CITY OF VANCOUVER

REFERRAL REPORT

Report Date: August 19, 2025
Contact: Saul Schwebs
Contact No.: 604.873.7040
RTS No.: 17861
VanRIMS No.: 08-2000-20
Meeting Date: September 16, 2025

TO: Vancouver City Council

FROM: General Manager of Development, Buildings & Licensing, General Manager of Engineering Services and the Chief Building Official, in consultation with the General Manager of Planning, Urban Design and Sustainability

SUBJECT: Alleviating Sewer Infrastructure Issues Through On-Site Rainwater Management

RECOMMENDATION TO REFER

THAT the General Manager of Planning, Urban Design and Sustainability be instructed to make application to bring forward the by-law amendments as described below and that the application be referred to Public Hearing together with the recommendations set out below;

FURTHER THAT the Director of Legal Services be instructed to prepare the necessary by-laws, in accordance with the recommendations set out below, for consideration at the Public Hearing.

RECOMMENDATION FOR PUBLIC HEARING

A. THAT Council approve, in principle, amendments to the Building By-law regarding rainwater management regulations for new buildings, generally as presented in Appendix A;

FURTHER THAT the Director of Legal Services be instructed to bring forward for enactment an amendment to the Building By-law generally in accordance with Appendix A.

B. THAT subject to approval of Recommendation A, Council approve, in principle, an application to amend the Zoning and Development By-law to eliminate storm water requirements from the First Shaughnessy District Schedule, generally as presented in Appendix B;

FURTHER THAT the Director of Legal Services be instructed to bring forward for enactment amendments to the Zoning and Development By-law generally in accordance with Appendix B.

C. THAT subject to approval of Recommendation B, Council approve, in principle, an application to amend the Heritage Conservation Area Official Development Plan (HCA ODP) to eliminate storm water guidelines from the First Shaughnessy Heritage Conservation Area Design Guidelines (Appendix A3 of the HCA ODP) generally as presented in Appendix C;

FURTHER THAT the Director of Legal Services be instructed to bring forward for enactment amendments to the Heritage Conservation Area Official Development Plan, generally in accordance with Appendix C;

D. THAT subject to approval of Recommendation A, Council approves, in principle, applications to:

(i) amend CD-1 (211) By-law No. 6314 for 2502 East 26th Avenue, to eliminate storm water requirements, generally as presented in Appendix D;

(ii) amend CD-1 (212) By-law No. 6315 for 2709-2791 East 28th Avenue, to eliminate storm water requirements, generally as presented in Appendix E;

(iii) amend CD-1 (214) By-law No. 6317 for 2960 East 29th Avenue, to eliminate storm water requirements, generally as presented in Appendix F;

(iv) amend CD-1 (218) By-law No. 6321 for 3301-3347 Clive Avenue and 3330 Vanness Avenue, to eliminate storm water requirements, generally as presented in Appendix G;

(v) amend CD-1 (223) By-law No. 6361 for 2750-2798 East 28th Avenue and 4400-4402 Kaslo Street, to eliminate storm water requirements, generally as presented in Appendix H;

(vi) amend CD-1 (225) By-law No. 6363 for 5092 McHardy Street and 3263-3277 and 3311-3327 Vanness Avenue, to eliminate storm water requirements, generally as presented in Appendix I; and

(vii) amend CD-1 (241) By-law No. 6528 for 5003-5399 Boundary Road, to eliminate storm water requirements, generally as presented in Appendix J;

E. THAT subject to approval of Recommendation D, at the time of enactment of the amendments to the above by-laws, the General Manager of Planning, Urban Design and Sustainability be instructed to bring forward for approval amendments to the Joyce Station Area CD-1 Guidelines (Vanness Avenue North, Rae Avenue & 5000-5300 Blocks Boundary Road) (By-law No. 6528) to eliminate storm water requirements, generally as presented in Appendix K; and

F. THAT subject to approval of Recommendation A, at the time of enactment of the amendments to the above by-laws, the General Manager of Planning, Urban

Design and Sustainability be instructed to bring forward for approval amendments to the Transit-Oriented Areas Rezoning Policy to eliminate site-specific rainwater management requirements, generally as presented in Appendix L.

REPORT SUMMARY

Staff recommend an update to city-wide rainwater management requirements to mitigate the impacts of development on sewer system capacity, reduce application-triggered sewer capacity reviews and upgrade requirements, and help meet regulatory obligations. The amendments would apply to new developments on sites exceeding 1,000 m^2 and for buildings exceeding 1.0 FSR (floor space ratio) effective January 1, 2026. Implementation would continue through the streamlined process of the Building By-law, with the concurrent elimination of rainwater requirements from the First Shaughnessy District Schedule and several CD-1 by-laws.

COUNCIL AUTHORITY/PREVIOUS DECISIONS

- Council has legislated private property rainwater management to address sewer system impacts on receiving waters and to fulfill the City's requirements in the Metro Vancouver Integrated Liquid Waste and Resource Management Plan (approved by the Province in 2011; summary in RTS 15424).

- Council adopted the 3-3-3-1 Permit Approval Framework in June 2023 to help increase the supply of housing (meeting minutes).

- Council approved city-wide rainwater management requirements in the Building By-law for complex buildings effective January 1, 2024 (RTS 15424) and for low-density buildings effective July 1, 2025 (RTS 16455).

- The Vancouver Charter permits Council to regulate plumbing facilities in and about buildings and premises, including the means of connections with sewers (section 306); to regulate the disposal of surface water (section 302); and to prohibit the erection of any building unless due provision is made for sanitary facilities and drainage (section 565A).

CITY MANAGER'S/GENERAL MANAGER'S COMMENTS

The City Manager recommends approval of the foregoing.

REPORT

Background/Context

The City's sewer and drainage system is in place to enable safe and reliable collection, conveyance and management of sanitary sewage and rainwater runoff; the management of flood risk; and the protection of the ecosystem. The system collects sanitary waste and drainage

from more than 100,000 service connections from homes and businesses, curbs and gutters and flows into 44,000 catch basins, a system of pipes 2,140 km in length and 25 pump stations.

The City's sewer and drainage system is complex with 42% combined pipes, where sanitary sewage, groundwater and rainwater are conveyed in the same pipe, and 58% separated sanitary and stormwater sewer pipes. The regional Integrated Liquid Waste and Resource Management Plan requires 1% of the overall sewer system to be separated per year to reduce combine sewer overflows (CSOs) and flows to wastewater treatment plants. Increased investment has doubled annual sewer separation rates since 2019, with 0.6% of the system separated in 2024, but this remains short of the regulatory requirement.

While 58% of the sewer pipes have been separated, the sewer system is considered functionally combined as the majority of separated pipes connect into downstream combined pipes, so that even separated sanitary sewage, groundwater and rainwater are ultimately conveyed in the same pipe. The conveyance of rainwater in the same pipe results in negative system impacts when it rains. Rainwater accounts for about 42% of the 250 billion litres conveyed through the City's sewer system per year.[1]

Further, individual connections servicing private lots also require separation to achieve full system separation. As private properties are redeveloped, their sewer connections are separated and additional density typically places more demand on the sewer system. This increases the risk of sewer back-ups, flooding and untreated sewage overflows into receiving waters. Vancouver is required by the Integrated Liquid Waste and Resource Management Plan to eliminate CSOs by 2050.

To manage redevelopment impacts on the sewer system, and complementing investments by the City of Vancouver and the Metro Vancouver Regional District into improved sewage and drainage services, Council has enacted on-site rainwater management regulations for new developments. These are expressed in the Building By-law through two compliance pathways (Figure 1):

- The *small site pathway* applies to most new low-density developments such as single detached homes, duplexes, and multiplexes, on sites up to 1,000 m^2 (or about 10,764 sq. ft.).

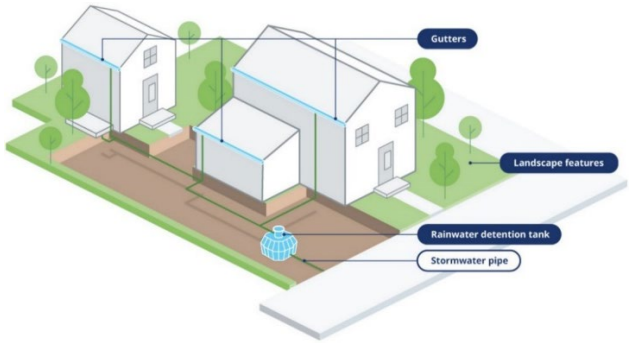
- The *engineered pathway* applies to new developments on sites larger than 1,000 m^2 and/or exceeding a floor space ratio (FSR) of 1.0.

Several site-specific rainwater management requirements also exist in CD-1 by-laws and the First Shaughnessy District Schedule. Furthermore, Engineering Services staff conduct sewer capacity reviews on new rezoning applications and select development permit applications, which may result in a costly sewer upgrade condition or a customised rainwater management requirement. The unpredictability of the outcomes of these resource-intensive reviews and the implications to development viability are acknowledged in a recent report to Council on housing supply (RTS 17891).

Longer term, the City's Healthy Waters Plan aims to guide investments, programs and regulations for the renewal and growth of the City's sewer system while reducing CSOs. This

[1] Estimated from analyses completed as part of the ongoing Healthy Waters Plan.

includes focusing sewer separation efforts near receiving waters so that rainwater and groundwater flow directly to waterways and not into combined pipes. One of the three "key directions" approved unanimously by Council in February 2025 was to optimise rainwater management policy for redevelopment (RTS 15549). This is advancing through the City's directions for growth and change, such as within the Rupert and Renfrew Station Area Plan, which calls for more on-site rainwater management by new developments to reduce the need for more expensive infrastructure upgrades (RTS 17631).

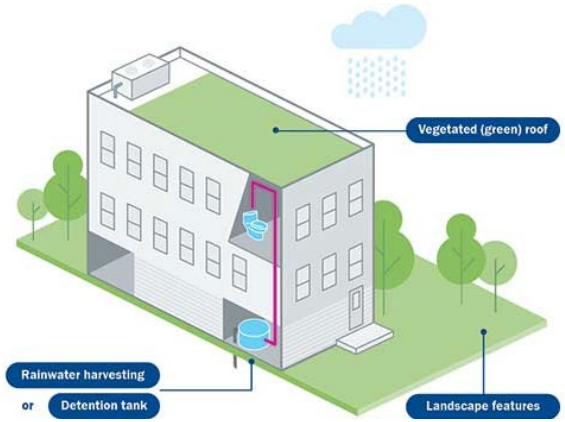


Small Site Pathway

For sites up to 1,000 m^2 and up to 1.0 FSR. Includes most single detached homes, duplexes and multiplexes.

No changes are proposed to the requirements. A contractor selects one of four detention tank configurations pre-calculated by Engineering Services staff. An owner's engineer is not required.

No changes are proposed to the permit process. Compliance verification remains at the plumbing inspection stage.



Engineered Pathway

For sites exceeding 1,000 m^2 and/or exceeding 1.0 FSR.

Currently, rainwater storage is designed by an owner's engineer to meet the requirements of minimum volume and maximum release rate to protect sewer system capacity.

This report recommends increasing the storage volume with a controlled release in two stages to both protect sewer system capacity and mitigate sewer overflows.

No changes are proposed to the permit process, but some new developments will no longer require a sewer capacity review. Compliance verification remains at the plumbing permit application stage.

Figure 1. Summary of present and proposed rainwater management requirements for new developments.

This approach of controlling inputs to the public sewer system at the source helps preserve existing capacity. The success of this is evident with sanitary sewage. From 2019 to 2024, when the City's population *increased* by 8%, the City's annual water consumption *decreased* by about 5%, or 5.6 billion litres, meaning decreased sanitary sewage loading. This can be attributed partly to the Building By-law's water efficiency requirements for new developments and the implementation of the City's Water Demand Management Strategy.

A "source control" approach is also being applied here to rainwater. Uncontrolled, rainwater runoff can overwhelm the sewer system and lead to CSOs. A new development can reduce the peak intensity of runoff by detaining rainwater and releasing it in a controlled manner (Appendix M). Already, as of June 2025 and in compliance with the City's present rainwater management requirements, 174 new developments with issued building permits will, in total, manage rainwater on 60.5 hectares and reduce peak rainwater runoff by about 6,600 litres per second (for comparison, this is nearly four times the flow rate of the Capilano River on July 10, 2025).[2]

The central recommendation of this report is to strengthen and unify the existing city-wide rainwater management regulation for new developments effective January 1, 2026. Harmonious with Council direction and the City's long-term plans, this would be implemented by amending the Building By-law *engineered pathway* and, in synchrony, eliminating the patchwork of customised, site-specific rainwater management requirements. Council approval of this recommendation would decrease the risk of sewer back-ups, flooding and untreated overflows; improve predictability for new developments; lessen the need for sewer capacity reviews and sewer upgrade conditions; and help meet regulatory obligations.

Strategic Analysis

City-wide rainwater management requirements in the Building By-law took effect in January 2024 for new, higher-density buildings (through the *engineered pathway*) and were expanded to most new buildings in July 2025 (with the introduction of the *small site pathway*). No changes are proposed to the *small site pathway*. The *small site pathway* applies to 97% of properties in the R1-1 Residential Inclusive district.

This report proposes changes to the *engineered pathway* for January 1, 2026 which would:

- standardise the calculation method used to size detention storage, and
- establish two "stages" of controlled rainwater release into the public sewer, with the first 15 mm of rainfall on non-landscaped area controlled to a maximum of 5 litres per second per hectare (L/s/ha), and the remainder, up to a "10-year design storm," controlled to 25 L/s/ha.[3]

[2] These developments will also add 67 new green roofs totalling 3.4 hectares (for comparison, Nanaimo Park is 2.9 hectares) and 5 new building-scale non-potable rainwater re-use systems for flushing toilets and other uses.
[3] A "10-year design storm" means a theoretical storm that is predicted to occur once every 10 years. For modelling post-development conditions, the amount of rainfall in such a storm is based on estimates for the year 2100 in Vancouver.

This would lower the rainwater release rate compared to the present *engineered pathway*, through which calculated flow targets typically range from 60 to 110 L/s/ha.

Rationale

A lowered rainwater release rate would reduce sewer upgrade needs and costs city-wide. The proposed changes would also help to mitigate combined sewer overflows during small, frequent rainfall events, in congruence with the City's regulatory obligations.

Additionally, for new development applications, the proposed changes enable a reduction in sewer capacity reviews and local sewer upgrade requirements. The City's practice for the last several years has been to conduct sewer capacity reviews on all rezoning applications and on certain development permit applications. About 30% of rezoning applications were conditioned with local sewer upgrades. Excluding major projects, a developer's cost for a sewer upgrade averaged $350,000 (ranging from $0 to $5.8 million), totalling about $21 million annually in conditioned infrastructure.[4] With Council's approval of enhanced rainwater management requirements, the number of sites conditioned with a sewer upgrade would decrease and the average sewer upgrade cost per site would decrease.

The proposed changes would enable staff to focus resources for sewer capacity reviews to rezoning and development permit applications for towers with a floor space ratio (FSR) greater than 7.0 (approximately 20-26 storeys); all industrial and institutional developments; and "Major Projects" (typically large or unique sites and/or sites with special upgrade or servicing requirements), including sites subject to the *Rezoning Policy for Sustainable Large Developments*.[5] This threshold would exempt new developments (except industrial and institutional projects) under the proposed R3 (low-rise), R4 (mid-rise) and R5 (high-rise) zoning districts from sewer capacity reviews and potential upgrade requirements.[6]

This new approach to sewer capacity reviews is possible because a reduction in rainwater runoff rate, accomplished by the amended *engineered pathway*, would assist with balancing the increase in sanitary sewage flows into existing combined sewers. For sewer-separated areas, the threshold for capacity reviews is deemed acceptable from system capacity monitoring data. Any recommended local and neighbourhood interventions would be addressed through the City's capital and utility development cost levy (UDCL) programs, respectively, on a city-wide prioritised basis.

Developments greater than 7.0 FSR, and all industrial and institutional projects, would be reviewed to assess whether the sewer system impact of the proposed development is mitigated by on-site rainwater management. When this is the case, no sewer upgrade would be conditioned. For "Major Projects," additional site-specific criteria beyond the "no-impact" criterion may be applied to assess potential sewer upgrade requirements.

[4] Approximately $10-20 million in developer-delivered sewer infrastructure is constructed annually. There is a difference compared to what is conditioned annually because some projects are revised, some do not move forward, and identical conditions may be assigned to multiple sites.

[5] Pending Council approval of this report's recommendations, additional details will be provided to Council in Q4 2025 in a proposed new policy for city-wide Sewer Capacity Development Reviews.

[6] Zoning changes to an R3, R4 or R5 district and updates to the rezoning policy for the Broadway Plan and Cambie Corridor Plan areas have been referred to Public Hearing (RTS 17679).

The anticipated effects of these changes, based on current application volumes, is an annual reduction of sewer capacity reviews from about 65 to 15, and an annual decrease in conditioned developer costs for sewer upgrades of approximately $16 million (excluding Major Projects). The movement away from conditioning certain new applications with sewer upgrade requirements would increase the predictability of development costs, decrease uncertainty when assessing development viability, reduce processing time and, in certain cases, reduce the need to administer Latecomer Agreements.

Costs

For new developments subject to the *engineered pathway*, the proposed amendments would necessitate detention storage larger than under the current requirements. The size increase ranges from negligible to double, depending on the area available for rainwater to soak into (through landscaping or features like a vegetated roof assembly).

As an example, a development on a 2,500 m^2 site (0.25 hectares, or about 26,900 sq. ft.) with typical imperviousness currently requires approximately 34,200 litres of rainwater storage, which can be provided by a detention tank, vegetated roof assembly with flow control, or other site infrastructure. This would be approximately 58,100 litres under the proposed requirements (a 70% increase). Assuming a two-metre-tall detention tank, this may occupy an additional underground parking stall and the construction cost increase would be roughly $32,000 (±$7,000, as costs depend on materials and site variables, and excluding design and inspection costs).

The proposed changes do not impact the need for neighbourhood-scale utilities upgrades. These are addressed by the Utilities Development Cost Levy (UDCL) program, which faces more growth-related demands than it can support. This update would help manage UDCL program needs and prioritise projects in the context of both existing financial constraints, including the option to defer UDCL payments (RTS 17891), and expanded housing options from Province- and City-led initiatives.

Implementation

a) **Regulatory simplification**

Amending the *engineered pathway* in the Building By-law would establish a unified, city-wide rainwater management regulation. Site-specific requirements in the First Shaughnessy District Schedule and CD-1 by-laws are proposed to be eliminated. Staff foresee a period of regulatory and administrative stability with regards to private property rainwater management requirements to engender construction cost certainty. During this period, staff would monitor implementation and would continue system planning and modelling work.

b) **3-3-3-1 Permit Approval Framework**

The elimination of site-specific rainwater requirements would simplify development permit applications in those areas. The reduction in application-specific sewer capacity reviews and upgrades would help to streamline the development process.

Implementation of the proposed changes would not alter the simplified permit processing approach adopted by Council for rainwater management requirements (RTS 15424). Compliance verification would remain at the plumbing permit application stage.

c) **In-stream applications**

The proposed *engineered pathway* changes are proposed to take effect January 1, 2026, meaning that any building permit opened as of that date would be subject to the enhanced requirements.

Any project with a building permit opened before January 1, 2026 would continue to be subject to the current rainwater management requirements of the Building By-law, and as applicable, any public sewer upgrade condition. For certain built forms, this condition can be removed if the applicant agrees to implement the more stringent *engineered pathway* requirements proposed for January 1, 2026.

Presently, the Building By-law provides “in-stream application protection” from rainwater management requirements for certain new development applications opened before January 1, 2024. This is proposed to expire for those projects which have not opened a building permit before January 1, 2026. With Council approval, this would be broadcast through City webpages and distribution lists.

d) **Existing trees**

A developer is expected to accommodate existing trees when planning for rainwater storage. Under the *Protection of Trees By-law*, the City will not issue a tree permit to remove, relocate or replace a moderate or high retention value tree for a new detention tank. A clarifying note is proposed for the Building By-law that the Chief Building Official may relax or waive the rainwater storage and release rate requirements when a suitable location cannot be found due to existing trees and other rainwater control options are not feasible on the site or within the building.

Consultation

The proposals were shared through a public consultation process involving professional and industry associations and consultants. This included direct outreach, information on City webpages, and an online seminar attended by 99 individuals. A consultation letter published on June 5, 2025 invited feedback by July 7, 2025 and was downloaded 151 times. Technical suggestions and policy questions were received and considered, and refinements to the draft by-law text were made where deemed appropriate.

One policy question pertained to the ban on detention tanks within 3.7 m of the property line, based on staff interpretation of Broadway Plan guidelines for underground parking structures. This prohibition would be expanded with Council approval of the proposed R3, R4 and R5 district schedules (RTS 17679). The intent is to preserve space for potential future trees. Concern was raised that this increases costs and decreases resiliency when a detention tank may have otherwise been located outside of the building. Drainage by gravity may no longer be possible, necessitating pumping and ongoing maintenance. By compelling tanks to be located within parkades, such structures might need to be deepened. It was suggested that a detention tank can be placed within this setback while providing space for potential future trees. Staff are

reviewing this suggestion and will communicate if any adjustments to this requirement are possible.
Another policy question was a request for the City to consider financial incentives to further enhance on-site rainwater management. The avoidance of sewer upgrading conditions for certain developments represents a financial savings. No additional incentives are proposed in this report.

Lastly, there were many questions from developers and consultants about sewer capacity reviews and upgrade requirements. These questions have informed the content of this report. Staff will be reporting back to Council with a written policy for city-wide Sewer Capacity Development Reviews as well as a summary of conditions removed and benefitting sites in Q4 2025.

Implications/Related Issues/Risk

Financial

There are no financial implications.

Legal

If the recommendations in this report are adopted by Council, Council will consider by-law and policy amendments related to rainwater management at a public hearing.

CONCLUSION

Supporting growth and development viability without worsening flooding and sewer overflows, the proposed amendments update on-site rainwater management requirements for redevelopments on larger sites and with buildings of higher density.

* * * * *

APPENDIX A

DRAFT By-law to amend Building By-law No. 14343 regarding Rainwater Management Regulations for New Developments

Note: An amending by-law will be prepared generally in accordance with the provisions listed below, subject to change and refinement prior to posting to the satisfaction of the Director of Legal Services.

1. This by-law amends the indicated provisions of Building By-law No. 14343.

2. In Clause 1.2.1.1.(1)(b) of Book I, Division A and Clause 7.1.5.1.(1)(a) of Book I, Division B, Council strikes out "and Sentence 3.3.1.3.(1) of Division C".

3. In Subclause 7.1.5.1.(1)(d)(ii) of Book I, Division B, Council strikes out the defined term for "*Vegetated roof assembly**".

4. In Clause 7.1.5.2.(1)(b) of Book I, Division B, Council:

   a) in the row for "COV / Engineering Design Manual", strikes out the by-law reference and substitutes

      "2.4.2.5.(5)
      A-2.4.2.5.(5)", and

   b) adds a new row:

      "

CoV		Protection of Trees By-law(4)	A-2.4.2.5.(9)

      ".

5. Council strikes out Clause 7.1.5.2.(2)(k) of Book I, Division B and substitutes

"k) adding a new Article 2.4.2.4. and Article 2.4.2.5.:

"**2.4.2.4. Connections to Storm Drainage Systems**

1) Except as provided in Sentence (2), *building* and site drainage shall connect to a *storm drainage system*.

2) *Building* and site drainage need not connect to a *storm drainage system* if
a) on-site *rainwater* management practices are employed and overflow is connected to a *storm drainage system*, and
b) *rainwater* does not create a hazardous condition or discharge upon or impact other lands or sites.
(See Note A-2.4.2.4.(2).)

2.4.2.5. Rainwater Management

1) Except as provided in Sentence (2), all *buildings* shall manage *rainwater* on-site through one of the applicable compliance pathways in Table 2.4.2.5.-A, in which
a) "small site pathway" means Sentence (4) applies, and Sentences (5) and (6), (7) and (8) do not apply, and
b) "engineered pathway" means Sentences (5), (6), (7) and (8) apply, and Sentence (4) does not apply.

Table 2.4.2.5.-A
Compliance Pathways for On-Site Rainwater Management
Forming Part of Sentence 2.4.2.5.(1)

Site Area (m^2)	Net Floor Space Ratio(1)	Compliance Pathway
No greater than 1000	No greater than 1.0	Small site pathway
	Greater than 1.0	Engineered pathway
Greater than 1000	Any	Engineered pathway

Notes to Table 2.4.2.5.-A:
(1) As computed according to the Zoning and Development By-law after any applicable exclusions.

2) The requirements of this Article do not apply to
a) "laneway houses" or "infill" as defined by the Zoning & Development By-law, when the site area is no greater than 1000 m^2,
b) "accessory buildings" as defined by the Zoning & Development By-law,
c) *float homes*,
d) *marinas*,
e) retaining structures, or
f) temporary *buildings* approved according to Subsection 1.6.8. of Division C.

3) The *Chief Building Official* shall be provided with a document demonstrating that the *rainwater* management requirements of Sentence (1) have been satisfied, in the form prescribed by the *Chief Building Official*.

4) Except as provided in Sentence (9), a detention tank shall be installed with
a) the minimum active storage capacity specified in Table 2.4.2.5.-B,
b) an orifice plate with the diameter specified in Table 2.4.2.5.-B,
c) overflow protection,
d) one or more *cleanouts* providing access to the outlet and overflow, and
e) for subsurface detention tanks, the capability of supporting the design depth of cover and surface loads.
(See Note A-2.4.2.5.(4).)

Table 2.4.2.5.-B
Detention Tank Specifications for the Small Site Pathway
Forming Part of Sentence 2.4.2.5.(4)

Site Area (m^2)	Minimum Active Storage Capacity (L)	Orifice Plate Diameter (mm)
No greater than 400	3,400	30
Greater than 400 to no greater than 500	3,900	35
Greater than 500 to no greater than 750	4,600	45
Greater than 750 to no greater than 1000	7,200	50

5) Except as provided in Sentences (8) and (9), *rainwater* from the site area shall be detained with controlled discharge to a public *combined sewer,* public *storm sewer* or designated public *storm water* disposal location, and the minimum detention volume shall be calculated with the Modified Rational Method

a) using the following formula:

$$V = Q_p \times D - Q_o \frac{D + t_c}{2}$$

where

V = minimum detention storage volume in L,
Q_p = peak runoff rate for the duration D in L/s,
D = duration of rainfall in s,
Q_o = maximum discharge flow rate in L/s, and
t_c = time of concentration of the drainage catchment, determined according to the City of Vancouver Engineering Design Manual, in s,

b) iterating for a range of values of D in Clause (a)

i. with a maximum of a 15 min increment, and
ii. until the value of V in Clause (a) reaches a maximum value, confirmed by iterating values of D for an additional 60 min, and

c) applying from the City of Vancouver Engineering Design Manual:

i. the post-development, 2100 IDF curve with a 10 year return period,
ii. the minimum inlet time specified, and
iii. the applicable runoff coefficients to derive a composite runoff based on the percentages of different surfaces of the site area.

(See Note A-2.4.2.5.(5).)

6) Except as provided in Sentences (8) and (9), the detention volume calculated in Sentence (5) shall be held in detention storage

a) designed to control discharge in 2 stages, at

i. no greater than 5 L / s / hectare for the first stage, for a volume of water equivalent to what would be present if water 15 mm deep covered the portion of the site area without landscaping, and
ii. no greater than 25 L / s / hectare after the first stage, and

b) installed with

i. no orifice smaller than 25 mm in diameter when an orifice is used,
ii. overflow protection, and
iii. one or more *cleanouts* providing access to the outlets and overflow.

(See Note A-2.4.2.5.(6).)

7) An operations and maintenance manual conforming to Article 2.2.1.9. is required for the equipment employed to satisfy the requirements of Sentences (5) and (6).

8) When an *existing building* will remain on the same property at the time the occupancy permit is issued, the site area used in Sentences (5) and (6) may be reduced to be proportional to the ratio of the *buildings'* greatest horizontal area within the outside surface of exterior walls.

9) The *Chief Building Official* may relax the requirements of Sentences (4), (5) and (6) in accordance with Sentence 1.5.2.10.(2) of Division C if

a) the *owner* demonstrates to the satisfaction of the *Chief Building Official* by a *subsurface investigation* that excavation is precluded or limited by soil contamination or other factors, and

b) it is impractical, in the opinion of the *Chief Building Official*, to meet the *rainwater* management requirements of Sentences (4), (5) or (6).

(See Note A-2.4.2.5.(9).)".".

6. In Subclause 7.1.5.2.(2)(dd)(ii) of Book I, Division B, Council

a) strikes out Note A-2.4.2.5.(1),

b) inserts a new Note A-2.4.2.5.(5):

"**A-2.4.2.5.(5) Minimum Detention Volume Calculation**.

Example: Determination of the minimum detention volume

Step No. 1: Assemble calculation inputs

a) Site characteristics (example)

Site area	=	0.25 hectares
Post-development runoff coefficient, C	=	0.75

b) City of Vancouver IDF projections

Return period	=	10 years (from Sentence (5))
Time of concentration, t_c	=	5 min
IDF curve	=	2100 (RCP 8.5 Moderate Projection)
IDF Coefficient A	=	26.651
IDF Coefficient B	=	-0.482

Step No. 2: Calculate 10-year unit flow target

Flow target	=	25 L/s/hectare (from Sentence (6))
Maximum discharge flow rate, Q_O	=	0.00625 m^3/s (calculated as = Flow target x Site area)

Step No. 3: Calculate peak post-development flow

Peak rainfall intensity, i	=	88 mm/h (calculated as = A x t_c^B)
Uncontrolled peak flow, Q_{POST}	=	0.0460 m^3/s (calculated as = Site area x C x i)

Step No. 4: Iterate for a range of storm durations to determine the peak storage requirement

Event duration, D (min)	Post-development rainfall intensity, i (mm/hr)	Post-development peak flow, Q_{POST} (m^3/s)	Required detention volume, V (m^3)
5	88	0.046	11.9
20	45	0.024	23.6
35	35	0.018	30.3
50	29	0.015	35.2
65	26	0.013	39.0
80	23	0.012	42.1
95	21	0.011	44.7
110	20	0.010	46.9
125	19	0.010	48.8
140	18	0.009	50.4
155	17	0.009	51.8
170	16	0.008	53.0
185	15	0.008	54.0
200	15	0.008	54.9
215	14	0.008	55.6
230	14	0.007	56.2
245	14	0.007	56.8
260	13	0.007	57.2
275	13	0.007	57.5
290	12	0.007	57.8
305	12	0.006	58.0
320	12	0.006	58.1
335	12	0.006	58.1
350	11	0.006	58.1
365	11	0.006	58.0
380	11	0.006	57.9
395	11	0.006	57.7

The minimum detention volume required to satisfy Sentences (5) and (6) is therefore 58.1 m^3.

More advanced modelling software may be used in place of the Modified Rational Method, applying the storm distributions and durations defined in the City of Vancouver Engineering Design Manual.”,

c) strikes out Note A-2.4.2.5.(6) and substitutes:

"**A-2.4.2.5.(6) Detention Storage Calculations and Considerations**.

Example: Determination of the first stage detention volume

Step No. 1: Assemble calculation inputs

Site characteristics (example)

Site area	=	0.25 hectares
Ground-level landscaped area	=	0.05 hectares
Vegetated roof assembly	=	0.02 hectares
Portion of site area without landscaping	=	0.18 hectares (calculated)

Step No. 2: Calculate "first stage" volume

First stage volume = 27 m^3
(calculated as = 15 mm x Portion of site area without landscaping)

This is the volume to be released at no greater than 5 L / s / hectare.

Considerations for detention storage and flow control

Detention storage can be provided by detention tanks, roof-based detention methods, or other vegetated or non-vegetated detention or retention systems designed to meet the criteria.

The overflow must bypass the outlet flow control mechanism(s). An orifice or other flow control device may be used. An orifice must meet the minimum diameter requirement. The outlet flow control mechanism(s) should have appropriate debris protection to prevent blockages. The equipment or structure used for detention storage should be inspected and cleaned regularly following the operations and maintenance manual instructions.", and

d) in Table 2.4.2.5.(9) of Note A-2.4.2.5.(9), adds a new row:

“

Moderate retention value tree or high retention value tree, as defined in the *Protection of Trees By-law*	Certification by an arborist.

”.

7. In Clause 2.3.1.1.(1)(a) of Book I, Division C, Council strikes out “except as permitted by Sentence 3.3.1.3.(1),”.

8. In Sentence 2.3.1.2.(1) of Book I, Division C, Council strikes out “Except as permitted by Sentence 3.3.1.3.(2), the” and substitutes “The”.

9. Council strikes out Article 3.3.1.3. of Book I, Division C and substitutes:

“3.3.1.3. Reserved.”.

10. 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.

11. This By-law comes into force and takes effect on January 1, 2026.

ENACTED by Council this day of , 2025

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Mayor

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City Clerk

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APPENDIX B

**DRAFT By-law to amend
the Zoning and Development By-law No. 3575
regarding amendments to the First Shaughnessy District Schedule to
Simplify Rainwater Management Requirements**

Note: An amending by-law will be prepared generally in accordance with the provisions listed below, subject to change and refinement prior to posting to the satisfaction of the Director of Legal Services.

1. This by-law amends the indicated provisions of By-law No. 3575.

2. In the First Shaughnessy District Schedule, Council strikes out section 4.4.

3. This By-law comes into force and takes effect on January 1, 2026.

ENACTED by Council this day of , 2025

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Mayor

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City Clerk

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APPENDIX C

DRAFT
A By-law to amend the Heritage Conservation Area Official Development Plan By-law regarding Simplification of Rainwater Management Requirements in the First Shaughnessy Heritage Conservation Area Design Guidelines

Note: An amending by-law will be prepared generally in accordance with the provisions listed below, subject to change and refinement prior to posting to the satisfaction of the Director of Legal Services.

1. This by-law amends Schedule 1 of the Heritage Conservation Area Official Development Plan By-law No. 11349.

2. In Appendix A3 of Schedule 1, Council strikes out section 4 in its entirety, including the title.

3. In Appendix A3 of Schedule 1, Council renumbers section 5 and 5.1 as 4 and 4.1, respectively.

4. This By-law comes into force and takes effect on January 1, 2026.

ENACTED by Council this day of , 2025

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Mayor

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City Clerk

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APPENDIX D

DRAFT By-law to amend
CD-1 (211) By-law No. 6314
regarding Simplification of Rainwater Management Requirements

Note: An amending by-law will be prepared generally in accordance with the provisions listed below, subject to change and refinement prior to posting to the satisfaction of the Director of Legal Services.

1. This by-law amends the indicated provisions of By-law No. 6314.

2. Council strikes out sections 10 and 11.

3. Council renumbers section 12 as section 10.

4. This By-law comes into force and takes effect on January 1, 2026.

ENACTED by Council this day of , 2025

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Mayor

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City Clerk

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APPENDIX E

DRAFT By-law to amend
CD-1 (212) By-law No. 6315
regarding Simplification of Rainwater Management Requirements

Note: An amending by-law will be prepared generally in accordance with the provisions listed below, subject to change and refinement prior to posting to the satisfaction of the Director of Legal Services.

1. This by-law amends the indicated provisions of By-law No. 6315.

2. Council strikes out section 9.

3. Council renumbers section 10 as section 9.

4. This By-law comes into force and takes effect on January 1, 2026.

ENACTED by Council this day of , 2025

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Mayor

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City Clerk

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APPENDIX F

DRAFT By-law to amend
CD-1 (214) By-law No. 6317
regarding Simplification of Rainwater Management Requirements

Note: An amending by-law will be prepared generally in accordance with the provisions listed below, subject to change and refinement prior to posting to the satisfaction of the Director of Legal Services.

1. This by-law amends the indicated provisions of By-law No. 6317.

2. Council strikes out section 10.

3. Council renumbers section 11 as section 10.

4. This By-law comes into force and takes effect on January 1, 2026.

ENACTED by Council this day of , 2025

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Mayor

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City Clerk

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APPENDIX G

DRAFT By-law to amend
CD-1 (218) By-law No. 6321
regarding Simplification of Rainwater Management Requirements

Note: An amending by-law will be prepared generally in accordance with the provisions listed below, subject to change and refinement prior to posting to the satisfaction of the Director of Legal Services.

1. This by-law amends the indicated provisions of By-law No. 6321.

2. Council strikes out section 10.

3. Council renumbers section 11 as section 10.

4. This By-law comes into force and takes effect on January 1, 2026.

ENACTED by Council this day of , 2025

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Mayor

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City Clerk

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APPENDIX H

DRAFT By-law to amend
CD-1 (223) By-law No. 6361
regarding Simplification of Rainwater Management Requirements

Note: An amending by-law will be prepared generally in accordance with the provisions listed below, subject to change and refinement prior to posting to the satisfaction of the Director of Legal Services.

1. This by-law amends the indicated provisions of By-law No. 6321.

2. Council strikes out section 9.

3. Council renumbers section 10 as section 9.

4. This By-law comes into force and takes effect on January 1, 2026.

ENACTED by Council this day of , 2025

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Mayor

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City Clerk

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APPENDIX I

DRAFT By-law to amend
CD-1 (225) By-law No. 6363
regarding Simplification of Rainwater Management Requirements

Note: An amending by-law will be prepared generally in accordance with the provisions listed below, subject to change and refinement prior to posting to the satisfaction of the Director of Legal Services.

1. This by-law amends the indicated provisions of By-law No. 6363.

2. Council strikes out section 9.

3. Council renumbers section 10 as section 9.

4. This By-law comes into force and takes effect on January 1, 2026.

ENACTED by Council this day of , 2025

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Mayor

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City Clerk

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APPENDIX J

DRAFT By-law to amend
CD-1 (241) By-law No. 6528
regarding Simplification of Rainwater Management Requirements

Note: An amending by-law will be prepared generally in accordance with the provisions listed below, subject to change and refinement prior to posting to the satisfaction of the Director of Legal Services.

1. This by-law amends the indicated provisions of By-law No. 6528.

2. Council strikes out section 11.

3. Council renumbers section 12 as section 11.

4. This By-law comes into force and takes effect on January 1, 2026.

ENACTED by Council this day of , 2025

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Mayor

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City Clerk

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APPENDIX K

Proposed Amendments to the Joyce Station Area CD-1 Guidelines (Vanness Avenue North, Rae Avenue & 5000-5300 Blocks Boundary Road) (By-law No. 6528)

Note: Amendments to Council-adopted policies will be prepared generally in accordance with the provisions listed below, subject to change and refinement prior to posting.

* *Proposed amendments are shown in red.*

Within the Joyce Station Area CD-1 Guidelines, delete section 9 as follows:

~~**9 Storm Water Storage**~~

~~The following table, prepared by the City Engineer, rates the pervious character of various surfaces to guide applicants in the City's administration of the storm water storage provision of the by-law.~~

~~**Pervious**~~	~~**Impervious**~~
~~Grass~~	~~Buildings~~
~~Gardens~~	~~Concrete~~
	~~Black Top~~
	~~Asphalt~~
	~~Wood~~

~~**Additional Items Generally Considered Pervious**~~	~~**Additional Items Generally Considered Impervious**~~
~~Decorative stone driveways and walkways (Gravel size or smaller)~~	~~Wooden decks with spaces between the slats to pervious ground beneath~~
~~Turfstone pavers for driveways (use % of pervious brick pavers with sand between area in the pavers)~~	~~Swimming pools~~
~~Overhangs such as bay windows with pervious ground beneath~~	~~Gravel driveways~~

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APPENDIX L

Proposed Amendments to the Transit-Oriented Areas Rezoning Policy

Note: Amendments to Council-adopted policies will be prepared generally in accordance with the provisions listed below, subject to change and refinement prior to posting.

* *Proposed amendments are shown in red.*

Within the Transit-Oriented Areas Rezoning Policy, amend section 7.1 as follows:

7.1 Sewer & Drainage

7.1.1 Upgrades to the City system may be required to support future population and employment growth and will be confirmed and/or implemented concurrently with, and/or through the rezoning process. ~~Developments in some TOAs have been identified as potentially requiring neighbourhood-serving upgrades and/or additional on-site rainwater management requirements, with development conditions that may impact project viability. Key TOAs include (but not limited to): 29th Avenue Station, Commercial-Broadway Station, Dunbar Loop Exchange, and Nanaimo Station.~~

7.1.2 Regional upgrades may be identified at time of rezoning application and will need to be coordinated between the City and regional and local partners.

~~7.1.3 In addition to any on-site rainwater management requirements applicable under the Vancouver Building By-law, flow control requirements may be applied where sewer capacity constraints exist.~~

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APPENDIX M

Background: How On-Site Rainwater Management Helps to Protect the Sewer System

Illustrated is a general housing redevelopment (it is not representative of all situations). The graph contrasts the rainwater flow into the sewer under two post-development scenarios.

After redevelopment, there is typically less area for rainwater to soak into, and if there are no on-site controls there will be a higher peak rainwater runoff rate, potentially overwhelming the sewer.

With a detention tank, rainwater is held and released in a controlled manner to protect the sewer and reduce the risk of flooding.