



## COUNCIL REPORT

Report Date: May 25, 2023  
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VanRIMS No.: 08-2000-20  
Meeting Date: June 13, 2023  
[Submit comments to Council](#)

TO: Vancouver City Council

FROM: General Manager of Development, Buildings and Licensing;  
General Manager of Engineering Services; and the Chief Building Official

SUBJECT: Plumbing and Administrative Amendments to the Vancouver Building By-law,  
Water Works By-law and By-law Notice Enforcement By-law

### Recommendations

- A. THAT Council approve, in principle, amendments to the Building By-law regarding once through cooling, drains, public health protection regulations, and housekeeping amendments as described in this report and as generally set out in Appendix A;

FURTHER THAT the Director of Legal Services be instructed to bring forward for enactment by Council, a by-law to amend the Building By-law, set out in Appendix A, to be effective immediately upon enactment.

- B. THAT Council approve, in principle, amendments to the Water Works By-law regarding connections to non-recirculating applications and backflow prevention as described in this report and as generally set out in Appendix B;

FURTHER THAT the Director of Legal Services be instructed to bring forward for enactment by Council, a by-law to amend the Water Works By-law, set out in Appendix B, to be effective immediately upon enactment.

- C. THAT Council approve, in principle, amendments to the By-law Notice Enforcement By-law regarding contraventions of the Building By-law as described in this report and as generally set out in Appendix C;

FURTHER THAT the Director of Legal Services be instructed to bring forward for enactment by Council, a by-law to amend the By-law Notice Enforcement By-law, set out in Appendix C, to be effective immediately upon enactment.

## **Purpose and Executive Summary**

This plumbing report proposes to simplify regulations, introduce health protection measures, and provide a ticketing alternative to prosecution for contraventions of public health significance. It also proposes housekeeping amendments to the Building By-law.

## **Council Authority/Previous Decisions**

On November 4, 2010 ([RTS 8908](#)), Council approved the By-law Notice Enforcement By-law, since amended, as an alternative to court-based prosecution.

On April 12, 2017 ([RTS 11716](#)), Council approved phasing out once through cooling, amending this regulation most recently on December 6, 2022 ([RTS 15148](#)).

On December 5, 2018 ([RTS 12782](#)), Council approved requirements pertaining to water closets and geexchange systems. Council also approved unanimously measures for *Legionella* prevention, and amended these unanimously on June 10, 2020 ([RTS 13842](#)).

## **City Manager's Comments**

The City Manager concurs with the foregoing recommendations.

## **Context and Background**

This report recommends plumbing-related changes to the Building By-law, Water Works By-law and By-law Notice Enforcement By-law. The proposals respond to Council direction to simplify regulations and have as their overarching objective public health protection.

Many of the recommendations build on the City's efforts to prevent Legionnaires' disease, a serious type of pneumonia that results from exposure to contaminated aerosols. Nearly all patients diagnosed with the disease are hospitalised and about 7% die. In 2018 the City of Vancouver established the Operating Permit program ([vancouver.ca/operating-permit](http://vancouver.ca/operating-permit)), which has been recognised by the U.S. Centers for Disease Control and Prevention and has been a reference for others developing regulations (such as the Province of New Brunswick).

The City of Vancouver Operating Permit program has been a demonstrable success: In 2021, 30 cooling towers at 16 facilities, including two hospitals, reported *Legionella pneumophila* concentrations that required corrective measures. Without this program, it is unknown for how long these issues would have persisted. More detail is in a peer-reviewed article in an official journal of the World Health Organization and the International Water Association ([doi.org/10.2166/wh.2023.154](https://doi.org/10.2166/wh.2023.154)).

## Discussion

This report proposes to simplify plumbing regulations pertaining to drain sizes, once through cooling and operating permits:

- The minimum prescribed size for drainage pipes serving three or more water closets is recommended to be eliminated to prevent oversizing and unsanitary conditions.<sup>1</sup>
- Once through cooling requirements are currently within both the Water Works By-law and the Building By-law, and this report recommends solely the latter for these regulations, where they are more logically housed administratively.
- The threshold for certain operating permit requirements is recommended to be relaxed from four to eight dwelling units in buildings of solely residential occupancy, in response to the evolving built form of residential properties.<sup>2</sup>

Presently, open-loop geexchange systems — “pump and dump” configurations which extract groundwater and then discharge this into the sewer system — are prohibited for buildings of residential occupancy with four or fewer dwelling units. Now, with the same-sized residential properties potentially having more dwelling units, this report recommends amending the open-loop geexchange prohibition to eight or fewer dwelling units.

For *Legionella* prevention, the report makes three proposals regarding hot water:

- It is recommended that reference be eliminated to a third-party energy efficiency standard contradicting the Building By-law requirement for a minimum hot water *storage* temperature of 60 °C (140 °F).<sup>3</sup>
- A minimum hot water *distribution* temperature of 49 °C (120 °F) in new buildings is recommended, in line with domestic and international best practices.<sup>4</sup>
- Drain water heat recovery units are recommended to direct warmed water only to service water heaters, in harmony with requirements in the Province of Quebec.<sup>5</sup>

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<sup>1</sup> Aligns with a proposed change to the 2020 National Plumbing Code (proposed change 1390): [https://ccbfcc-cccipi.ca/eng/public-review/2023\\_1/pcfs/npc20\\_divb\\_02.04.09.02\\_001390.html](https://ccbfcc-cccipi.ca/eng/public-review/2023_1/pcfs/npc20_divb_02.04.09.02_001390.html)

<sup>2</sup> No Operating Permit would be required for a building water treatment system, non-potable water system, or decorative water feature.

<sup>3</sup> Hot water storage temperature adjustment from 49 °C (120 °F) or lower is required by ASHRAE Standard 90.1-2022 “Energy Standard for Sites and Buildings Except Low-Rise Residential Properties” in Article 7.4.4., which not only contradicts the Building By-law (Book II, Division B, Sentence 2.6.1.12.(1)) but also ASHRAE Guideline 12-2020 “Managing the Risk of Legionellosis Associated with Building Water Systems.” City staff have notified ASHRAE of this inconsistency.

<sup>4</sup> As a domestic example, see Public Services and Procurement Canada standard MD 15161-2013 “Control of *Legionella* in Mechanical Systems” (section 6.4): <https://www.tpsgc-pwgsc.gc.ca/biens-property/documents/legionella-eng.pdf>. Internationally, refer to the U.S. Centers for Disease Control and Prevention: <https://www.cdc.gov/legionella/downloads/Control-Toolkit-Potable-Water.pdf>

<sup>5</sup> See <https://www.rbg.gouv.qc.ca/domaines-d'intervention/plomberie/interpretations-et-directives-techniques/branchement-des-systemes-de-recuperation-de-chaleur-des-eaux-de-drainage-attention-aux-legionelles/> [in French only].

The hot water proposals align with the requirements of the Standards of Maintenance By-law,<sup>6</sup> and were part of the stakeholder consultation process described in the accompanying Referral Report (RTS 15424). The sole objection was from a distributor of drain water heat recovery units who wished to allow such units to also feed showers directly. Staff considered material shared (in French) by the vendor, the Province of Quebec’s regulation, peer-reviewed articles, reports commissioned by state jurisdictions, and conversations with North American experts, and applying the precautionary principle, recommend that such devices only feed service water heaters, where the warmed water can be heated up to 60 °C (140 °F).

Also in support of *Legionella* prevention is the City’s Operating Permit program. With the aim of encouraging compliance with by-law requirements, this report recommends providing a ticketing alternative to prosecution for specified contraventions such as the failure to report a *Legionella* test result.

Finally, an exemption is proposed for health care facilities and for medical sterilization devices from the prohibition of using potable water to temper condensate discharged to the sewer, and housekeeping amendments are proposed to the Building By-law to address clerical errors.

### **Financial Implications**

There are no financial implications associated with this report’s recommendations.

### **Legal Implications**

Council has the authority under the Vancouver Charter to make by-laws for regulating the installation of plumbing facilities, for fixing standards for plumbing facilities, for protecting the health of inhabitants and for preventing, prohibiting and remedying insanitary conditions in the city under sections 306(1)(l), 330(a) and 330(b).

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<sup>6</sup> The [Standards of Maintenance By-law](#) specifies that for a hand basin, bathtub, shower or sink, the hot water must be supplied at a minimum temperature of 49 °C and a maximum of 60 °C (section 16.1(2)), with an equivalent requirement for lodging house operators (section 21.4(a)).

## APPENDIX A

### DRAFT

#### **A By-law to amend Building By-law No. 12511 regarding Once Through Cooling, Drains, Public Health Protection Regulations, and Housekeeping Amendments**

*Note: A By-law will be prepared generally in accordance with the provisions listed below, subject to change and refinement prior to posting.*

1. This by-law amends the indicated provisions of Building By-law No. 12511.
2. In Article 10.2.2.2. of Book I, Division B, Council:
  - (a) in Clause 2(f), strikes out “and”;
  - (b) in Clause 2(g), strikes out “Appendix G.” and substitutes “Appendix G, and”; and
  - (c) adds a new Clause 2(h) as follows:

“h) no requirement to comply with Service Water-Heating System Controls, per ASHRAE 90.1, Article 7.4.4. (See Article 2.6.1.12. of Division B of Book II (Plumbing Systems) of this By-law.)”.
3. In Section 2.2 of Book II, Division B, Council:
  - (a) in Sentence 2.2.10.17.(3), strikes out “4 principal” and substitutes “8 principal”;
  - (b) in Sentence 2.2.11.4.(1), strikes out “Sentence (2)” and substitutes “Sentence (3)”;
  - (c) in Article 2.2.11.4.:
    - (i) renumbers Sentence (2) as Sentence (3),
    - (ii) adds a new Sentence (2) as follows:

“**2** Except as provided in Sentences (3) and (4), all equipment, machinery, appliances or fixtures listed in Clauses (1)(a) through (d) that are connected to the *City’s* water system shall be disconnected.”;
  - (d) in Sentence 2.2.11.4.(3):
    - (i) adds “or may retain an existing connection to the *City’s* water system” after “may be connected to the *City’s* water system”, and
    - (ii) strikes out “or *City Engineer*”;

- (e) in Article 2.2.11.4., adds the following new Sentence:

**“4)** Where, in the opinion of the *Chief Building Official* in consultation with the *City Engineer*, the cost of disconnecting *once through cooling equipment* from the *City’s* water system and replacing it with other cooling equipment is unreasonable, taking into account any relevant factors, which may include the following

- a) the current water flow rate compared to the expected reduction in water consumption if the equipment is disconnected,
- b) where the equipment is in its life cycle,
- c) the potential impact the disconnection and replacement of the equipment, including any required renovations, will have on business operations,
- d) the cost to replace the equipment relative to the expected reduction in water and sewer costs, and
- e) where applicable, the cost to replace the equipment relative to the operational size,

the *once through cooling equipment* may retain an existing connection to the *City’s* water system at the discretion of the *Chief Building Official* until a specified expiry date and, if permitted, Clauses 2.2.11.4.(3)(a) through (c) shall apply.”;

- (f) in Sentence 2.2.11.5.(4), strikes out “4 principal” and substitutes “8 principal”;

- (g) in Article 2.2.11.6.:

(i) in Sentence (4), strikes out “The *Chief Building Official* shall be notified,” and substitutes “The owner of a *cooling tower*, or their authorized representative, shall notify the *Chief Building Official*,”; and

(ii) In Sentence (8), strikes out “the response set out in Table 2.2.11.6. shall be undertaken.” and substitutes “the owner of a *cooling tower*, or their authorized representative, shall undertake the response set out in Table 2.2.11.6.”; and

- (h) in Article 2.2.11.7.:

(i) in Sentence (1), strikes out “4 principal” and substitutes “8 principal”;

(ii) in Sentence (3), strikes out “The *Chief Building Official* shall be notified,” and substitutes “The owner of a *decorative water feature*, or their authorized representative, shall notify the *Chief Building Official*,”; and

(iii) in Sentence (8), strikes out “the response set out in Table 2.2.11.7. shall be undertaken.” and substitutes “the owner of a *decorative water feature*, or their authorized representative, shall undertake the response set out in Table 2.2.11.7.”.

4. In Sentence 2.4.4.2.(2) of Book II, Division B, Council strikes out “No systems or equipment” and substitutes “Except within health care facilities or for medical sterilization devices, no systems or equipment”.
5. In Article 2.4.9.2. of Book II, Division B, Council:
  - (a) strikes out Sentences (2) and (3); and
  - (b) renumbers Sentence (4) as Sentence (2).
6. In Article 2.6.1.1. of Book II, Division B, Council adds the following new Sentences:

**“3) In a hot *water distribution system* with a recirculation loop, the temperature of the water being recirculated shall not be less than 49°C at any point of the system.**

**4) The recirculation loop described in Sentence (3) may be replaced by a self-regulating heat tracing system.”.**
7. In Article 2.6.1.12. of Book II, Division B, Council adds the following new Sentence:

**“2) Drain water heat recovery units shall only be used to supply *service water heaters*.”.**
8. In Section 2.7. of Division B of Book II, Council:
  - (a) in Sentence 2.7.7.2.(1), inserts “by the owner of an *alternate water source system*, or their authorized representative,” between the words “submitted” and “to”;
  - (b) in Sentence 2.7.7.3.(1), strikes out “the response set out in Table 2.7.7.3. shall be undertaken.” and substitutes “the owner of an *alternate water source system*, or their authorized representative, shall undertake the response set out in Table 2.7.7.3.”; and
  - (c) in Sentence 2.7.4.1.(5), strikes out “the response set out in Table 2.7.4.1. shall be undertaken.” and substitutes “the owner of an *alternate water source system*, or their authorized representative, shall undertake the response set out in Table 2.7.4.1.”.
9. In Table 2.8.1.1. of Book II, Division B, Council:
  - (a) under “2.4.9.2. Serving Water Closets”,
    - (i) deletes rows (2) and (3), and
    - (ii) renumbers row (4) as row (2);
  - (b) adds in correct numerical order, under “2.6.1.1. Design” the following new rows:

**“(3) [F40-OH1.1]**  
**(4) [F40-OH1.1]”; and**





**APPENDIX B**

**DRAFT**

**A By-law to amend the Water Works By-law No. 4848 regarding Connections to Non-Recirculating Applications and Backflow Prevention**

*Note: A By-law will be prepared generally in accordance with the provisions listed below, subject to change and refinement prior to posting.*

1. This by-law amends the indicated provisions of Water Works By-law No. 4848.
2. In section 1.1, Council strikes out the following definitions in their entirety:
  - (a) emergency once through cooling equipment;
  - (b) maintenance once through cooling equipment;
  - (c) non-recirculating liquid ring pump; and
  - (d) once through cooling equipment.
3. Council strikes out section 3.9.
4. Council strikes out section 3.10.
5. Council renumbers sections 3.11, 3.12, 3.13 and 3.14 as sections 3.9, 3.10, 3.11 and 3.12, respectively.
6. In Schedule H, Council strikes out “Once through cooling equipment permit fee 184.00”.
7. In Schedule J, Council strikes out the row corresponding to “Non-potable Water System, using rainwater or clear-water waste – Potable Make-up Water” and substitutes:

Non-potable Water System – Potable Make-up Water	High	AG or RPBA
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8. This by-law is to come into force and take effect on the date of its enactment.

ENACTED by Council this      day of      , 2023

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Mayor

\_\_\_\_\_  
City Clerk

**APPENDIX C**

**DRAFT**

**A By-law to amend the By-law Notice Enforcement By-law No. 10201 regarding Operating Permit enforcement**

*Note: A By-law will be prepared generally in accordance with the provisions listed below, subject to change and refinement prior to posting.*

1. This by-law amends the indicated provisions of By-law Notice Enforcement By-law No. 10201.
2. In section 7.3, Council inserts “all Supervisors and Managers of Plumbing and Mechanical Inspections,” after “all Supervisors and Managers of Revenue Services,”.
3. Council strikes the word “and” at the end of section 8(b), renumbers section 8(c) as 8(d) and inserts a new section 8(c) as follows:  
 “(c) District Plumbing and Mechanical Inspectors and Operating Permit Clerks as by-law enforcement officers for the purposes of enforcing all the Building By-law, Book II (Plumbing Systems) contraventions set out in Schedule A of this By-law; and”.
4. At the end of Schedule A, but before the sentence “In this By-law all penalties, discounts and surcharges are dollar (\$) amounts.” Council adds the following

“

<b>By-law and By-law Section</b>	<b>Description</b>	<b>A1 Penalty</b>	<b>A2 Discount</b>	<b>A3 Surcharge</b>
<b>Building By-law (Book II (Plumbing Systems))</b>				
Division C, Sentence 1.6.9.1.(1)	No Operating Permit	500	250	250
Division C, Sentence 1.6.9.4.(1)	No certification	500	250	250
<i>Cooling Tower</i>				
Division B, Clause 2.2.11.6.(4)(a)	Failure to notify of start-up	250	125	125
Division B, Clause 2.2.11.6.(4)(b)	Failure to provide a <i>Legionella pneumophila</i> test result	500	250	250
Division B, Sentence 2.2.11.6.(8)	Failure to conduct required response to meet <i>Legionella</i> standards	500	250	250

<i>Decorative Water Feature</i>				
Division B, Clause 2.2.11.7.(3)(a)	Failure to notify of start-up	250	125	125
Division B, Clause 2.2.11.7.(3)(c)	Failure to provide a <i>Legionella pneumophila</i> test result	500	250	250
Division B, Sentence 2.2.11.7.(8)	Failure to conduct required response to meet <i>Legionella</i> standards	500	250	250
<i>Non-Potable Water System</i>				
Division B, Clause 2.7.7.2.(1)(a)	Failure to provide documentation	500	250	250
Division B, Sentence 2.7.7.3.(1)	Failure to conduct required response to meet water quality standards	500	250	250
Division B, Sentence 2.7.4.1.(5)	Failure to conduct required response to meet water quality standards for a system installed prior to January 1, 2019	500	250	250

”

5. A decision by a court that any part of this by-law is illegal, void, or unenforceable severs that part from this by-law, and is not to affect the balance of this by-law.

6. This By-law comes into force and takes effect upon enactment.

ENACTED by Council this \_\_\_\_\_ day of \_\_\_\_\_, 2023

\_\_\_\_\_  
Mayor

\_\_\_\_\_  
City Clerk