment. EMS is the ministry's primary monitoring data repository. The system was designed to capture data covering physical/chemical and biological analyses performed on water, air, solid waste discharges and ambient monitoring sites throughout the province.

Government Publication Date: Mar 2011-Mar 31, 2019

Federal Convictions: Federal FCON

Environment Canada maintains a database referred to as the "Environmental Registry" that details prosecutions under the Canadian Environmental Protection Act (CEPA) and the Fisheries Act (FA). Information is provided on the company name, location, charge date, offence and penalty.

Government Publication Date: 1988-Jun 2007*

Contaminated Sites on Federal Land: Federal FCS

The Federal Contaminated Sites Inventory includes information on known federal contaminated sites under the custodianship of departments, agencies and consolidated Crown corporations as well as those that are being or have been investigated to determine whether they have contamination arising from past use that could pose a risk to human health or the environment. The inventory also includes non-federal contaminated sites for which the Government of Canada has accepted some or all financial responsibility. It does not include sites where contamination has been caused by, and which are under the control of, enterprise Crown corporations, private individuals, firms or other levels of government.

Government Publication Date: Jun 2000-Oct 2018

Commercial Fisheries: Provincial FISH

The Fisheries, Aquaculture & Commercial Fisheries Branch of the Ministry of Water, Land & Air Protection maintains a database of fish processing plant approvals, licenses and activities. Each year, licenses need to be renewed.

Government Publication Date: 1993-2019

Fisheries & Oceans Fuel Tanks: Federal FOFT

Fisheries & Oceans Canada maintains an inventory of aboveground & underground fuel storage tanks located on Fisheries & Oceans property or controlled by DFO. Our inventory provides information on the site name, location, tank owner, tank operator, facility type, storage tank location, tank contents & capacity, and date of tank installation.

Government Publication Date: 1964-Sep 2018

Waste Generators Summary: Provincial GEN

Within British Columbia, the Special Waste Regulation defines a waste generator as any site, equipment and/or operation involved in the production, collection, handling and/or storage of regulated wastes. A generator of regulated waste is required to register the waste generation site and each waste produced, collected, handled, or stored at the site. This database contains the registration number (BCG#), company name and address of registered generators; including the types of hazardous wastes generated and the form of treatment used in the handling of the waste. Some of "Waste Generators Summary" addresses may represent mailing addresses rather than waste/hazardous sites. This information is a summary of all years from June 1993 to September 2010. Please note that a British Columbia Generator number (BCG#) are not unique to a company. This database is part of a larger SWIS (Special Waste Information System) database controlled by the Ministry of Environment in BC. Waste Generators Summary data are historic and no longer being updated.

Government Publication Date: 1993-Sep 30, 2017

Generators - Special Waste Information System (SWIS): Provincial GEN2

The Special Waste Information System (SWIS) maintained by the BC Ministry of Environment holds information related to the generation and transportation of hazardous waste under the Hazardous Waste Regulation. This is a list of waste shipper sites (waste generators) included in hazardous waste transport manifests from 2011 - 2014, accompanied by manifest details.

Government Publication Date: Jan 2011-Dec 2014

Greenhouse Gas Emissions from Large Facilities: Federal GHG

List of greenhouse gas emissions from large facilities made available by Environment Canada. Greenhouse gas emissions in kilotonnes of carbon dioxide equivalents (kt CO2 eq).

Government Publication Date: 2013-Dec 2017

Hazardous Waste Facilities: Provincial HWF

A list of Hazardous Waste Facilities in British Columbia made available by the Ministry of Jobs, Trade and Technology in the BC Data Catalogue.

Government Publication Date: Sep 30, 2017

Indian & Northern Affairs Fuel Tanks: Federal IAFT

The Department of Indian & Northern Affairs Canada (INAC) maintains an inventory of aboveground & underground fuel storage tanks located on both federal and crown land. Our inventory provides information on the reserve name, location, facility type, site/facility name, tank type, material & ID number, tank contents & capacity, and date of tank installation.

Government Publication Date: 1950-Aug 2003*

Lumber Mills: Provincial LUM

This database provides information regarding the general location and estimated annual output capacity of major timber processing facilities within the province of British Columbia.

Government Publication Date: 1997-2017

Canadian Mine Locations: Private MINE

This information is collected from the Canadian & American Mines Handbook. The Mines database is a national database that provides over 290 listings on mines (listed as public companies) dealing primarily with precious metals and hard rocks. Listed are mines that are currently in operation, closed, suspended, or are still being developed (advanced projects). Their locations are provided as geographic coordinates (x, y and/or longitude, latitude). As of 2002, data pertaining to Canadian smelters and refineries has been appended to this database.

Government Publication Date: 1998-2009*

Minerals Deposits Database: Provincial MNR

The Ministry of Energy and Mines maintains a database of more than 12,000 metallic mineral, industrial mineral and coal deposits and occurrences within British Columbia. Information within our report pertains to primary name, elevation, mining division, commodities, and status. Please note that as of January 27, 1999, information included within this database was divided into 2 categories: released and unreleased areas. Records for unreleased areas may contain incomplete, unedited, and/or inaccurate data.

Government Publication Date: May 30, 2018

National Analysis of Trends in Emergencies System (NATES): Federal NATE

In 1974 Environment Canada established the National Analysis of Trends in Emergencies System (NATES) database, for the voluntary reporting of significant spill incidents. The data was to be used to assist in directing the work of the emergencies program. NATES ran from 1974 to 1994. Extensive information is available within this database including company names, place where the spill occurred, date of spill, cause, reason and source of spill, damage incurred, and amount, concentration, and volume of materials released.

Government Publication Date: 1974-1994*

Non-Compliance Reports: Provincial NCPL

From 1990 to March 2001 the Ministry of Water, Land & Air Protection maintained a reporting system that identified any reported concern that pertained to compliance with authorized waste management permits or plans, approvals, orders, operational certificates and regulations, or any other activity under the Waste Management Act. This reporting system was discontinued in April of 2001; therefore there will be no updates to this database. However, beginning in January 2006 the Ministry of the Environment began publishing Compliance and Enforcement Summaries. See the Compliance and Enforcement Summary (CPL) database above for more information.

Government Publication Date: 1990-Mar 2001*

National Defense & Canadian Forces Fuel Tanks: Federal NDFT

The Department of National Defense and the Canadian Forces maintains an inventory of all aboveground & underground fuel storage tanks located on DND lands. Our inventory provides information on the base name, location, tank type & capacity, tank contents, tank class, date of tank installation, date tank last used, and status of tank as of May 2001. This database will no longer be updated due to the new National Security protocols which have prohibited any release of this database.

Government Publication Date: Up to May 2001*

National Defense & Canadian Forces Spills: Federal NDSP

The Department of National Defense and the Canadian Forces maintains an inventory of spills to land and water. All spill sites have been classified under the "Transportation of Dangerous Goods Act - 1992". Our inventory provides information on the facility name, location, spill ID #, spill date, type of spill, as well as the quantity of substance spilled & recovered.

Government Publication Date: Mar 1999-Apr 2018

National Defence & Canadian Forces Waste Disposal Sites: Federal NDWD

The Department of National Defence and the Canadian Forces maintains an inventory of waste disposal sites located on DND lands. Where available, our inventory provides information on the base name, location, type of waste received, area of site, depth of site, year site opened/closed and status.

Government Publication Date: 2001-Apr 2007*

National Energy Board Pipeline Incidents: Federal NEBI

Locations of pipeline incidents from 2008 to present, made available by the National Energy Board (NEB). Includes incidents reported under the Onshore Pipeline Regulations and the Processing Plant Regulations related to pipelines under federal jurisdiction, does not include incident data related to pipelines under provincial or territorial jurisdiction.

Government Publication Date: 2008-Dec 31, 2018

National Energy Board Wells: Federal NEBP

The NEBW database contains information on onshore & offshore oil and gas wells that are outside provincial jurisdiction(s) and are thereby regulated by the National Energy Board. Data is provided regarding the operator, well name, well ID No./UWI, status, classification, well depth, spud and release date.

Government Publication Date: 1920-Feb 2003*

National Environmental Emergencies System (NEES): Federal NEES

In 2000, the Emergencies program implemented NEES, a reporting system for spills of hazardous substances. For the most part, this system only captured data from the Atlantic Provinces, some from Quebec and Ontario and a portion from British Columbia. Data for Alberta, Saskatchewan, Manitoba and the Territories was not captured. However, NEES is also a repository for previous Environment Canada spill datasets. NEES is composed of the historic datasets ' or Trends ' which dates from approximately 1974 to present. NEES Trends is a compilation of historic databases, which were merged and includes data from NATES (National Analysis of Trends in Emergencies System), ARTS (Atlantic Regional Trends System), and NEES. In 2001, the Emergencies Program determined that variations in reporting regimes and requirements between federal and provincial agencies made national spill reporting and trend analysis difficult to achieve. As a consequence, the department has focused efforts on capturing data on spills of substances which fall under its legislative authority only (CEPA and FA). As such, the NEES database will be decommissioned in December 2004.

Government Publication Date: 1974-2003*

National PCB Inventory: Federal NPCB

Environment Canada's National PCB inventory includes information on in-use PCB containing equipment in Canada including federal, provincial and private facilities. Federal out-of-service PCB containing equipment and PCB waste owned by the federal government or by federally regulated industries such as airlines, railway companies, broadcasting companies, telephone and telecommunications companies, pipeline companies, etc. are also listed. Although it is not Environment Canada's mandate to collect data on non-federal PCB waste, the National PCB inventory includes some information on provincial and private PCB waste and storage sites. Some addresses provided may be Head Office addresses and are not necessarily the location of where the waste is being used or stored.

Government Publication Date: 1988-2008*

National Pollutant Release Inventory: Federal NPRI

Environment Canada has defined the National Pollutant Release Inventory ("NPRI") as a federal government initiative designed to collect comprehensive national data regarding releases to air, water, or land, and waste transfers for recycling for more than 300 listed substances.

Government Publication Date: 1993-May 2017

BC Oil and Gas Commission Incidents: Provincial OG INCIDENTS

A list of oil and gas pipeline incidents in British Columbia made available by BC Oil and Gas Commission. An incident is defined as a present or imminent event or circumstance, resulting from oil and gas activity that is outside the scope of normal operations which may or may not be an emergency. Includes pipeline spills, releases, and damage to active and discontinued pipelines; does not include incidents that did not result in damage to the pipeline or a release of contents.

Government Publication Date: Nov 30, 2018

Oil and Gas Wells: Private OGWW

The Nickle's Energy Group (publisher of the Daily Oil Bulletin) collects information on drilling activity including operator and well statistics. The well information database includes name, location, class, status and depth. The main Nickle's database is updated on a daily basis, however, this database is updated on a monthly basis. More information is available at www.nickles.com.

Government Publication Date: 1988-Feb 28, 2019

Canadian Pulp and Paper: Private PAP

This information is part of the Pulp and Paper Canada Directory. The Directory provides a comprehensive listing of the locations of pulp and paper mills and the products that they produce.

Government Publication Date: 1999, 2002, 2004, 2005, 2009-2014

Inventory of PCB Storage Sites: Provincial PCB

The Ministry of Water, Land & Air Protection maintains a database of all active Polychlorinated Biphenyls (PCB) waste storage sites within the Special Waste Information System. Please note that there is no requirement to maintain an accurate listing of all inactive PCB waste storage equipment and/or disposal sites. The records within this database provide information regarding site name, location, an inventory of stored wastes and quantities, and status date (when site first active/inactive). Previous to May 1993, data was collected from a different source and is only available for 1989. Inventory of PCB Storage Sites data are historic and no longer being updated.

Government Publication Date: 1989, May 1993-2010*

Parks Canada Fuel Storage Tanks: Federal PCFT

Canadian Heritage maintains an inventory of known fuel storage tanks operated by Parks Canada, in both National Parks and at National Historic Sites. The database details information on site name, location, tank install/removal date, capacity, fuel type, facility type, tank design and owner/operator.

Government Publication Date: 1920-Jan 2005*

Pesticide Register: Provincial PES

This is a database of individuals who apply for a service or vendor license for the use of registered pesticides. A service license is denoted by an "S" in the license number, likewise, a vendor license by a "V" in the license number.

Government Publication Date: 1989-Aug 2018

Private Aggregate Inventory: Provincial PRAI

Within British Columbia, aggregate pits are designated as mines; and as such, the Ministry of Energy and Mines is responsible for their planning, management and regulation, including permitting, health, safety and reclamation. Owners or operators of all private aggregate pits must file Notices of Work as part of the permitting and reclamation process. In 1994, the Geological Survey Branch initiated the Aggregate Program, in order to establish an inventory of natural and crushed aggregate pits. Information about each pit in the database file includes its location, NTS map sheet number, Notice of Work file number and status (active/inactive) and the type of landform hosting the pit. This database was a one-time inventory and will not be updated.

Government Publication Date: 1975-1996*

Public Aggregate Inventory: Provincial PUAI

Information about public aggregate pits in British Columbia is collected and managed by the Ministry of Transportation and Highways. Data has been gathered on more than 2000 pits, in respect to pit name, type and geographical location.

Government Publication Date: 1960-2001*

Waste Receivers Summary: Provincial REC

The Special Waste Regulation defines the disposal of regulated waste through an operating waste management system or a waste disposal site operated or used pursuant to the terms and conditions of a Certificate of Approval or a Provisional Certificate of Approval. A waste receiving location is any site or facility to which waste is transferred through a waste carrier. A receiver of regulated waste is required to register the waste receiving facility. This database represents registered receivers of regulated wastes, identified by registration number, company name and address. Some of "Waste Receivers Summary" addresses may represent mailing addresses rather than waste/hazardous sites. This database is part of a larger SWIS (Special Waste Information System) database controlled by the Ministry of Environment in BC. Waste Receivers Summary data are historic and no longer being updated.

Government Publication Date: 1992-2010*

Receivers - Special Waste Information System (SWIS): Provincial REC2

The Special Waste Information System (SWIS) maintained by the BC Ministry of Environment holds information related to the generation and transportation of hazardous waste under the Hazardous Waste Regulation. This is a list of waste receiver sites included in hazardous waste transport manifests from 2011 - 2014, accompanied by manifest details.

Government Publication Date: Jan 2011-Dec 2014

Retail Fuel Storage Tanks: Private RST

This database includes an inventory of retail fuel outlet locations (including marinas) that have on their property gasoline, oil, waste oil, natural gas and / or propane storage tanks.

Government Publication Date: 1999-Jan 31, 2019

Scott's Manufacturing Directory: Private SCT

Scott's Directories is a data bank containing information on over 200,000 manufacturers across Canada. Even though Scott's listings are voluntary, it is the most comprehensive database of Canadian manufacturers available. Information concerning a company's address, plant size, and main products are included in this database.

Government Publication Date: 1992-Mar 2011*

Site Registry: Provincial SREG

This information is collected from the Ministry of Environment's Site Registry. It is not a registry of contaminated sites, although some sites on the registry are contaminated. Most sites have already been investigated and require minor remediation, or have already been cleaned up to government requirements. The Registry also stores environmentally relevant historic information about sites including: names of participants, legal and administrative notations, references to pertinent documents submitted to the ministry, associations with other sites, and much more.
1. Please note the information provided in the Detail Reports have been updated to the best of our ability as provided by the source, BC Government. For more information, please contact your ERIS sales representative.

Government Publication Date: Apr 30, 2019

Surrey Tank Construction Permits: Provincial STNK

A list of building permits issued for the removal, construction, and decommissioning of storage tanks in the City of Surrey. This list is made available by the City of Surrey Building Division of the Department of Planning and Development.

Government Publication Date: Dec 31, 2018

Transport Canada Fuel Storage Tanks: Federal TCFT

List of fuel storage tanks currently or previously owned or operated by Transport Canada. This inventory also includes tanks on The Pickering Lands, which refers to 7,530 hectares (18,600 acres) of land in Pickering, Markham, and Uxbridge owned by the Government of Canada since 1972; properties on this land has been leased by the government since 1975, and falls under the Site Management Policy of Transport Canada, but is administered by Public Works and Government Services Canada. This inventory provides information on the site name, location, tank age, capacity and fuel type.

Government Publication Date: 1970-Aug 2018

Vancouver Heating Oil Underground Storage Tanks: Provincial VTNK

A list of heating oil Underground Storage Tanks made available by the City of Vancouver. The City of Vancouver maintains records of UST removals, abandonments, and installations for heating oil storage tanks.

Government Publication Date: Jun 1995 - Apr 2019

Waste Disposal Site Inventory: Provincial WDS

This inventory pertains to active, regulated waste disposal sites within the province of British Columbia. Registered companies may hold a permit or certificate for release of the following waste types: Effluent, Refuse, Air and Special Waste Storage. Information on Waste Disposal Sites after 1998 is contained within the Authorizations (AUTH) database.

Government Publication Date: 1980-1998*

Water Well Information System: Provincial WWIS

This database was collected from the Groundwater Information Center of the Ministry of Water, Land & Air Protection and contains over 90,000 records. Comprehensive information is available for each well including: well location (address/site area), latitude/longitude, legal description (section, lot, plan, district lot, range, township), BCGS Mapsheet No., depth of well, construction dates, well status and lithology. The accuracy of well locations is also provided, as well as the reference source for obtaining geographic coordinates.

Government Publication Date: Jul 31, 2018

Definitions

Database Descriptions: This section provides a detailed explanation for each database including: source, information available, time coverage, and acronyms used. They are listed in alphabetic order.

Detail Report: This is the section of the report which provides the most detail for each individual record. Records are summarized by location, starting with the project property followed by records in closest proximity.

Distance: The distance value is the distance between plotted points, not necessarily the distance between the sites' boundaries. All values are an approximation.

Direction: The direction value is the compass direction of the site in respect to the project property and/or center point of the report.

Elevation: The elevation value is taken from the location at which the records for the site address have been plotted. All values are an approximation. Source: Google Elevation API.

Executive Summary: This portion of the report is divided into 3 sections:

'Report Summary'- Displays a chart indicating how many records fall on the project property and, within the report search radii.

'Site Report Summary'-Project Property'- This section lists all the records which fall on the project property. For more details, see the 'Detail Report' section.

'Site Report Summary-Surrounding Properties'- This section summarizes all records on adjacent properties, listing them in order of proximity from the project property. For more details, see the 'Detail Report' section.

Map Key: The map key number is assigned according to closest proximity from the project property. Map Key numbers always start at #1. The project property will always have a map key of '1' if records are available. If there is a number in brackets beside the main number, this will indicate the number of records on that specific property. If there is no number in brackets, there is only one record for that property.

The symbol and colour used indicates 'elevation': the red inverted triangle will dictate 'ERIS Sites with Lower Elevation', the yellow triangle will dictate 'ERIS Sites with Higher Elevation' and the orange square will dictate 'ERIS Sites with Same Elevation.'

Unplottables: These are records that could not be mapped due to various reasons, including limited geographic information. These records may or may not be in your study area, and are included as reference.

APPENDIX IV
Qualifications of Assessor

Qualifications of Assessors

Jessica Pagotto, B.Sc.

Senior Project Coordinator

Pinchin Ltd.

Jessica Pagotto joined Pinchin Ltd. in February 2010 after completing her Degree in Biological Science from the University of Guelph, in Guelph, Ontario. Jessica's experience includes full project office and field work for Phase I ESAs, Phase 2 ESAs, DSIs and soil and groundwater remediation. Jessica has also conducted environmental monitoring for several projects across British Columbia. She has experience in sediment and erosion control, compliance monitoring, spill and emergency response, water monitoring as well as writing Environmental Management Plans.

APPENDIX V
Photographs

Photo 1 – View of the south elevation of Site Building A.

Photo 2 – West elevation of Site Building B.

Photo 3 – Heating oil AST adjacent to the west wall of Site Building A.

Photo 4 – Municipal water line and associated infrastructure constructed through the Site, as well as the northern portion of the Site.

Photo 5 – Properties located north of the Site.

Photo 6 – Properties located south of the Site.

Photo 7 – Properties located east of the Site.

Photo 8 – Properties located west of the Site.

RYZUK GEOTECHNICAL
Engineering & Materials Testing

28 Crease Avenue, Victoria, BC, V8Z 1S3 Tel: 250-475-3131 Fax: 250-475-3611 www.ryzuk.com

July 26, 2019
File No: 8-8298-3

Westurban Developments Ltd.
1-1170 Shoppers Row
Campbell River, BC
V9W 2C8

Attn: Frank Limshue (By E-mail: flimshue@westurban.ca)

Re: Proposed 5 to 6 Story Building
9 Erskine Lane, View Royal, BC

As requested, we have completed an assessment of the geotechnical conditions at the referenced site. The scope of our assessment included a desktop study of available geotechnical information, and a brief site reconnaissance. The following letter summarizes the results of our assessment and our associated recommendations as such relate to the proposed development. Our work has been completed in accordance with, and is subject to, the attached Terms of Engagement.

PROPOSED DEVELOPMENT

The project site is located on the northeast side of Erskine Lane, and is bounded by Watkiss Way to the northwest, a vacant lot that appears to have been formerly used as a quarry to the northeast, and a commercial lot occupied by two warehouse structures to the southeast. In addition, the Victoria General Hospital is approximately 150 meters (m) northeast of the site. There is a Victoria watermain right of way that runs east to west and roughly bisects the site into two distinct portions, hereafter referred to as the northwest portion (north of the right of way), and the southeast portion (south of the right of way).

There are very steep to vertical rock faces that separate the site, adjacent to the northeast property line, from the vacant lot to the northeast. These rock faces appear to have been created by past rock excavation/quarrying activities completed in the now vacant lot.

Based on our discussions with you, we understand that the proposed development would consist of constructing several five to six storey multi-family residential buildings with one level of underground parking.

SURFACE AND SUBSURFACE CONDITIONS

The majority of the site is undeveloped and heavily vegetated. Vegetation consists of mature trees and relatively dense underbrush. Site topography is highest in the northwest portion of the site, and generally descends to the southeast at a moderate grade. However, there are localized steep slopes along the northwest property line where there is approximately 8.0 m of relief between the highest elevation on the site and the elevation of Watkiss Way. There are also localized rock cuts up to approximately 3.5 m high along the northwest property line adjacent to Watkiss Way. Along the northeast property line, there is an approximately 8.0 to 10.0 m high rock slope to the north of the watermain right of way, and an additional 8.0 to 10.0 m high cut slope in the southeast corner (refer to Drawing 8298-3-1).

Bedrock outcrops were observed at the surface over most of the northwest portion of the site. The ground surface expression is rugged and hummocky and follows the contours of the bedrock surface. This is consistent with available surficial geology mapping and our previous experience in the area.

The southeast portion of the site gently slopes down to the southeast. Bedrock outcrops were not observed in this area. Available surficial geology mapping, and our past experience with projects nearby, indicates that the surficial geology in this area consists of stiff brown silty clays up to 3.0 m thick overlying dense glacial till atop bedrock.

Groundwater observations were not conducted as part of our assessment at this site. However, given our experience in the area, we anticipate that the impermeable nature of the native clays will likely preclude free water conditions, and that the glacial till overlying the bedrock may be saturated.

GEOTECHNICAL ASSESSMENT AND RECOMMENDATIONS

On the basis of our desktop study and site reconnaissance, we do not anticipate any geotechnical issues that will preclude development as proposed at this site. However, careful consideration will be required if it is desired to build in the vicinity of the 8.0 to 10.0 m rock cut along the northeast property line. In addition, ground conditions vary significantly across the site from outcropping bedrock in the north-west, to clay deposits in the south-east.

As such, in the northwest portion of the site we anticipate that blasting will be required to excavate into the bedrock to achieve a single level of underground parking, and/or to create a generally level building platform.

In the southeast portion of the site, we expect that excavation of the native soils may be readily achieved with conventional excavating equipment. Assuming each of the proposed buildings will include a level of underground parking, we anticipate varying amounts of blasting will be required to advance the excavations given the commonly erratic profile of Victoria bedrock. The amount of

blasting required can be estimated once elevations of the underground parking are confirmed and rock probing data is acquired.

Excavation Considerations

We expect excavations during construction will be up to approximately 4.0 m in depth. We anticipate that design grades may be reached with temporary excavation cutslopes. Given the ground conditions observed, we expect temporary excavation cutslopes will be stable at the following configurations:

- Topsoil/Fill materials – 1H:1V (Horizontal : Vertical)
- Stiff to very stiff brown clay – 0.5H:1V
- Dense Sandy Gravel (glacial till) – 0.5H:1V to near vertical
- Bedrock – 0.25H:1V to vertical (flatter is preferred for long term stability of exposed rock faces)

Adjustments to the above configurations may be required during construction if variations in the soil/seepage conditions are observed. According to WorkSafe BC guidelines, the stability of temporary excavation cutslopes graded steeper than 0.75H:1V, and deeper than 1.2 m, must be inspected and approved by a qualified geotechnical professional prior to worker entry or approach within a distance equal to the excavation depth.

Where the proposed structures are near property lines, excavation for foundations will require careful consideration in order to maintain adequate lateral support to neighboring properties. Flattening of temporary excavation cutslopes may require encroachment agreements to be in place with neighboring land owners and/or the municipality of View Royal. If encroachment onto neighboring properties is not permitted, a shoring system may be required unless sufficient building offset is available.

In excavation areas directly adjacent to property boundaries, and where bedrock is encountered above design excavation depth, we recommend carrying out line drilling in advance of blasting to minimize potential for over break beyond the property line, and to reduce the requirement for stabilizing shotcrete, anchoring and/or rock bolting in the rock cut face following blasting.

There are existing generally vertical rock walls and steep cutslopes along portions of the northwest and northeast property lines. Care must also be taken not to encroach too close to these rock slopes to avoid creating unstable rock slope conditions. We recommend that structures are set back from these slopes such that a 1H:1V support splay within the rock mass can be maintained for the building foundations. As such, assuming a foundation elevation at 4.0 m below ground surface, an appropriate setback along the northeast property line would be 6.0 m from the rock wall crest. Along the northwest property line, a setback of 4.0 m from the slope crest is appropriate. The setback distances must be confirmed once precise foundation elevations are known, and the rock faces have been assessed for global stability.

We recommend that vibrations created by blasting activities are monitored near sensitive infrastructure and nearby structures. Such vibrations should be kept, at minimum, below a peak particle velocity of 25 mm/s to avoid damaging nearby infrastructure/structures. Completion of a pre-blast survey of neighboring properties is also strongly recommended.

Seismic Considerations

Greater Victoria is situated in a region of very high seismicity. Considerable earthquake risk exists, stemming from our proximity to the Cascadia subduction zone and numerous more local faults in southwestern BC and northwestern Washington State.

Based on ground conditions observed in the northwest portion of the site, it is reasonable to expect the shear wave velocity in the upper 30 m (V_s^{30}) to be above 1500 m/s. This corresponds to a Site Classification for Seismic Site Response of 'A', in accordance with the current BC Building Code (2018). In the southeast portion of the site, we expect the V_s^{30} to be between 360 and 760 m/s, corresponding to site class 'C' (refer to Drawing 8298-3-1). Note that if the foundations in the southeast portion of the site extend to bedrock, the site class 'A' is appropriate.

As such, the seismic hazard spectral acceleration values for 'Hard Rock' (site class 'A'), and "firm ground" (site class 'C'), are presented in Table 1, for a 2% in 50-year probability of exceedance:

Table 1: Spectral Accelerations Values for a 2% in 50-Year Probability of Exceedance

Period (sec)	PGA	PGV	0.2	0.5	1.0	2.0
Response (g) Site Class 'A'	**0.528**	**0.521**	**0.781**	**0.667**	**0.392**	**0.236**
Response (g) Site Class 'C'	**0.587**	**0.840**	**1.312**	**1.170**	**0.688**	**0.407**

Engineered Fill

Wherever engineered fill is placed it should consist of a select granular material, and it should be compacted in lifts of maximum 300 mm thickness to a minimum of 95% of the Standard Proctor Maximum Dry Density (SPMDD). Site sourced blast rock may be used as engineered fill pending approval from a qualified geotechnical professional.

Foundations

We expect conventional shallow spread foundations, cast directly upon approved native soils, compacted over blast, clean intact bedrock, or compacted engineered fill atop such, will be the

preferred choice for building support. Foundations elements bearing on the noted materials can be dimensioned according to the values summarized in Table 2.

Table 2: Bearing Resistances for Strip or Pad Footings Cast Atop Approved Subgrade

Bearing Material	Limit State Design (LSD)	
	Strip Footing	Pad Footing
Stiff brown silty clay/engineered fill	150 kPa (SLS[1]) 250 kPa (ULS[2])	175 kPa (SLS) 290 kPa (ULS)
Glacial till or compacted over blast	225 kPa (SLS) 340 kPa (ULS)	280 kPa (SLS) 420 kPa (ULS)
Intact/fractured in-place bedrock	2,000 kPa (SLS) 3,000 kPa (ULS)	2,400 kPa (SLS) 3,600 kPa (ULS)

[1] Serviceability Limit State
[2] Ultimate Limit State

The Limit State Design values noted utilize a geotechnical resistance factor of 0.5 as per the current Canadian Foundation Engineering Manual. We recommend minimum footing widths of 400 and 600 mm for strip and pad footings, respectively. Actual bearing capacity will need to be confirmed by a geotechnical professional once the native subgrade has been exposed.

Any disturbance to native soils during construction activities should be rectified by cleaning the disturbed area down to undisturbed soil before placing formwork for footings. For bedrock bearing, the surface is required to be relatively flat/level in foundation areas. If the profile is sloping greater than 6H : 1V and not naturally keyed, then the bedrock may need to be benched, or steel dowels will need to be installed, to resist induced sliding.

Additionally, all footings should be placed a minimum of 450 mm below adjacent finished grade to provide protection against seasonal frost and moisture variation. All foundation subgrade must be inspected by a geotechnical professional.

If, after removal of unsuitable soils, it is necessary to recover the design grade, approved fill material should be placed upon approved subgrade in maximum 300 mm lifts and compacted to a minimum of 95% of the SPMDD or judged equivalent. The engineered fill must have a footprint that extends horizontally beyond the footings at least 1.0 m plus the thickness of the engineered fill, in order to provide adequate splay for foundation loads. In perimeter areas, it is inadvisable to have the fill splay extend beyond property lines. Blast rock fill can be used as engineered fill pending approval and gradation recommendations by a geotechnical professional.

Settlement Considerations

Provided all loose and deleterious material is removed from all building/foundation and road/parking areas, we expect that settlement at this site will be well within structural tolerances, given the anticipated soil conditions.

Foundation Walls

Foundation walls should be backfilled with clean, well graded granular material, compacted in maximum 300 mm lifts to at least 95% of Standard Proctor Maximum Dry Density (SPMDD). Where the grade elevation differs significantly between the two sides of a perimeter wall and the wall is free to rotate in order to develop the active earth pressure state (rotation of 0.1% of the wall height, non-rigid wall), the wall should be designed to resist a lateral earth pressure (due to granular backfill) similar in magnitude and distribution to that of a fluid having a unit weight of 6.3 kN/m^3.

Lateral earth pressures due to floor loadings and/or foundation loads from adjacent portions of the building can be calculated assuming a lateral coefficient of 0.35. Where the wall cannot rotate (rigid wall), it should be designed to resist an at rest lateral earth pressure loading, similar in magnitude and distribution to that of a fluid having a unit weight of 8.6 kN/m^3. In this case, lateral earth pressure due to floor loadings and/or foundation loads from adjacent buildings can be calculated assuming a lateral coefficient of 0.45. Equipment larger than a skid-steer should not be allowed within 1.5 m of the foundation walls during backfilling.

Lateral earth pressures resulting from seismic activity can be calculated according to the following equations:

Non Rigid Wall : $P_E = 0.375\ k_h\ \gamma\ H^2$

Rigid Wall : $P_E = 0.5\ k_h\ \gamma\ H^2$

where:

- P_E is the resultant force per unit length of wall;
- the coefficients of 0.375 and 0.5 are dimensionless;
- k_h is the design peak horizontal ground acceleration coefficient;
- γ is the moist unit weight of the backfill material, which is approximately 20.4 kN/m^3 for most granular backfill; and
- H is the height of the wall.

In the case of the non-rigid wall, the backfill pressure distribution resulting from the earthquake loading can be assumed to be triangular, increasing from zero at the base of the wall to a maximum of $0.75\ k_h\ \gamma\ H$ at the top of the wall, with the resultant force acting at 0.67H above the base of the wall.

In the case of the rigid wall, the backfill pressure distribution resulting from the earthquake loading can be assumed to be parabolic, with the resultant force acting at 0.5H above the base of the wall.

For design purposes, the pressure distribution resulting from earthquake loading on the backfill should be added to either the active or at rest pressure distribution depending on whether or not the noted wall rotation can occur.

Slab on Grade

Use of a concrete slab on grade is considered feasible for the underground parkade. All interior fills supporting the slab should consist of select free draining granular fill, compacted to at least 95% of the SPMDD. A polystyrene vapor barrier should also be placed directly beneath the slab to prevent moisture capillary rise.

Foundation Drainage

Based on as-built drawings, dated April 1994, provided by the municipality of View Royal, we have confirmed the presence of existing storm and sewer drains aligned along Erskine Lane. The drawings indicate that both the storm and sewer drains are not continuous along Erskine lane, starting approximately 70 m east of the watermain ROW, and grading towards the east-southeast. The storm drain is shown to daylight/discharge into a ditch network associated with the Galloping Goose Trail.

As such, careful consideration regarding the elevation difference of on-site drainage system and the existing municipal network must be made. Given the site topography and the indicated invert elevation of the municipal drainage network, we expect that there may be challenges associated with providing suitable grades for perimeter drainage systems of the eastern half of the development if one level of underground parking is to be included in the design.

In areas where the foundation elevation provides suitable grades to the municipal drainage network, we expect a conventional perimeter drainage system will be appropriate to maintain locally low groundwater conditions. The perimeter drainage system should consist of perforated drainpipe surrounded by clean drain rock, tied into free draining backfill material. To prevent the migration of fine-grained soil particles into the drainage system, a layer of medium weight, non-woven geotextile should be placed between the clean drain rock around the perforated pipe and the granular backfill material. The geotextile should encompass the entire drain rock/drainpipe system.

Pavement Considerations

In areas of light traffic (parking stalls), 50 mm of asphalt over 150 mm of 19 mm minus crushed rock and 300 mm of 75 mm minus crushed rock should be sufficient. For heavier traffic areas (drive aisle), we suggest 80 mm of asphalt over a similar granular base and subbase structure. For

asphalt selection, Master Municipal Construction Document (MMCD) UC#2 would be sufficient. In areas of frequent heavy traffic (i.e. adjacent to garbage bins) concrete pads are appropriate. Granular base and subbase fills should be compacted to at least 95% of SPMDD.

Closure

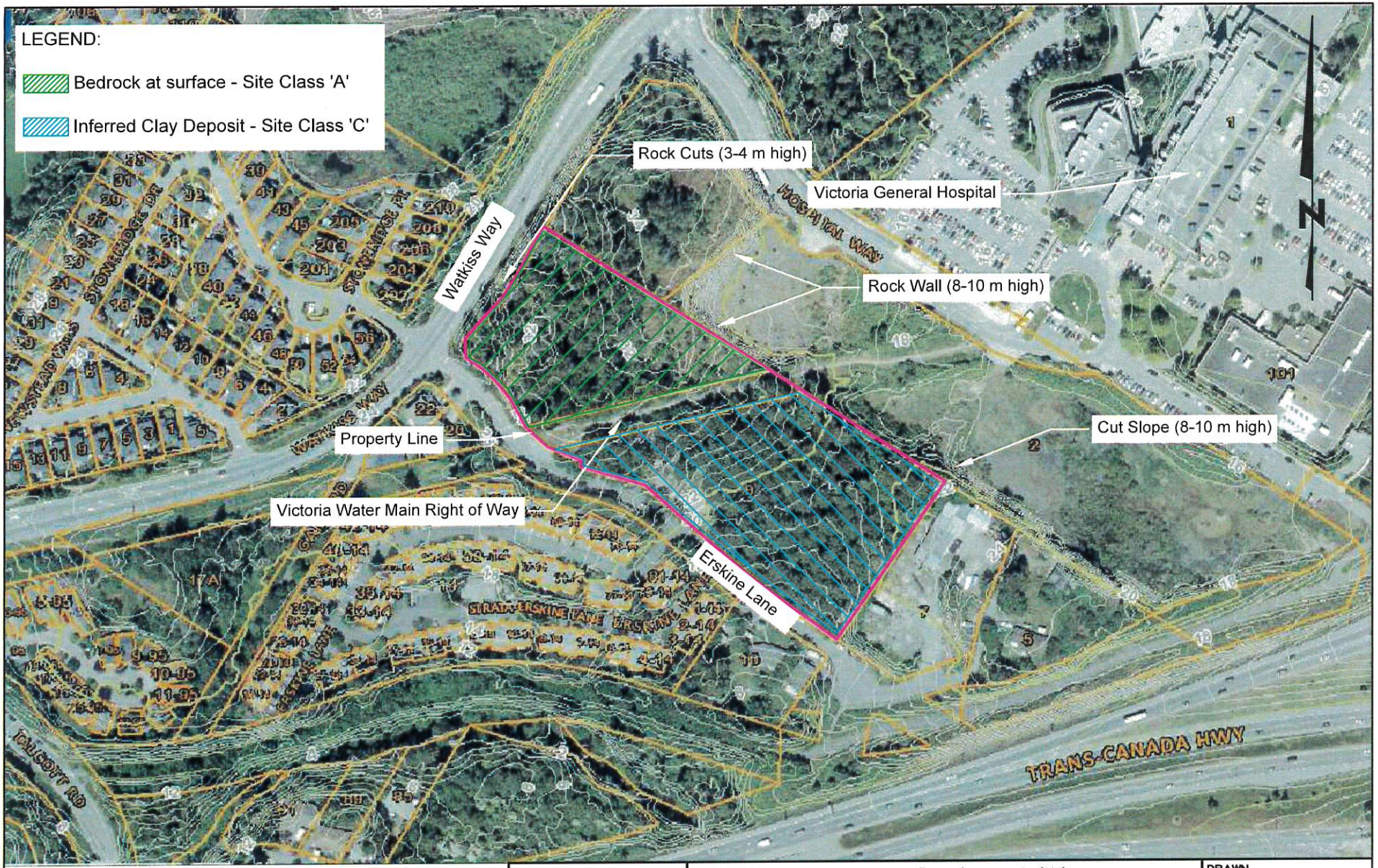
We trust the preceding is suitable for your purposes at present. Please don't hesitate to contact our office if we can be of further assistance.

Yours truly,
Ryzuk Geotechnical

Steven Bigsby, EIT
Junior Engineer

Richard Moser, P. Eng.
Project Engineer

Attachments: Terms of Engagement
Site Location Plan (Drawing 8298-3-1)



Notes:

Base imagery obtained from CRD Webmap 2017 aerial photography.

Westurban Developments Ltd.

LOCATION PLAN

Proposed 5-6 Story Building

9 Erskine Lane View Royal, B.C.

RYZUK GEOTECHNICAL Engineering & Materials Testing

DRAWN	SJB
DATE	July, 2019
APPROVED	
SCALE	1:2950
DRAWING No.	8298-3-1

TERMS OF ENGAGEMENT

GENERAL

Ryzuk Geotechnical (the Consultant) shall render the Services, as specified in the agreed Scope of Services, to the Client for this Project in accordance with the following terms of engagement. The Services, and any other associated documents, records or data, shall be carried out and/or prepared in accordance with generally accepted engineering practices in the location where the Services were performed. No other warranty, expressed or implied is made. The Consultant may, at its discretion and at any stage, engage sub-consultants to perform all or any part of the Services.

Ryzuk Geotechnical is a wholly owned subsidiary of C. N. Ryzuk & Associates Ltd.

COMPENSATION

All charges will be payable in Canadian Dollars. Invoices will be due and payable by the Client on receipt of the invoice without hold back. Interest on overdue accounts is 24% per annum.

REPRESENTATIVES

Each party shall designate a representative who is authorized to act on behalf of that party and receive notices under this Agreement.

TERMINATION

Either party may terminate this engagement without cause upon thirty (30) days' notice in writing. On termination by either party under this paragraph, the Client shall forthwith pay to the Consultant its Charges for the Services performed, including all expenses and other charges incurred by the Consultant for this Project.

If either party breaches this engagement, the non-defaulting party may terminate this engagement after giving seven (7) days' notice to remedy the breach. On termination by the Consultant under this paragraph, the Client shall forthwith pay to the Consultant its Charges for the Services performed to the date of termination, including all fees and charges for this Project.

ENVIRONMENTAL

The Consultant's field investigation, laboratory testing and engineering recommendations will not address or evaluate pollution of soil or pollution of groundwater. The Consultant will cooperate with the Client's environmental consultant during the field work phase of the investigation.

PROFESSIONAL RESPONSIBILITY

In performing the Services, the Consultant will provide and exercise the standard of care, skill and diligence required by customarily accepted professional practices and procedures normally provided in the performance of the Services contemplated in this engagement at the time when and the location in which the Services were performed.

INSURANCE

Ryzuk Geotechnical is covered by Professional Indemnity Insurance as follows:

1. $ 2,000,000 each and every claim
2. $ 4,000,000 aggregate
3. $ 5,000,000 commercial/general liability coverage

LIMITATION OF LIABILITY

The Consultant shall not be responsible for:

1. the failure of a contractor, retained by the Client, to perform the work required for the Project in accordance with the applicable contract documents;
2. the design of or defects in equipment supplied or provided by the Client for incorporation into the Project;
3. any cross-contamination resulting from subsurface investigations;
4. any Project decisions made by the Client if the decisions were made without the advice of the Consultant or contrary to or inconsistent with the Consultant's advice;
5. any consequential loss, injury or damages suffered by the Client, including but not limited to loss of use, earnings and business interruption;
6. the unauthorized distribution of any confidential document or report prepared by or on behalf of the consultant for the exclusive use of the Client
7. Subsurface structures and utilities

The Consultant will make all reasonable efforts prior to and during subsurface site investigations to minimize the risk of damaging any subsurface utilities/mains. If, in the unlikely event that damage is incurred where utilities were unmarked and/or undetected, the Consultant will not be held responsible for damages to the site or surrounding areas, utilities/mains or drilling equipment or the cost of any repairs.

The total amount of all claims the Client may have against the Consultant or any present or former partner, executive officer, director, stockholder or employee thereof under this engagement, including but not limited to claims for negligence, negligent misrepresentation and breach of contract, shall be strictly limited to the amount of any professional liability insurance the Consultant may have available for such claims.

No claim may be brought against the Consultant in contract or tort more than two (2) years after the date of discovery of such defect.

DOCUMENTS AND REPORTING

All of the documents prepared by the Consultant or on behalf of the Consultant in connection with the Project are instruments of service for the execution of the Project. The Consultant retains the property and copyright in these documents, whether the Project is executed or not. These documents may not be used on any other project without the prior written agreement of the Consultant.

The documents have been prepared specifically for the Project, and are applicable only in the case where there has been no physical alteration to, or deviation from any of the information provided to the Consultant by the Client or agents of the Client. The Client may, in light of such alterations or deviations, request that the Consultant review and revise these documents.

The identification and classification as to the extent, properties or type of soils or other materials at the Project site has been based upon investigation and interpretation consistent with the accepted standard of care in the engineering consulting practice in the location where the Services were performed. Due to the nature of geotechnical engineering, there is an inherent risk that some conditions will not be detected at the Project site, and that actual subsurface conditions may vary considerably from investigation points. The Client must be aware of, and accept this risk, as must any other party making use of any documents prepared by the Consultant regarding the Project.

Any conclusions and recommendations provided within any document prepared by the Consultant for the Client has been based on the investigative information undertaken by the Consultant, and any additional information provided to the Consultant by the Client or agents of the Client. The Consultant accepts no responsibility for any associated deficiency or inaccuracy as the result of a miss-statement or receipt of fraudulent information.

JOBSITE SAFETY AND CONTROL

The Client acknowledges that control of the jobsite lies solely with the Client, his agents or contractors. The presence of the Consultant's personnel on the site does not relieve the Client, his agents or contractors from their responsibilities for site safety. Accordingly, the Client must endeavor to inform the Consultant of all hazardous or otherwise dangerous conditions at the Project site of which the Client is aware.

The client must acknowledge that during the course of a geotechnical investigation, it is possible that a previously unknown hazard may be discovered. In this event, the Client recognizes that such a hazard may result in the necessity to undertake procedures which ensure the safety and protection of personnel and/or the environment. The Client shall be responsible for payment of any additional expenses incurred as a result of such discoveries, and recognizes that under certain circumstances, discovery of hazardous conditions or elements requires that regulatory agencies must be informed. The Client shall not bring about any action or dispute against the Consultant as a result of such notification.

FIELD SERVICES

Where applicable, field services recommended for the Project are the minimum necessary, in the sole discretion of the Consultant, to observe whether the work or a contractor retained by the Client is being carried out in general conformity with the intent of the Services. Any reduction from the level of services recommended will result in the Consultant providing qualified certifications for the work.

DISPUTE RESOLUTION

If requested in writing by either the Client or the Consultant, the Client and the Consultant shall attempt to resolve any dispute between them arising out of or in connection with this Agreement by entering into structured non-binding negotiations with the assistance of a mediator on a without prejudice basis. The mediator shall be appointed by agreement of the parties. If a dispute cannot be settled within a period of thirty (30) calendar days with the mediator, the dispute shall be referred to and finally resolved by arbitration under the rules of the arbitrator appointed by agreement of the parties or by reference to a Judge of the British Columbia Court.

NOTES:

1. FOR DISCUSSION PURPOSES ONLY.
2. SEE LEGAL SURVEY DRAWING FOR SITE DETAILS AND ELEVATIONS.
3. SEE ARCHITECTURAL DRAWINGS FOR BUILDING DETAILS.
4. EXISTING INFORMATION PROVIDED BY OTHERS.

ISSUES

No.	DATE YYYY.MM.DD	ISSUED FOR
1	2020.08.11	REZONING

CLIENT

STORM DRAIN INFRASTRUCTURE REQUIRED FOR INSTALLATION OF BARRIER CURB

ROAD SECTION AS PER TOVR STD. DWG. No. VRSD-R14
BARRIER CURB AND GUTTER
1.50m BOULEVARD
1.80m CONCRETE SIDEWALK
1.50m BOULEVARD
STREETLIGHTING

RELOCATE EXISTING BUS STOP. DETAILS TO BE ESTABLISHED BY ToVR AND BC TRANSIT

REM. PARCEL A
BLOCK 1
PLAN VIP1066

RETAINING WALLS. BY OTHERS (TYP.)

PARKING STRUCTURE OUTLINE (TYP.)

WATKISS WAY

CENTRELINE OF ROAD

PROPERTY LINE

BUILDING A
79 UNITS
MAIN FLOOR
ELEVATION=29m

29 MFE

BUILDING B
79 UNITS
MAIN FLOOR
ELEVATION=29m

LOT A

REM. PARCEL B
PLAN 26648

C
PLAN 26648

BUILDING C
89 UNITS
MAIN FLOOR
ELEVATION=21m

LOT B

BUILDING D
89 UNITS
MAIN FLOOR
ELEVATION=21m

REM. B
PLAN VIP57062

937 VIEW STREET
LOT A, OF LOTS 785-787,
VICTORIA, PLAN 36505

BUILDING

RETAINING WALL

DRIVEWAY

VARIES

WHEELCHAIR ACCESS RAMP AS PER MMCD STD. DWG. No. C8

REINSTATE "NO PARKING" SIGNS AS REQUIRED

DRIVEWAY CROSSING AS PER ToVR STD. DWG. No. VRSD-C7b WIDTH BETWEEN 5.00m TO 10.00m

PROVIDE CURB LETDOWN AND ACCESS FOR CRDIWS MAINTENANCE VEHICLES, AS PER CRDIWS REQUIREMENTS

ROAD SECTION AS PER ToVR STD. DWG. No. VRSD-R10
BARRIER CURB AND GUTTER
2.50m BOULEVARD
2.00m CONCRETE SIDEWALK
1.50m BOULEVARD
STREETLIGHTING

EXISTING UTILITY POLE TO REMAIN. ANCHOR TO BE RELOCATED

DRIVEWAY CROSSING AS PER ToVR STD. DWG. No. VRSD-C7b WIDTH BETWEEN 5.00m TO 10.00m

EXISTING TREES TO BE REMOVED (TYP.)

NEW BARRIER CURB AS PER MMCD STD. DWG. No. C5 (TYP.)

EXTENT OF POTENTIAL INTERSECTION ROUNDABOUT

SDMH 1
STORM DRAIN MANHOLE AS PER MMCD STD. DWG. No. S1 (TYP. 3)

SDMH 2

CATCH BASIN

38.75m OF STORM DRAIN MAIN

COMMUNITY MAILBOX TO BE RELOCATED AS PER CANADA POST REQUIREMENTS

SDMH 3

35.85m OF STORM DRAIN MAIN

EXISTING UTILITY POLE TO REMAIN

TIE STORM DRAIN INTO EXISTING MANHOLE

CATCH BASIN TO BE RELOCATED

EXISTING WATER GATE VALVES TO BE ADJUSTED TO SUIT OR RELOCATED (TYP. 2)

ELECTRICAL KIOSKS TO BE ADJUSTED IN BOULEVARD

CATCH BASIN TO BE RELOCATED

ERSKINE LANE

GAME ROAD

GALLOPING GOOSE REGIONAL TRAIL

PART B
PLAN VIP57062
AREA 2
PLAN VIP61159

PART A
PLAN VIP57062
AREA 2
PLAN VIP61161

PART 3
PLAN 4206

STRATA PLAN VIS3076

1 PLAN VIP76363
2 PLAN VIP76363
3 PLAN VIP76363

APPROVAL

1:500 0 10 30m

9 ERSKINE LANE MULTI-FAMILY DEVELOPMENT REZONING APPLICATION

TOWN OF VIEW ROYAL

WESTURBAN DEVELOPMENTS LTD.

HEROLD ENGINEERING
1051 Vancouver St, Victoria, BC V8V 4T6
Tel: 250-590-4875 Fax: 250-590-4392
Email: mail@heroldengineering.com

PROPOSED
ROAD LAYOUT

DESIGNED TDL	ENGINEER'S SEAL
DESIGN REVIEW AJH	
DRAFTED SAC	
DRAFTING REVIEW	
PROJECT No. 4689-006	CLIENT DRAWING No.
SCALE H: 1:500 V: —	PERMIT No.
HEL DRAWING No. SK-01 1 OF 1	REVISION 1

DESTROY ALL DRAWINGS SHOWING PREVIOUS REVISION

CD-25: Erskine Lane Residential

Principal Uses

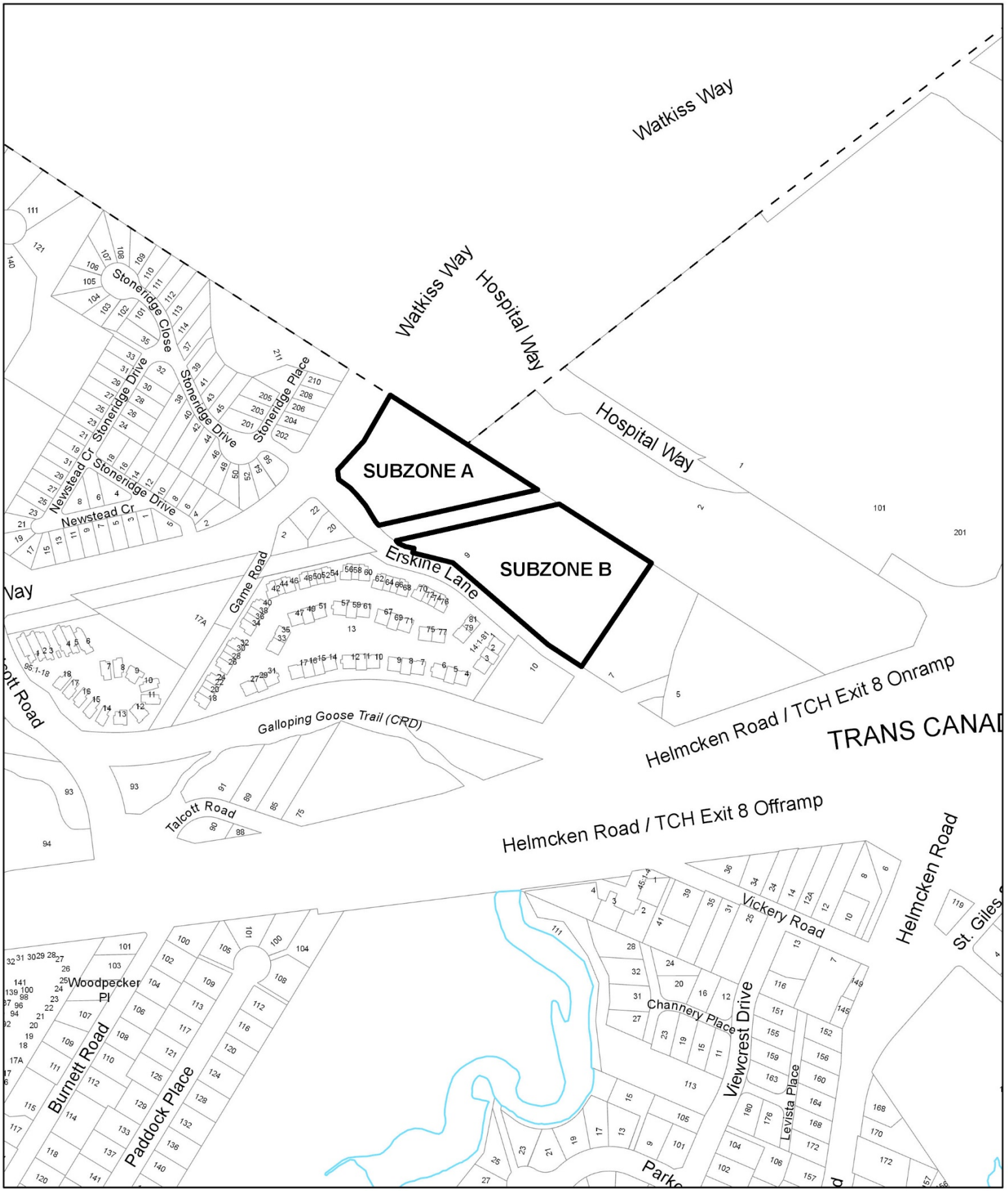
- Residential Apartment

Accessory Uses

- Home Occupation

CD-25: Erskine Lane Residential	
Lot Size	
Lot Size, minimum (Subzone A)	8,400m^2
Lot Size, minimum (Subzone B)	12,000 m^2
Lot Density	
Floor Space Ratio (Subzone A)	1.5
Floor Space Ratio (Subzone B)	1.15
Lot Coverage	
Lot Coverage, Maximum (Subzone A)	30%
Lot Coverage, Maximum (Subzone B)	22%
Impermeable Surface Coverage, Maximum	40%
Size of Principal Buildings and Other Structures	
Building Height	15.5m and 5 storeys
Building Width, Maximum	6m
Siting of Buildings and Other Structures (Principal and Accessory)	
Northwest Lot Line – Watkiss Way Frontage (Subzone A)	7.5m
Northeast Lot Line (Subzone A)	7m
Southwest Lot Line – Erskine Lane Frontage (Subzone A)	7.5m
South Lot Line – CRD Property (Subzone A)	4m
North Lot Line – CRD Property (Subzone B)	4m
Northeast Lot Line (Subzone B)	7m
Southeast Lot Line (Subzone B)	19n
Southwest Lot Line – Erskine Lane Frontage (Subzone B)	7m

Schedule A


Watkiss Way
Watkiss Way
Hospital Way
Hospital Way
SUBZONE A
SUBZONE B
Erskine Lane
Game Road
Stoneridge Close
Stoneridge Drive
Stoneridge Drive
Stoneridge Place
Newstead Cr
Newstead Cr
Stoneridge Drive
Galloping Goose Trail (CRD)
Talcott Road
Helmcken Road / TCH Exit 8 Onramp
Helmcken Road / TCH Exit 8 Offramp
TRANS CANAD
Vickery Road
Helmcken Road
Channery Place
Viewcrest Drive
Levista Place
Woodpecker Pl
Burnett Road
Paddock Place
0
62.5
125
250
375
500
Meters