Township of
ESQUIMALT

GREEN BUILDING CHECKLIST

The purpose of this Checklist is to make property owners and developers aware of specific green features that can be included in new developments to reduce their carbon footprints to help create a more sustainable community.

Creating walkable neighbourhoods, fostering green building technologies, making better use of our limited land base and ensuring that new development is located close to services, shops and transit are some of the means of achieving sustainability.

The Checklist which follows focuses on the use of **Green Technologies** in new buildings and major renovations. The Checklist is not a report card, it is a tool to help identify how your project can become 'greener' and to demonstrate to Council how your project will help the Township of Esquimalt meet its sustainability goals. It is not expected that each development will include all of the ideas set out in this list but Council is looking for a strong commitment to green development.

There are numerous green design standards, for example, Built Green BC; LEED ND; Living Building Challenge; Green Shores; Sustainable Sites Initiative. Esquimalt is not directing you to follow any particular standard, however, you are strongly encouraged to incorporate as many green features as possible into the design of your project .

As you review this checklist, if you have any questions please contact **Development Services at 250.414.7108** for clarification.

New development is essential to Esquimalt. We look forward to working with you to ensure that development is as green and sustainable as possible.

Other documents containing references to building and site design and sustainability, which you are advised to review, include:

- Esquimalt's Official Community Plan
- Development Protocol Policy
- Esquimalt's Pedestrian Charter
- Tree Protection Bylaw No. 2664
- A Sustainable Development Strategic Plan for the Township of Esquimalt

Adopted on January 10th, 2011

"One-third of Canada's energy use goes to running our homes, offices and other buildings. The federal government's Office of Energy Efficiency (Natural Resources Canada) reports that a corresponding one-third of our current greenhouse gas (GHG) emissions come from the built environment."
[Green Building and Development as a Public Good, Michael Buzzelli, CPRN Research Report June 2009]

Please answer the following questions and describe the green and innovative features of your proposed development. Depending on the size and scope of your project, some of the following points may not be applicable.

Green Building Standards

Both energy use and emissions can be reduced by changing or modifying the way we build and equip our buildings.

1	Are you building to a recognized green building standard? If yes, to what program and level?	Yes	**No**
2	If not, have you consulted a Green Building or LEED consultant to discuss the inclusion of green features? Discussed cost effective techniques I may encorporate in the build, like proper sealing and more efficient windows and doors	**Yes**	No
3	Will you be using high-performance building envelope materials, rainscreen siding, durable interior finish materials or safe to re-use materials in this project? If so, please describe them. We will be using durable cement siding products.	**Yes**	No
4	What percentage of the existing building[s], if any, will be incorporated into the new building? Where possible, we will use the existing fences and retaining wallls, as well as rock excavated from the site.	0-10 %	
5	Are you using any locally manufactured wood or stone products to reduce energy used in the transportation of construction materials? Please list any that are being used in this project. We will use as much excavated material as possible and will source local wood for framing wherever possible.		
6	Have you considered advanced framing techniques to help reduce construction costs and increase energy savings? Will discuss with engineer and builder advanced framing techniques like spacing studs further apart and using California corners.	**Yes**	No
7	Will any wood used in this project be eco-certified or produced from sustainably managed forests? If so, by which organization? Wherever possible. We will be most likely be sourcing wood locally through Sleggs. For which parts of the building (e.g. framing, roof, sheathing etc.)?		
8	Can alternatives to Chlorofluorocarbon's and Hydro-chlorofluorocarbons which are often used in air conditioning, packaging, insulation, or solvents] be used in this project? If so, please describe these. Units will not be air conditioned.	Yes	**No**
9	List any products you are proposing that are produced using lower energy levels in manufacturing. Engineered wood flooring, ceramic tiles for backsplashes and bathrooms.		
10	Are you using materials which have a recycled content [e.g. roofing materials, interior doors, ceramic tiles or carpets]? Will dertermine through source companies	**Yes**	No
11	Will any interior products [e.g. cabinets, insulation or floor sheathing] contain formaldehyde?	Yes	**No**

Water Management

The intent of the following features is to promote water conservation, re-use water on site, and reduce storm water run-off.

Indoor Water Fixtures

12	Does your project exceed the BC Building Code requirements for public lavatory faucets and have automatic shut offs?	Yes	**No**
13	For commercial buildings, do flushes for urinals exceed BC Building Code requirements?	Yes N/A	No
14	Does your project use dual flush toilets and do these exceed the BC Building Code requirements?	Yes	**No**
15	Does your project exceed the BC Building Code requirements for maximum flow rates for private showers? Will determine but we will likely use low flow showers	**Yes**	No
16	Does your project exceed the BC Building Code requirements for flow rates for kitchen and bathroom faucets? We will use low faucets that meet BC Code and will try to exceed	Yes	**No**

Storm Water

17	If your property has water frontage, are you planning to protect trees and vegetation within 60 metres of the high water mark? [Note: For properties located on the Gorge Waterway, please consult Sections 7.1.2.1 and 9.6 of the Esquimalt Official Community Plan.]	Yes	No	**N/A**
18	Will this project eliminate or reduce inflow and infiltration between storm water and sewer pipes from this property? We are proposing a landscape swale to slow and reduce impact on storm water system.	**Yes**	No	N/A
19	Will storm water run-off be collected and managed on site (rain gardens, wetlands, or ponds) or used for irrigation or re-circulating outdoor water features? If so, please describe. As shown on the landscaping plan, proposing a rain garden/swale	**Yes**	No	N/A
20	Have you considered storing rain water on site (rain barrels or cisterns) for future irrigation uses?	**Yes**	No	N/A
21	Will surface pollution into storm drains will be mitigated (oil interceptors, bio-swales)? If so, please describe. Bio-swale/rain garden should filter some water from the site.	**Yes**	No	N/A
22	Will this project have an engineered green roof system or has the structure been designed for a future green roof installation?	Yes	**No**	N/A
23	What percentage of the site will be maintained as naturally permeable surfaces?	At least 40% %		

Waste water

24	For larger projects, has Integrated Resource Management (IRM) been considered (e.g. heat recovery from waste water or onsite waste water treatment)? If so, please describe these.	Yes	No	**N/A**

Natural Features/Landscaping

The way we manage the landscape can reduce water use, protect our urban forest, restore natural vegetation and help to protect the watershed and receiving bodies of water.

25	Are any healthy trees being removed? If so, how many and what species? We are proposing to remove a pine and an ornamental cherry, as well as two smaller hazlenuts and replace them with 31 large trees and four small trees (vine maples). We are also keeping the approximate 25-foot chestnut tree in the southeast corner of the lot based on discussions with the neighbours.	**Yes**	No	N/A
	Could your site design be altered to save these trees? We will be excavating near or in all of their root zones.			
	Have you consulted with our Parks Department regarding their removal? I have a permit application that will be submitted.			

26	Will this project add new trees to the site and increase our urban forest? If so, how many and what species? Please see detailed landscaping design, which includes approximately 45 new trees.	**Yes**	No	N/A
27	Are trees [existing or new] being used to provide shade in summer or to buffer winds? We're proposing trees along the Lampson and Colville street frontage, along the property lines and in between buildings to provide shade, buffer winds, give some visual interest throughout the property.	**Yes**	No	N/A
28	Will any existing native vegetation on this site be protected? If so, please describe where and how. However, we will be planting some native species.	Yes	**No**	N/A
29	Will new landscaped areas incorporate any plant species native to southern Vancouver Island? We've chosen mahonia nervosa, ribes, dogwoods, ferns, vine maples, carex and walker's low catmint, and mixed them in with other non-native species to add some colour and texture to the development	**Yes**	No	N/A
30	Will xeriscaping (i.e. the use of drought tolerant plants) be utilized in dry areas?	**Yes**	No	N/A
31	Will high efficiency irrigation systems be installed (e.g. drip irrigation; 'smart' controls)?	**Yes**	No	N/A
32	Have you planned to control invasive species such as Scotch broom, English ivy, Himalayan and evergreen blackberry growing on the property?	**Yes**	No	N/A
33	Will topsoil will be protected and reused on the site?	**Yes**	No	N/A

Energy Efficiency

Improvements in building technology will reduce energy consumption and in turn lower greenhouse gas [GHG] emissions. These improvements will also reduce future operating costs for building occupants.

34	Will the building design be certified by an independent energy auditor/analyst? If so, what will the rating be? _____	Yes	**No**	N/A
35	Have you considered passive solar design principles for space heating and cooling or planned for natural day lighting? Engaged an energy consultant to advise on design. However, we are fairly restricted by the layout of the site, as it is pie shaped and tapers from west to east.	**Yes**	No	N/A
36	Does the design and siting of buildings maximize exposure to natural light? What percentage of interior spaces will be illuminated by sunlight? We expect 70-75 %	**Yes**	No	N/A
37	Will heating and cooling systems be of enhanced energy efficiency (ie. geothermal, air source heat pump, solar hot water, solar air exchange, etc.). If so, please describe. _____ If you are considering a heat pump, what measures will you take to mitigate any noise associated with the pump? _____	Yes	**No**	N/A
38	Has the building been designed to be solar ready?	Yes	**No**	N/A
39	Have you considered using roof mounted photovoltaic panels to convert solar energy to electricity?	**Yes**	No	N/A
40	Do windows exceed the BC Building Code heat transfer coefficient standards? We will use more energy efficient windows along Lampson street frontage	**Yes**	No	N/A
41	Are energy efficient appliances being installed in this project? If so, please describe. Energy star appliances will be used wherever possible within budget.			
42	Will high efficiency light fixtures be used in this project? If so, please describe.	**Yes**	No	N/A
43	Will building occupants have control over thermal, ventilation and light levels?	**Yes**	No	N/A
44	Will outdoor areas have automatic lighting [i.e. motion sensors or time set]?	**Yes**	No	N/A
45	Will underground parking areas have automatic lighting?	Yes	No	**N/A**

Air Quality

The following items are intended to ensure optimal air quality for building occupants by reducing the use of products which give off gases and odours and allowing occupants control over ventilation.

46	Will ventilation systems be protected from contamination during construction and certified clean post construction?	**Yes**	No	N/A
47	Are you using any natural, non-toxic, water soluble or low-VOC [volatile organic compound] paints, finishes or other products? If so, please describe. Paints and adhesives	**Yes**	No	N/A
48	Will the building have windows that occupants can open?	**Yes**	No	N/A
49	Will hard floor surface materials cover more than 75% of the liveable floor area?	Yes	**No**	N/A
50	Will fresh air intakes be located away from air pollution sources?	**Yes**	No	N/A

Solid Waste

Reuse and recycling of material reduces the impact on our landfills, lowers transportation costs, extends the life-cycle of products, and reduces the amount of natural resources used to manufacture new products.

51	Will materials be recycled during demolition of existing buildings and structures? If so, please describe. We will use as much of the rock, fill and leave retaining walls where possible.	**Yes**	No	N/A
52	Will materials be recycled during the construction phase? If so, please describe. Framing wood will be reused for building, as well as rock and fill from site.	**Yes**	No	N/A
53	Does your project provide enhanced waste diversion facilities i.e. on-site recycling for cardboard, bottles, cans and or recyclables or on-site composting?	Yes	No	**N/A**
54	For new commercial development, are you providing waste and recycling receptacles for customers?	Yes	No	**N/A**

Green Mobility

The intent is to encourage the use of sustainable transportation modes and walking to reduce our reliance on personal vehicles that burn fossil fuels which contributes to poor air quality.

55	Is pedestrian lighting provided in the pathways through parking and landscaped areas and at the entrances to your building[s]?	**Yes**	No	N/A
56	For commercial developments, are pedestrians provided with a safe path[s] through the parking areas and across vehicles accesses?	Yes	No	**N/A**
57	Is access provided for those with assisted mobility devices?	Yes	**No**	N/A
58	Are accessible bike racks provided for visitors?	**Yes**	No	N/A
59	Are secure covered bicycle parking and dedicated lockers provided for residents or employees?	**Yes**	No	N/A

60 Does your development provide residents or employees with any of the following features to reduce personal automobile use [check all that apply]:

- ☐ transit passes
- ☑ car share memberships
- ☐ shared bicycles for short term use
- ☐ weather protected bus shelters
- ☑ plug-ins for electric vehicles

As noted in our letter to the mayor and council, we are in discussions with Modo to put a car share vehicle on site and to provide memberships to residents, as well as to wire each garage for future electric chargers.

Is there something unique or innovative about your project that has not been addressed by this Checklist? If so, please add extra pages to describe it.

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MEMORANDUM

To: Ryan Jabs – Lapis Homes

From: Tom Baumgartner, M.Sc., P.Eng.
Tanner Vollema, EIT

Our File #: 2503.B01

Project: Colville & Lampson Developments

Date: August 17, 2018

RE: Transportation Review

1.0 INTRODUCTION

Watt Consulting Group was retained by Lapis Homes to conduct a transportation review for two proposed developments located at the southeast corner of the Lampson Street and Colville Road intersection in Esquimalt, BC. The proposed developments include a 6-unit two-bedroom townhouse development at 937 Colville Road and a 10-unit three-bedroom townhouse development at 825 / 827 Lampson Street and 939 Colville Road. This memo will review the existing site conditions and characteristic, the existing operations of the Lampson Street / Colville Road intersection, the location of the proposed accesses, and the predicted trip generation and parking requirements of the proposed developments. **Figure 1** shows the location of the proposed development sites.

Figure 1: Proposed Development Location

2.0 EXISTING CONDITIONS

The proposed development sites are located on the southeast corner of the Colville Road / Lampson Street intersection in Esquimalt, BC. The development sites are currently zoned as follows:

- 825 Lampson Street: CD-90 (Comprehensive Development No. 90);
- 827 Lampson Street: RS-4 (Single Family Bed and Breakfast Residential);
- 937 Colville Road: RS-1 (Single Family Residential); and
- 939 Colville Road: RS-4 (Single Family Bed and Breakfast Residential).

Adjacent land uses include Two-Family Residential (RD-1 & RD-3), Multiple Family Residential (RM-2), Parks and Open Space (P-2), and Comprehensive Development (CD-32 & CD-70). The proposed development sites are currently accommodating single-family residential homes. The Township of Esquimalt OCP (2018) has designated the site as Townhouse Residential in the Proposed Land Use Designations (Schedule B).

Lampson Street is a two-lane major road with a speed limit of 50km/h. Colville Road is a two-lane local road east of Lampson Street and a two-lane collector road west of Lampson Street. The speed limit on Colville Road is 50km/h with a 30km/h playground zone that begins 20m east of Lampson Street and extends west of Carrie Street. The Lampson Street / Colville Road intersection is two-way stop controlled with the stop control located on Colville Road.

2.1 Current Intersection Operations

The Lampson Street / Colville Road intersection was previously studied by Watt and determined to have a failing level of service (~100 sec delay) for Colville Road approaches in the AM and PM weekday peak hours. The operational level of the intersection is the result of existing traffic levels and traffic control; the proposed developments traffic will not have a significant effect on the intersection volumes (as indicated in Section 5).

3.0 SITE CHARACTERISTICS

The transportation options and services within proximity of the site are as follows:

SERVICES

The development sites are located 300 meters west of the Esquimalt High School and about one kilometer northeast of Rockheights Middle School. The nearest grocery stores are within an 8-10 minute walk and include Craigflower Foods (600 metres away) and Esquimalt Wholesale Club (700 metres away). There are several restaurants within a one-kilometer walk. The sites are located about one kilometer away from the light industrial park in the Devonshire / Viewfield Road area and provide access to employment and services.

TRANSIT

Lampson Street is a public transit route with the nearest southbound transit stop located 40 meters from the development sites and the nearest northbound transit stop located 100 meters from the development sites. These stops are currently serviced by Route 24 (Cedar Hill / Admirals Walk) and by Route 26 (Dockyard / UVic). Additional transit stops on Craigflower Road are located 300 metres north of the development sites and are serviced by Route 14 (Vic General / UVic). **Figure 2** shows the proximity of nearby transit stops.

WALKING

There are paved sidewalks on both sides of Lampson Street and Colville Road. The Lampson Street sidewalks are continuous for the length of the road. On Colville Road, the south sidewalk ends 500m east of the sites and the north sidewalk ends 500m west of the sites; the opposite sidewalks continue until the end of Colville Road. The multi-use E&N Rail Trail is located 100m south of the development sites. The Walkscore for the development sites is 64, which indicates that some errands can be accomplished on foot.[1]

CYCLING

The E&N Rail Trail crosses Lampson Street less than 200 meters south of the development sites. The 17-kilometer trail runs from West Victoria to Langford and provides access to the Galloping Goose Trail and to downtown Victoria via the Esquimalt Road and Johnson Street bike lanes. Bike lanes are also located on Craigflower Road, approximately 300 meters north of the development sites. **Figure 2** shows the proximity of nearby cycling facilities.

CARSHARING

The Modo Car Cooperative ("Modo") is the most popular carsharing service in Greater Victoria. In 2015, there were 23 cars and 800 members; as of March 2018, there are 60 Modo vehicles and 4,136 members across the Greater Victoria region, suggesting that Modo is growing in popularity.[2] The developer has proposed to provide a Modo membership for each unit in both developments as well as a dedicated Modo carshare vehicle space.

[1] Walkscore. https://www.walkscore.com/score/939-colville-rd-victoria-bc-canada
[2] Email correspondence with Modo's Business Development Manager on March 13, 2018.

Figure 2: Proximity of Site to Alternate Modes

4.0 ACCESS REVIEW

4.1 Corner Clearance

Driveway access to each of the developments will be off of Colville Road. The access to the 825 / 827 Lampson Street and 939 Colville Road development will be located 25 metres east of the Lampson intersection and the 937 Colville Road development access will be located 35 metres east of the Lampson intersection. Section 8.8 of the TAC *Geometric Design Guide for Canadian Roads (2017)* suggests a minimum corner clearance of 15 metres between an access and a stop-controlled major intersection. The proposed driveway locations for both developments exceed the recommended corner clearance distance.

4.2 Sightlines

The TAC Geometric Design Guide sets the criteria for minimum sightlines for a vehicle turning from a stop onto a 50km/h roadway at 105 metres for a left turn and 95 metres for a right turn. Looking east, the sightlines for both accesses are in excess of 200 meters; however, the sightline to the west is obstructed by a vertical crest curve located at the Lampson Street / Colville Road intersection which limits the sightline distance to approximately 45m for the 825 / 827 Lampson St and 939 Colville Rd development and 55 metres for the 937 Colville Road development (see **Table 1**).

TABLE 1: SIGHT LINE DISTANCES FOR PROPOSED DRIVEWAY ACCESSES

Access	Movement	Posted Speed	Required Sight Distance (m)	Actual Sight Distance (m)	Achieved
825/827 Lampson St / 939 Colville Rd	Right Turn	50km/h	95	45	**No**
	Left Turn	50km/h	105	200+	Yes
937 Colville Rd	Right Turn	50km/h	95	55	**No**
	Left Turn	50km/h	105	200+	Yes

Considering that traffic turning off of Lampson Street onto Colville Road would have to slow down to speeds of less than 20km/h in order to negotiate the horizontal alignment, and eastbound Colville Road traffic must stop before crossing Lampson Street. The required sight distance for a stopped vehicle turning right onto a 20km/h road is 40m. The sightlines at the proposed accesses are sufficient to allow for a safe exit onto Colville Road. It is recommended that on-street parking is restricted near the accesses so sightlines are not further constrained.

5.0 TRIP GENERATION

New site trips were estimated from the Institute of Transportation Engineers (ITE) *Trip Generation Manual (10th Edition)*. The *Trip Generation Manual* provides trip rates for a wide variety of land uses gathered from actual sites across North America over the past 35 years. The trip generation results are summarized in **Table 2**.

TABLE 2: POST-DEVELOPMENT TRIP GENERATION

ITE Code	Land Use	Units	Trip Rate	Trips In	Trips Out	Total Trips
AM Peak Hour						
220	Multifamily Housing (Low-Rise)	16	0.46/unit	2	5	7
PM Peak Hour						
220	Multifamily Housing (Low-Rise)	16	0.56/unit	6	3	9

The proposed developments will generate 7 trips during the AM peak hour and 9 trips during the PM peak hour. The low volume of trips generated is expected to have a minimal effect on the surrounding traffic operations.

6.0 PARKING REQUIREMENTS

6.1 Proposed Parking Supply

The proposed 10-unit 825 / 827 Lampson Street and 939 Colville Road development will provide a total of 16 parking spots consisting of 10 garage spaces (one for each unit), five (5) visitor stalls, and one (1) Modo carshare.

The proposed 6-unit 937 Colville Road development will provide a total of five (5) parking spaces consisting of four (4) owner stalls and one (1) visitor stall. Two units will not have dedicated parking and will be expected to use alternative transportation.

Secure bicycle parking will also be provided at both developments. At the 825/827 Lampson Street and 939 Colville Road site, secure bicycle parking spaces are provided in each unit's garage. At the 937 Colville Road site, a shared secure storage space will be provided for 10 bikes. An outdoor bicycle lockup will be provided at each site for visitor use.

6.2 Parking Bylaw Requirements

The Township of Esquimalt Parking Bylaw No. 2011 requires townhouse developments to provide 2 parking spaces per dwelling unit, with 1 out of every 4 spaces designated as visitor parking. Under this bylaw, the developments would be required to provide 32 parking spaces; however, past experience in Esquimalt and similar communities has shown the parking demand to be lower than the bylaw requirement. Additionally, the proposed developments will be oriented towards alternative transportation, which will lower the demand for parking spaces.

6.3 Expected Parking Demand

Using the ITE *Parking Generation Handbook (4th ed.)*, the expected parking generation rate for an urban townhouse development (using the ITE Land Use No. 221 – Low/Mid-rise Apartments) is 1.2 spaces per dwelling during the peak demand period (Weekdays from 10PM to 5AM). This would result in a peak parking demand of 19 spaces.

Although conducting a parking study was out of scope of this review, a previous parking study was conducted by Watt Consulting Group in August 2017 for a 16-unit townhouse development in the District of Saanich. The Saanich development is similar in the number and type of units, geographic context, and site characteristics (on a transit route, near to cycle facilities, and a similar walk score of 66). During the study, observations were conducted of the parking demand at several representative townhouse sites. The observations suggest an average parking demand of 0.85 vehicles per unit (see summary in **Table 3**). Applied to the proposed developments, this rate would result in a peak parking demand of 14 spaces.

TABLE 3: PARKING DEMAND OBSERVATIONS (SAANICH PARKING STUDY)

Site	Units	Parking Demand (vehicles / unit)
2633 Shelbourne Street	8	0.75
1827 Fairfield Road	4	1.00
229 Ontario Street	13	0.69
242 Ontario Street	9	0.67
245 Ontario Street	9	1.22
290 Superior Street	7	0.71
130 Niagara Street	14	0.93
	Average	**0.85**

6.4 Parking Demand Reduction

The developer is proposing to reduce the parking demand by prioritizing alternative modes of transportation. In addition to the secure bicycle parking, the developer is proposing to provide a Modo carshare membership to each unit and will include a dedicated Modo carshare vehicle parking space. Access to carsharing programs have been shown to reduce vehicle ownership and lower parking demand. Several municipalities have introduced regulations allowing a reduction in parking requirements where carshare vehicles are easily accessible, including the Cities of Vancouver, New Westminster, Coquitlam, and Richmond. In previous studies where carshare memberships are provided and a carshare vehicle is easily accessible, it is Watt's experience that a 10-15% reduction in parking demand is expected.

7.0 SUMMARY & CONCLUSIONS

The proposed 6-unit two-bedroom townhouse at 937 Colville Road and 10-unit three-bedroom townhouse developments at 825 / 827 Lampson Street and 939 Colville Road in Esquimalt are not expected to incur a significant impact on the surrounding transportation network.

The proposed development will generate few vehicle trips volume of trips and provide minimal off-street parking. This is supported by:

- Pedestrian infrastructure and proximity to schools and commercial areas;
- Nearby transit stops servicing routes to downtown Esquimalt, downtown Victoria, and to the University of Victoria;
- Bike parking (secure and bike racks) and nearby access to Craigflower Road bicycle lanes and the E&N Rail Trail; and
- A dedicated Modo carshare parking space and Modo carshare membership for each unit.

There is adequate sightline distance for the proposed development accesses, however on-street parking should be restricted to provide sufficient sightline to the Lampson Street intersection.

Please contact me if there are any questions or comments at 778-313-1014 (ext 431). Thank you.

Sincerely,
Watt Consulting Group

Tom Baumgartner, M.Sc., P.Eng.
Transportation Engineer