

Our File: 2241-21014

July 14, 2023

City of Victoria
1 Centennial Square
V8W 1P6

Attention: Jack Hu, Sewer & Stormwater Quality Technologist

822 CATHERINE STREET, VICTORIA, BC – SANITARY IMPACT ASSESSMENT REVIEW LETTER

Attached is the information compiled comparing estimated sanitary flows allowed under the existing zoning with estimated flows from a proposed development at 822 Catherine Street in Victoria, BC. We have summarized the information below:

Existing Scenario:

1. The existing zoning is R-2 Zone – Two Family Dwelling District (see attached) and allows for many different uses including two family dwellings, accessory buildings, home occupation and public buildings such as hospitals.
 - a. The analysis assumed a hospital was located at 822 Catherine Street (see attached calculation sheet 2).
2. Total peak sanitary flow was estimated to be 1.28 L/s. This calculation is based on using the Harmon peaking factor.

Proposed Scenario:

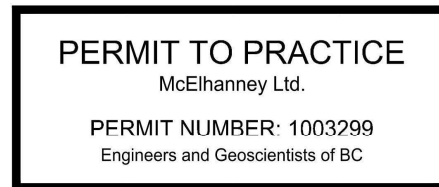
3. Sanitary flow were calculated based on the proposed development:
 - a. Residential – 5 x three bedroom units, 5 x two bedroom units, 15 x one bedroom units and 2 x studio units – see attached calculation sheet 3
 - b. Commercial Unit 1 – assumed restaurant space – see attached calculation sheet 4
4. Total peak sanitary flow was estimated at 0.91 L/s. This calculation is based on using a combined Harmon peaking factor.

The calculations above indicate that the proposed development would not increase the sanitary load on the City system any more than what could be discharged from the site under the existing zoning.

It should be noted that the commercial unit usage is subject to change, however, the above noted calculation provides a general guideline of estimated sanitary flow based on the assumed use.

Please let me know if you have any questions on the above.

Sincerely,
McElhanney Ltd.



Nathan Dunlop, P.Eng.

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Enclosures:

- Sheet 1 – Estimated Sanitary Flow Summary Sheet
 - Sheet 2 – Estimated Sanitary Flow (Existing – assumed Hospital)
 - Sheet 3 – Estimated Sanitary Flow (Proposed – Residential)
 - Sheet 4 – Estimated Sanitary Flow (Proposed – Commercial Unit 1)
- City of Victoria – R-2 Zone – Two Family Dwelling District
5468796 Architecture Inc. drawing AG.0 dated July 14, 2023

Sheet 1 - Estimated Sanitary Flow Summary Sheet

Project: 822 Catherine Street, Victoria, BC
Date: July 14, 2023
Client: Aryze Developments Inc. (as agent for and on behalf of Dimma Pacific Properties Ltd.)
McElhanney File #: 21-014 (4)

Existing Development (R-2 zoning):

Estimated allowable sanitary flows under current zoning

Total flow (see Sheet 2)	1.28 L/s
TOTAL FLOW	1.28 L/s

Proposed Development:

Estimated sanitary flow based on proposed development

Estimated residential flow (see Sheet 3)	0.79 L/s
Estimated commercial flow (see Sheet 4)	0.12 L/s
TOTAL FLOW	0.91 L/s

Sheet 2 - Estimated Sanitary Flow (Existing - assumed Hospital)

Project: 822 Catherine Street, Victoria, BC
Date: July 14, 2023
Client: Aryze Developments Inc. (as agent for and on behalf of Dimma Pacific Properties Ltd.)
McElhanney File #: 21-014 (4)

Current zoning - R-2 - Two Family Dwelling District

-allows for two family dwelling, home occupation, public building and accessory buildings
 -Public Buildings are non-commercial use of land, building and structures for art, cemetery, church, community centre, fire station, court of law, hospital, police station, recreation facility or school
 -floor space ratio (max) = 0.5 to 1, although this does not apply to Public Buildings

For this analysis, we have assumed a Public Building (Hospital) was installed on the consolidated lot

Site area	1,003 sq.m.
Max floor area based on zoning*	251 sq.m.
Area per person**	10 sq.m.
Equivalent Population	25 capita
Per Capita Flow Rate	1,000 L/capita/day (capita = bed)
Average flow =	25,100 L/day
Average Daily Flow	25,100 L/day 0.291 L/s
Peaking Factor -Harmon	4.37
Potential Peak Flow =	1.27 L/s
Site Area =	1,003 sq.m.
Approx. Hard Surface building area =	0 sq.m.
Approx. area for infiltration (allows for infiltration over entire site) =	1,003
Inflow and Infiltration (0.12 L/s/ha)***	0.012 L/s
Total Potential Flow = Potential Peak Flow + Inflow and Infiltration	1.28 L/s

*Floor area not defined under zoning, assumed 25% of the surface area of the lot for the purposes of the calculation

**based on BC Building Code - Table 3.1.17.1 (Occupant Load - Care, treatment and sleeping room areas)

***based on MMCD Design Guideline Manual 2014 (Section 3.5 Infiltration - used old system requirement to provide factor of safety)

Harmon Peaking Factor =

$$\left(\frac{14}{4 + \sqrt{\frac{P}{1000}}} + 1 \right)$$

Sheet 3 - Estimated Sanitary Flow (Proposed - Residential)

Project: 822 Catherine Street, Victoria, BC
Date: July 14, 2023
Client: Aryze Developments Inc. (as agent for and on behalf of Dimma Pacific Properties Ltd.)
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Estimated Residential flow

Total units*	27
TOTAL RESIDENTIAL UNITS	27
Persons per unit**	2.44 Estimated
Equivalent Population	66 capita
Per Capita Flow Rate***	240 L/capita/day
Average flow =	15,792 L/day
Average Daily Flow	15,792 L/day 0.183
Peaking Factor -Harmon (residential only)	4.29
Combined Peaking Factor -Harmon (combined residential and commercial)	4.25
Potential Peak Flow (based on combined peaking factor) =	0.78 L/s
Site Area =	1,003 sq.m.
Approx. Hard Surface building area =	0 sq.m.
Approx. area for infiltration (allows for entire site infiltration) =	1,003
Inflow and Infiltration (0.12 L/s/ha)****	0.012 L/s
Total Potential Flow = Potential Peak Flow + Inflow and Infiltration	0.79 L/s

*based on information provided by 5468796 Architecture Inc. dated July 14, 2023

**based on Ministry of Health Sewerage System Standard Practice Manual (Table II-9 - Per Capita Daily Design Flow for Residences) - see table below

***based on MMCD Design Guideline Manual 2014 (Section 3.2 Per Capita Flow, dry weather)

****based on MMCD Design Guideline Manual 2014 (Section 3.5 Infiltration - used old system requirement to provide factor of safety)

Harmon Peaking Factor =
$$\left(\frac{14}{4 + \sqrt{\frac{P}{1000}}} + 1 \right)$$

People per unit calculation:

	Units	Cap/unit	Capita
Number of 4 bedroom units	0	4.5	0
Number of 3 bedroom units	5	3.75	18.75
Number of 2 bedroom units	5	3	15
Number of 1 bedroom units	15	2	30
Number of studio units	2	1	2
TOTAL	27		65.75
Therefore, Persons per unit = total capita/total units =			2.44

Sheet 6 - Estimated Sanitary Flow (Proposed - Commercial Unit 2)

Project: 822 Catherine Street, Victoria, BC
Date: July 14, 2023
Client: Aryze Developments Inc. (as agent for and on behalf of Dimma Pacific Properties Ltd.)
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Estimated Commercial flow (actual use unknown, assumed RESTAURANT USE)

Commercial Space*	910 sq.ft. 85 sq.m.
Average floor space per person** =	3 sq.m
Average Person =	$\frac{\text{Avg Floor Space for Seats}}{\text{Average floor space per person}}$ = 28 people
Average Sanitary Discharge per person*** =	90 L/cap/day
Total Allowable Sanitary Discharge for site =	$\text{Avg Sanitary Discharge per person} \times \text{No of People}$ = 2,520 L/day 0.03 L/s
Peaking Factor -Harmon (this commercial only)	4.36
Combined Peaking Factor -Harmon (combined residential and both commercial)	4.25
Potential Peak Flow (based on combined peaking factor) =	0.12 L/s
Site Area =	0 sq.m.
Approx. Hard Surface building area =	0 sq.m.
Approx. area for infiltration =	0
Inflow and Infiltration (0.12 L/s/ha)****	0.000 L/s //flow accounted for in Residential
Total Potential Flow = Potential Peak Flow + Inflow and Infiltration****	0.12 L/s

*based on information provided by 5468796 Architecture Inc. dated July 14, 2023

**includes allowance for structure and common space

***Per Capita Flow rate based on Ministry of Health Sewerage System Standard Practice Manual (Restaurant, full service, per seat)

Harmon Peaking Factor = $\left(\frac{14}{4 + \sqrt{\frac{P}{1000}}} + 1 \right)$

****No additional infiltration as infiltration is accounted for in the residential flow sheet

PART 2.1 - R-2 ZONE, TWO FAMILY DWELLING DISTRICT

2.1.1 Permitted Uses

- a. Two family dwelling subject to the regulations in this Part
- b. Uses permitted in the R1-B Zone, Single Family Dwelling District, subject to the regulations set out in Part 1.2 of the Zoning Regulation Bylaw
- c. Home occupation subject to the regulations in Schedule "D"
- d. Accessory buildings subject to the regulations in Schedule "F"
- e. Public building
- f. Garage sales limited to no more than 2 in any year
- g. Commercial exhibits existing prior to January 1, 2011
- h. notwithstanding paragraphs a. through g., the only uses permitted on a panhandle lot created by way of subdivision after July 10, 2009, are the uses described in paragraphs b., c. (subject to the regulations in Schedule "D"), d. and f., which uses are subject to the regulations in Schedule "H"
- i. notwithstanding paragraphs a. through h., the only use permitted on a lot with a site area less than 230m² or with an average lot width less than 7.5m is a private garage

2.1.2 Site Area, Lot Width

- | | |
|---|--|
| a. <u>Site area</u> (minimum) | 555m ² |
| b. <u>Site area</u> for each <u>dwelling unit</u> (minimum) | 277.5m ² |
| c. <u>Lot width</u> (minimum average) | 15m |
| d. <u>Panhandle lot</u> | Subject to the regulations in Schedule "H" |

2.1.3 Floor Area of the Principal Building

- | | |
|--|-------------------|
| a. <u>Floor space ratio</u> (maximum) | 0.5 to 1 |
| b. Floor <u>area</u> per <u>dwelling unit</u> (minimum) | 46m ² |
| c. Floor <u>area</u> , for the first and second storeys combined (maximum) | 280m ² |
| d. Floor <u>area</u> , of all floor levels combined (maximum) | 380m ² |
| e. <u>Public buildings</u> | Not applicable |

(Amended Bylaw 15-001 adopted March 26, 2015) and (Amended Bylaw 17-050 adopted June 8, 2017)

Words that are underlined see definitions in Schedule "A" of the Zoning Regulation Bylaw

PART 2.1 - R-2 ZONE, TWO FAMILY DWELLING DISTRICT

2.1.4 Height, Storeys, Roof Decks

- | | |
|--|---|
| a. <u>Two family dwelling building</u> (maximum) | 7.6m in <u>height</u> and 2 <u>storeys</u> if the <u>building</u> does not have a <u>basement</u> |
| | 7.6m in <u>height</u> and 1½ <u>storeys</u> if the <u>building</u> has a <u>basement</u> |
| b. <u>Public building</u> (maximum) | 11m in <u>height</u> or the <u>width</u> of the <u>lot</u> whichever is lesser and 2 ¹ / ₂ <u>storeys</u> |
| c. <u>Roof deck</u> | Not permitted |

2.1.5 Setbacks and Projections

- | | |
|--|--|
| a. <u>Front yard setback</u> (minimum) except for the following maximum projections into the <u>setback</u> : <ul style="list-style-type: none">• steps and <u>porch</u> (maximum)• bay windows (maximum) | The lesser of 7.5m and the average of the actual <u>setbacks</u> of the <u>buildings</u> on the <u>lots</u> abutting the sides of the <u>lot</u>
3.5m
0.6m |
| b. <u>Rear yard setback</u> (minimum) | 10.7m or 35% of <u>lot depth</u> whichever is greater |
| c. <u>Side yard setbacks</u> from interior <u>lot lines</u> (minimum) | 1.5m or 10% of the <u>lot</u> width whichever is greater
3.0m for one <u>side yard</u> when the lot is not serviced by a rear lane |
| d. Combined <u>side yard setbacks</u> (minimum) | 4.5m |
| e. <u>Side yard setbacks</u> on a flanking <u>street</u> for a <u>corner lot</u> (minimum) | 3.5m or 10% of the <u>lot</u> width whichever is greater |
| f. Eave projections into <u>setbacks</u> (maximum) | 0.75m |

2.1.6 Site Coverage, Open Site Space, Parking

- | | |
|-------------------------------------|--|
| a. <u>Site coverage</u> (maximum) | 40% |
| b. <u>Open site space</u> (minimum) | 30% of the <u>area</u> of the <u>lot</u> and 33% of the <u>rear yard</u> |
| c. Parking | Subject to the regulations in Schedule “C” |

2.1.7 Outdoor Features

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|--|
| a. The <u>setbacks</u> set out in section 1.1.5 apply to <u>outdoor features</u> , as though they are <u>buildings</u> |
| b. <u>Outdoor features</u> may not exceed a height of 3.5m from <u>natural grade</u> or <u>finished grade</u> , whichever is lower |

(Amended Bylaw 15-001 adopted March 26, 2015) and (Amended Bylaw 17-050 adopted June 8, 2017)

Words that are underlined see definitions in Schedule “A” of the Zoning Regulation Bylaw

