



POLICY REPORT

Report Date: October 1, 2019
Contact: Neil Hrushowy
Contact No.: 604.829.9622
RTS No.: 13362
VanRIMS No.: 08-2000-20
Meeting Date: October 1, 2019

TO: Vancouver City Council
FROM: General Manager of Planning, Urban Design and Sustainability
SUBJECT: Amendments to Repair and Clarify Basement and Cellar Regulations for New Houses in RS Zones

RECOMMENDATION

- A. THAT the General Manager of Planning, Urban Design and Sustainability be instructed to make application to amend the Zoning and Development By-law, generally as set out in Appendix A, to amend:
- (i) the RS-1, RS-3 and RS-3A, RS-5, RS-6, and RS-7 District Schedules to clarify the regulations for basements and cellars in new houses;
 - (ii) Section 3 to introduce relaxations for sites with soil or hydrological conditions that are not suitable for basement construction; and
 - (iii) Section 10 to clarify the regulations that control the location secondary suites, bedrooms and other habitable rooms in basements;

FURTHER THAT the application be referred to a public hearing;

AND FURTHER THAT the Director of Legal Services be instructed to prepare the necessary by-laws, generally in accordance with Appendix A, for consideration at the public hearing.

- B. THAT Recommendation A be adopted on the following conditions:
- (i) THAT passage of the above resolutions creates no legal rights for any person, or obligation on the part of the City and any expenditure of funds or incurring of costs is at the risk of the person making the expenditure or incurring the cost;

- (ii) THAT any approval that may be granted following the public hearing shall not obligate the City to enact any rezoning by-laws; and
- (iii) THAT the City and all its officials, including the Approving Officer, shall not in any way be limited or directed in the exercise of their authority or discretion, regardless of when they are called upon to exercise such authority or discretion.

REPORT SUMMARY

This report recommends amendments to RS District Schedules to repair and clarify the regulations for the construction of basements and cellars. Current regulations allow for new house designs that do not fully align with the objectives that were intended when full basements were enabled through regulation changes made in 2009. Specifically, the changes in 2009 anticipated that basements would be built further out of the ground, resulting in better secondary suites in basements. This report describes how shortcomings in the regulations coupled with market demand have resulted in most new houses today being built with basements or cellars that are deeper into the ground than was common practice 10 years ago.

Staff began a review of secondary suites in new houses in early 2019 as part of implementation of the Housing Vancouver Strategy and 3-Year Action Plan. A number of issues and implications have been identified with the construction of deeper basements, including a decline in the livability of basement suites, and a range of environmental and sustainability impacts. The review of the issues related to deeper basements and cellars is ongoing and staff are continuing to explore options and future regulation changes that could be considered in the longer term to achieve a range of performance objectives.

Immediate changes, as outlined in this report, are recommended to repair, strengthen, and clarify regulations to control the depth of basements and require more livable basement floor area and secondary suites in new houses.

COUNCIL AUTHORITY/PREVIOUS DECISIONS

- Secondary suites as a permitted use in all RS zones (approved 2004, amended 2005)
- FSR and level of first floor increased in most RS zones to facilitate functional livable basements (April 2009)
- Housing Vancouver Strategy (2018-2027) and Three-Year Action Plan (2018-2020) (approved 2017)
- Development and Building Regulatory Review – Minor Amendments to the Zoning and Development By-law (June 2018)

CITY MANAGER'S/GENERAL MANAGER'S COMMENTS

The City Manager recommends approval of the foregoing to address shortcomings in the regulations and to improve outcomes for secondary suites in new house construction.

REPORT

Background/Context

1. 2009 Zoning Changes to Address Basement Challenges

Prior to 2009, most RS District Schedules included the basement or cellar area in the computation of allowable floor area. This meant that a trade-off was required between floor area above grade or in a basement, and most houses were being built with a partial basement or no basement at all. This posed a challenge for the construction of functional basements and secondary suites in new houses.¹

In 2009, zoning changes were implemented to address this challenge and facilitate full-sized basements. These amendments were expected to enable the following benefits:

- More space for functional basements by increasing basement floor area.
- More livable basements by increasing basement height.
- More housing choices by providing more options.
- More renovations and fewer demolitions by allowing basement expansions in existing houses.
- More green space by reducing the house footprint.

While primarily intended to enable full basements and achieve better basements and secondary suites, the regulation changes focused on floor area distribution and managing the visible above-grade massing of the house. The changes did not fully address outcomes for the basement level. A change was made to allow the height of the first floor above grade to increase from 1.2 m (3.9 ft.) to 1.5 m (4.9 ft.) assuming that the basement would then be built further out of the ground. However, regulations requiring that basements be built less deep were not introduced at the same time.²

As market demand for house designs with ceiling heights of 3 m (10 ft.) or more on the first floor has increased over the last 10 years, and overall building height regulations have not been increased, the level of the first floor above grade has been pushed down. As a result, most basements are being built deeper in the ground.

2. Housing Vancouver Strategy and 3-year Action Plan

Secondary suites have been permitted in all one-family (RS) neighbourhoods since 2004 and are an important part of Vancouver's rental housing stock. The Housing Vancouver Strategy (2018-2027) and 3-Year Action Plan (2018-2020) contain several actions related to secondary suites, including:

- Action 3.2C: Expand availability of legal secondary and lock-off suites and laneway houses across Vancouver neighbourhoods through existing and future planning processes.
- Action 3.2D: Review regulations around secondary suites (and existing lock-offs).

¹ Secondary suites have been allowed in all RS zones since 2004

² Bedrooms and secondary suites are required to be located no more than 0.6 m (2 ft.) below grade but this can be relaxed to 1.5 m (4.9 ft.) below grade and further relaxed to 1.83 m (6 ft.) below grade in a cellar.

A review of new secondary suites and houses in RS zones began in early 2019 in order to assess the outcomes since zoning changes were made in 2009 to allow full basements. The review has explored key topics and issues related to the construction of new homes and secondary suites, and begun to identify performance objectives and potential changes that could improve outcomes and address key strategic City objectives regarding housing choice, livability, accessibility, sustainability and resiliency.

This review has revealed the prevalence of deep basements and cellars in new one-family dwellings and the challenges and impacts they present, including reduced livability of basement suites, extensive use of concrete and the associated greenhouse gas emissions, greater site disturbance and tree loss, hydrological impacts, increased sewer pumping and reduced design flexibility. Secondary suites are lower cost housing options and important for lower income households, especially in RS zoned neighbourhoods where there are few other types of rental housing available. The poorer quality of livable space of these new units, therefore, presents an equity challenge in general, but especially when this is an outcome that results from gaps in City regulations. While review of these issues is ongoing, this report is focused on initial repairs to the regulations that control basements and cellars in newly constructed houses in RS zones to improve outcomes for below grade levels, which are often built with a secondary suite or are converted to include a suite in the future.

Work focused on existing secondary suites and the addition of suites (both permitted and unpermitted) in existing houses is also underway as part of a separate work program, which is being coordinated between the Planning, Urban Design and Sustainability Department (PDS) and the Development, Buildings and Licensing (DBL) Department.

Strategic Analysis

This section describes the observations and analysis of new house construction and the current regulations controlling below grade living space. It outlines the issues with deeper basements and cellars and proposes immediate changes to improve outcomes to increase the livability of basement suites and to prevent the use of cellars as secondary suites. Also proposed are minor amendments to enable greater design flexibility for front entries for suites and for houses on sites with challenging soil conditions.

1. Objectives & Outcomes of Basement Enabling Regulations

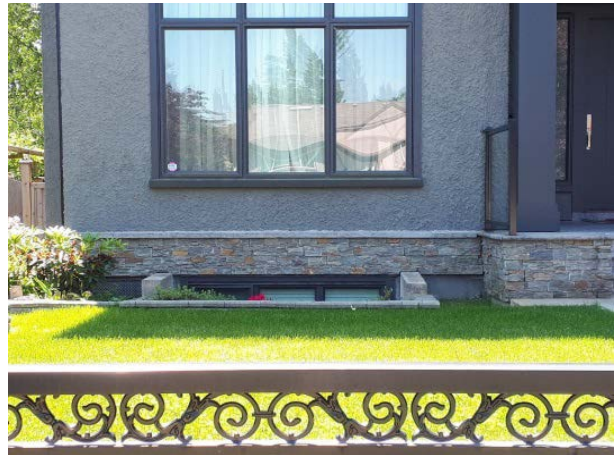
Regulation changes made in 2009 enabled functional, full-sized basements and more livable basement suites by increasing the allowable floor space ratio (FSR) for new houses from 0.6 to 0.7, and reducing the floor area that could be built above grade to 0.45 FSR. Building a basement became necessary in order to achieve the maximum FSR and as a result almost all new houses include them. The changes allowed greater flexibility and more housing options in a way that limited visible change in low-density neighbourhoods.

Through an analysis of recently approved building plans for new houses, site visits and conversations with building inspectors and local builders, staff have observed the following:

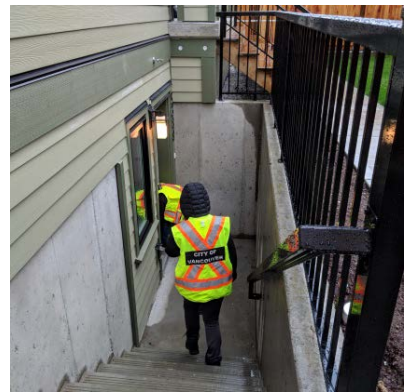
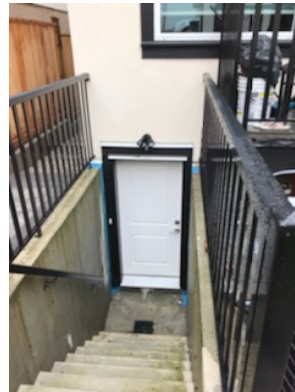
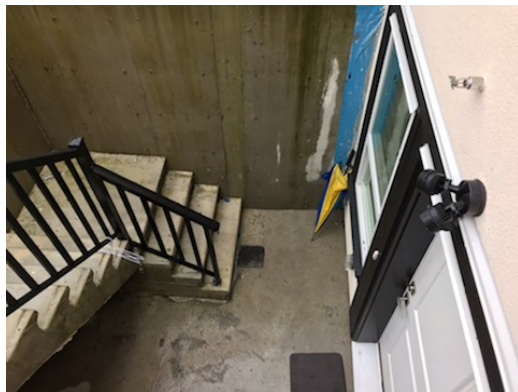
- Many homes are built with deep cellars (1.83 m or more below grade) and include rooms clearly intended as habitable space (including use as rental accommodation).
- Deep basements and cellars have very small windows which are often located in light wells and/or near the ceiling, as seen in *Figures 1 and 2*.

- Exterior basement access is provided by concrete stairwells and large concrete pit entrances, as seen in *Figures 3, 4 and 5*.
- Two concrete pit entries are often located in the rear yard to provide separate entranceways to the suite and remainder of the basement level, leaving little green space for planting and usable area in the rear yard.
- Houses are being built with basements or cellars on sites with problematic geotechnical conditions (e.g. peat soils), which is resulting in significant negative impacts, including subsidence and structural issues in affected buildings.

Staff have determined that the 2009 zoning changes have not fully met the objectives or resulted in the intended benefits anticipated, as outlined in *Table 1* and *Figure 6*.



Figures 1 & 2: Deep basement with small windows (left), below grade windows with light well (right)



Figures 3, 4 & 5: Concrete stairwells and pit entrances to suite

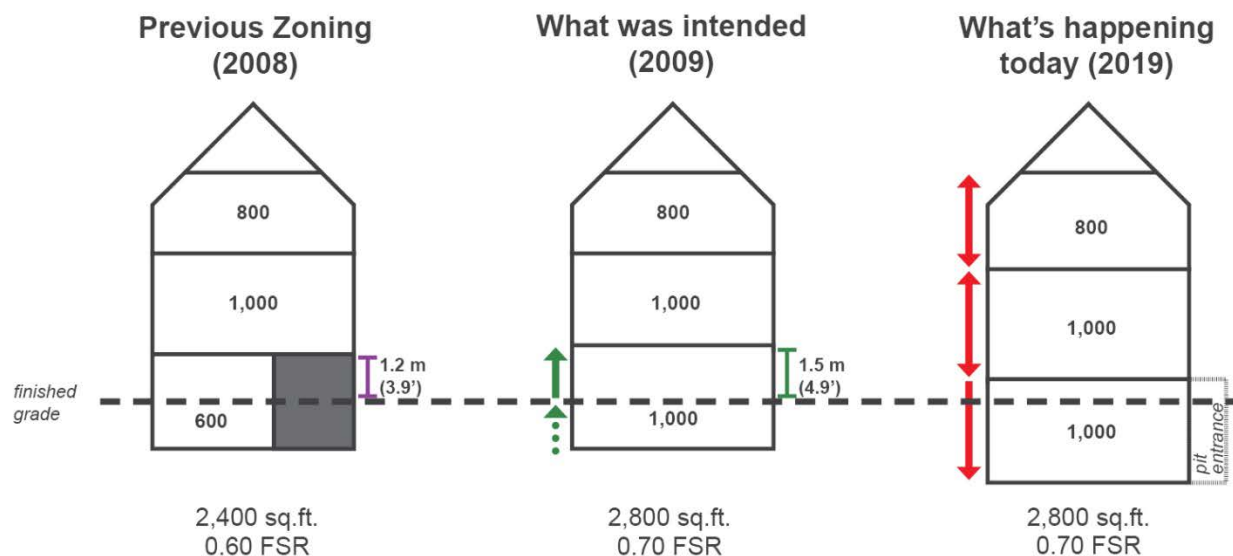


Figure 6: Examples of house options built to the maximum height limit of 9.5 m (31.2 ft.) on a 372 sq. m (4,000 sq. ft.) lot in RS-1 (the dotted line represents finished grade)

Table 1: Anticipated benefits vs. actual outcomes of 2009 zoning changes

Objectives & Intended Benefits of 2009 Changes	Actual Outcomes ³
Enable more functional basements & more livable suites	Full basements or cellars are being built but are located further below grade
Enable more housing choices by providing more options	No significant increase in number of legal suites
Fewer demolitions, encourage more renovations	Demolitions increased
Increase green space by reducing house footprint	Increase in concrete and impermeable area due to basement entries

2. Issues and Implications

The Zoning and Development By-law defines a Basement as a floor located less than 1.5 m (4.9 ft.) below grade, and a Cellar as a floor located 1.5 m (4.9 ft.) or more below grade. Current zoning regulations permit secondary suites to be located in cellars that are a maximum of 1.83 m (6 ft.) below average grade. Staff analysis of recently issued permits for one-family dwellings and one-family dwellings with secondary suites showed that most new homes are being built with cellars located 1.83 m (6 ft.) or more below grade.

The following issues and implications have been identified with construction of deeper basements and cellars:

- Livability** – Deeper basements with secondary suites push most of the suite into the ground and allow for only a thin band of windows near the ceiling and/or in window wells. This provides minimal natural light and ventilation, and windows in wells provide obstructed or no view out. Deep pits provide less dignified, accessible and inviting entrances, which presents equity concerns.

³ Factors other than zoning may have also influenced these outcomes.

- **Greenhouse Gas Emissions** – Deeper basement foundations, entranceways and window wells require the use of more concrete, which increases the associated greenhouse gas (GHG) emissions impacts. Staff analyses suggests that a 30% reduction in GHG emissions can be achieved with slab on grade construction where no basement level is built, compared to houses with full below grade concrete basements.
- **Site Disturbance** – Deeper basements require more extensive excavation, as seen in *Figure 7*. This makes it more difficult to retain existing trees and requires the removal of more soil. Concrete entranceways and window wells increase the impermeable area and reduce the opportunity for green space.
- **Groundwater Concerns** – In some areas of the city there is a risk of encountering groundwater during excavation, as seen in *Figure 8*. Deeper basements often require groundwater to be continuously pumped into sewers, which consumes sewer capacity and can affect local hydrological conditions and impact neighbouring sites, trees and landscaping. These impacts can be especially significant for sites with peat soils, where settlement can occur and result in structural issues for surrounding buildings.
- **Sewer Concerns** – Plumbing in deeper basements is more likely to require pumping up to the City’s sewer system instead of relying on gravity flow. As the Engineering Department is beginning to limit the depth of sewer connections, pumping will become even more prevalent. In houses without backup power systems, this means toilets won’t flush during power failures, a resiliency risk for basement suites.⁴
- **Design Flexibility** – Many new houses have cellars that don’t meet the City’s requirements for secondary suites because they are too deep and cannot legally be converted to include a secondary suite in the future.
- **Cost** – Below grade construction involves significant costs, including those associated with additional excavation and foundation construction.



Figure 7: Extensive excavation, decreased tree retention and reduced permeability



Figure 8: Groundwater encountered during excavation

3. Proposed Amendments to The Zoning and Development By-law

As described above, current regulations in the Zoning and Development By-law are producing outcomes that do not fully align with the objectives that were intended when they were introduced in 2009 to enable full basements. To address shortcomings in the regulations and

⁴ DBL and Engineering staff estimate that 80% of new houses being built with basements are pumping plumbing connections to the sewer. Approximately 800 new houses are currently built each year across Vancouver.

improve the livability of basements and secondary suites in new houses, several recommended changes to the Zoning and Development By-law are described below. These changes will also begin to address a number of other factors related to the construction of deep basements, described in the issues and implications section above.

1. Limit the Depth of Secondary Suites in New Houses - Amendments to Section 10 of the Zoning and Development By-law are recommended to prohibit secondary suites, lock-off units, and bedrooms from being located in a cellar or in a portion of a basement that is 1.5 m (4.9 ft.) or more below grade. Amendments to RS District Schedules are also proposed to no longer permit a separate external below grade entry to a cellar to help ensure they are not used as unpermitted rental accommodation. These changes would apply to new construction and flexibility will remain in the regulations to allow legal additions of secondary suites in existing houses.

As new houses with secondary suites are typically being built in cellars 1.83 m (6 ft) below grade, this change will generally require new suites to be built approximately 0.33 m (1.1 ft.) higher out of the ground. This will require more of the total building height above grade to be provided for the suite and will necessitate a commensurate trade-off for height available for above-grade floors. Staff have conducted design analyses and determined that houses with basements less than 1.5 m (4.9 ft.) below grade can still comply with the existing building height requirements in RS Districts, including RS-1 which has the most restrictive height limit at 9.5 m (31.2 ft.). As seen in *Figure 9*, a house in the RS-1 Zoning District built in accordance with the existing maximum height requirements and proposed basement depth requirements is feasible while still allowing for floor to ceiling heights up to 10 feet on the first floor.

On sloping sites, portions of a basement level may be 1.5 m (4.9 ft.) or more below grade. To ensure habitable rooms in a basement or secondary suite are located to have greater access to natural light, changes to Section 10 are proposed to require that that a living room, kitchen, dining room, or bedroom be located in parts of the basement that are less than 1.5 m (4.9 ft.) below the adjacent ground level.

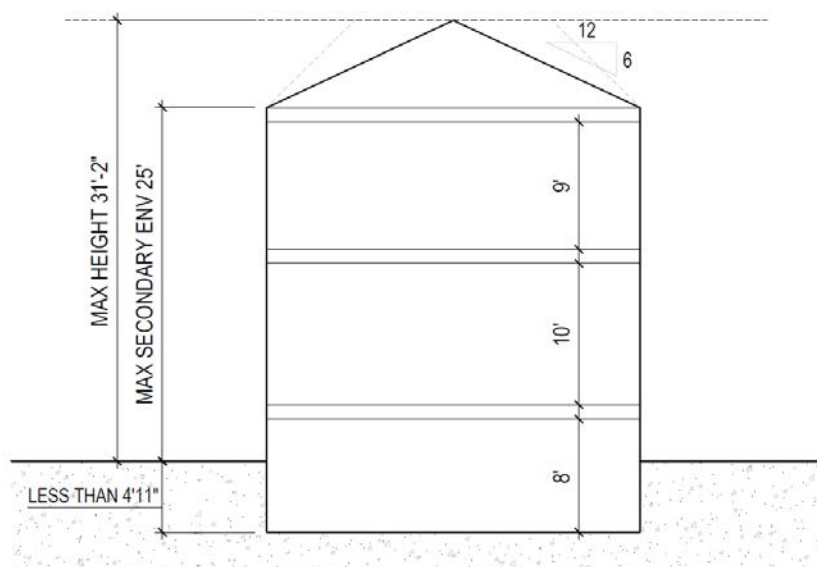


Figure 9: New houses with basements not more than 1.5 m (4.9 ft.) below grade can still comply with the existing height limit in RS-1

2. Expand Discretion for Height Increases in RS-1 to Enable Secondary Suites on Challenged Lots – Additional criteria are recommended to be added to the existing provisions for height relaxation in Section 4.3.4 of the RS-1 District Schedule to enable considerations for new houses with secondary suites. The proposed provisions would allow for a case-by-case height relaxation up to 10.7 m (35.1 ft.) for a new house (with a secondary suite) that has a pitched roof design on a site with grade conditions (e.g. significant sloping) that mean it cannot fully comply with the existing height limit and proposed below grade depth requirements.

In discussions with industry, some small home builders and designers suggested that the building height limit in the RS-1 Zoning District should be increased to align with the height limit in all other RS zones of 10.7 m (35.1 ft.) to make it easier to comply with the proposed maximum basement depth for new houses with secondary suites. However, as basement depths less than 1.5 m (4.9 ft.) are achievable under the existing height limit in ordinary conditions, staff are not recommending a general height increase for new houses in RS-1 as a necessary response to the strengthening of the basement regulations at this time. Staff are instead proposing that cases of merit be managed through relaxations.

3. Add Minimum Window Area Requirements to the RS-3 and RS-3A Districts Schedule - In July 2018, Council approved changes to most RS District Schedules that introduced minimum glazing area requirements for secondary suites as part of changes to permit two-family dwellings, however changes were not made to the RS-3 and RS-3A Districts Schedule at that time. As staff have observed that this regulation has increased the window area provided in new secondary suites since it was introduced in the other RS Zoning Districts, a minor amendment to add it to the RS-3 and RS-3A Districts Schedule is proposed. This change would create consistency across all of the RS Zoning Districts.
4. Clarify Regulations for Lowering the Level of Ground and Exemptions for Window Wells in Most RS District Schedules – Currently, most RS District Schedules establish limitations on the extent to which the ground level on a site can be altered to provide light or access to below grade floor area and additional guidance is provided in the Light or Access to Basement or Cellar Administration Bulletin. As this Administration Bulletin is outdated, staff are recommending that, along with the other proposed changes to limit external entries to basements, the guidance it contains on lowered surfaces and window wells be added to the regulations in most RS District Schedules to provide additional clarity for staff and applicants. Subject to Council approval of these changes, the Administration Bulletin would no longer be necessary and would be deleted.
5. Improve Design Flexibility for Front Entrances for Secondary Suites – Current RS regulations allow for two doors facing the front street provided that both are located at or above grade. A secondary below grade entry at the front of a house is currently limited to facing the side yard, which necessitates a notched design for the basement level. A minor amendment is proposed to allow a second below grade entry to face the front yard in a house with a secondary suite. Because secondary suites are typically built below grade, this will improve design flexibility and improve opportunities for the entry to the basement suite to be located at the front of the house in consideration of grade or privacy issues.

6. Enable Relaxations for Sites with Unique Soil and Hydrological Conditions - The 2009 zoning changes to enable full basements in RS Districts did not account for sites with soil or hydrological conditions (e.g. peat) which create challenges for below grade construction. To address this, changes to Section 3 are proposed to enable the Director of Planning to relax provisions, including those for above grade floor area, on a case-by-case basis for sites where soil or hydrological conditions are unsuitable for below grade construction.

Peat is a biologically rich carbon sink and undergoes lengthy decomposition and settlement, and is generally an unsuitable soil layer for construction. Excavation and dewatering of peat can result in differential settlement patterns in the surrounding area and other environmental impacts. Conventional construction and drainage methods do not work in peat conditions and can cause significant issues as settlement occurs and existing structures on and around the site are compromised.⁵ Because of these issues, best practice is to minimize disturbance of peat soils. The proposed relaxation would better facilitate this by providing an opportunity to shift more floor area of a house above-grade (up to 0.6 FSR) and limit the need for excavation and below grade construction.

In summary, the proposed amendments would repair, strengthen and clarify regulations for new houses in RS Zoning Districts by:

- a) limiting the location of a secondary suite, lock-off unit or bedroom to a basement (less than 1.5 m [4.9 ft.] below grade) or above grade area;
- b) restricting the location of a living room, kitchen, dining room or bedroom to portions of a basement that are less than 1.5 m (4.9 ft.) below the adjoining ground;
- c) no longer permitting an external entry to a cellar;
- d) allowing the Director of Planning to relax building height up to 10.7 m (35.1 ft.) in instances where a house with a basement suite is proposed with a pitched roof design and where the grade of the site is challenging;
- e) extending the minimum window area requirements for secondary suites to the RS-3 and RS-3A zoning districts;
- f) allowing a second front entry to a house with a secondary suite to be located below grade; and
- g) allowing the Director of Planning to relax provisions for sites in the RS zoning districts where soil conditions and site hydrology preclude below grade construction.

Staff are recommending these changes primarily to improve livability outcomes for basements and secondary suites, as was intended in 2009 when regulation changes enabled full basement levels in RS zones. To support this objective, the proposed amendments would require below grade floor area that includes a secondary suite or habitable room to be approximately 0.33 m (1.1 ft.) less deep than is being allowed today. While raising the basement level is achievable without necessitating changes to maximum building height, it may require design trade-offs that could influence the decisions of some property owners' and builders' of whether or not to include a secondary suite when planning a new house. It is possible that the proposed changes could result in a small reduction in the proportion of new houses that include a secondary suite, however it's likely that the type of suites that would no longer be built are those with the poorest livability condition, which these changes are focused on preventing.

⁵ The Tea Swamp area in the Mount Pleasant neighbourhood has experienced significant issues related to settlement of peat soils.

Subject to Council approval, staff will monitor and evaluate the results of these regulatory changes and report back on the outcomes and any future changes needed to address concerns related to basements, cellars and secondary suites in new houses.

4. Future Work

Future work related to the issues with deep basement construction will involve further research and analysis related to the issues and implications discussed in this report, including livability, accessibility, sustainability and resiliency. Once the broader review of issues related to basement construction is complete, performance objectives (beyond the current focus on design control) for new house construction and options for regulation change to achieve those objectives will be identified and shared for public commentary. Staff anticipate that a report outlining future changes to the regulations for new house construction will be provided for Council consideration early in 2020.

Public Engagement

Staff engaged with the small builders industry through a workshop held on June 13th and an online survey available from August 1st through September 6th. In person public engagement opportunities on the topic of deeper basements was provided through pop-up events at various locations across the city during the summer months. Residents could also provide comments through Talk Vancouver through a survey which sought comments on issues related to deeper basements and duplex.

Staff hosted an Open House on September 17th to share what had been heard so far through engagement and get feedback on the proposed amendments. A full engagement summary is provided as Appendix C.

Financial

There are no financial implications.

Legal

As is normal practice when regulations change, applicants who are in process will need to comply with by-law changes if enacted or permits cannot be issued. Staff are working to quantify the volume of in-stream applications and will provide notification to applicants who may be affected by changes pending by-law referral.

CONCLUSION

The proposed amendments will repair and clarify the regulations for new house construction to limit the depth of secondary suites to less than 1.5 m (4.9 ft.) below grade. Limiting basement depth will improve the livability of basements suites, and no longer permitting secondary suites to be located in cellars will make it easier for basements to be converted to include suites over the life of the building and will begin to address a range of other issues identified with the construction of deep basements.

* * * * *

**DRAFT By-law to amend
Zoning and Development By-law No. 3575
regarding floor space below finished grade**

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 the Zoning and Development Bylaw.
2. In section 3.2, Council:
 - (a) inserts the following as a new section 3.2.11:

“3.2.11 The Director of Planning, on the advice of the Chief Building Official, may relax any necessary provisions in an RS district schedule in order to permit additional above grade floor area if soil or hydrological conditions on a site are not suitable to below grade construction, provided that:

 - (a) the soil or hydrological conditions are documented to the satisfaction of the Director of Planning; and
 - (b) the area of all floors at or above finished grade does not exceed a floor space ratio of 0.6.”; and
 - (b) renumbers the existing 3.2.11 as 3.2.12.
3. Council strikes out section 10.21 and substitutes:

“10.21 Living Accommodation Below Finished Grade

 - 10.21.1 In the case of multiple dwellings:
 - (a) living accommodation may be located below finished grade provided the floor is no more than 0.8 m below the finished grade of the adjoining ground, except that the Director of Planning may increase this dimension to 1.5 m subject to applicable policies and guidelines; and
 - (b) where existing utility, recreational or storage areas are located below finished grade, a minimum of 20% of the floor area below finished grade shall be retained for such uses, except that the Director of Planning may allow a lesser amount where the Director of Planning is satisfied that adequate utility, recreational and storage space is provided elsewhere in the building.
 - 10.21.2 Storage rooms shall be excluded from the provisions of section 10.21.1.
 - 10.21.3 In the case of a one-family dwelling, one-family dwelling with secondary suite, two-family dwelling, two-family dwelling with secondary suite, or two-family dwelling with lock-off unit:
 - a. a secondary suite, lock-off unit or bedroom may be located in a basement; and
 - b. no portion of a living room, kitchen, dining room or bedroom can be located 1.5 m or more below the finished grade of the adjoining ground.

-
- 10.21.4 In the case of a one-family dwelling or a one-family dwelling with secondary suite existing prior to [the date of enactment], a secondary suite, lock-off unit or bedroom may be located in a cellar, provided that the cellar is no more than 1.83 m below the average finished grade.”.
4. In the RS-1 District Schedule, Council strikes out section 4.3.4 and substitutes:
- “4.3.4 Notwithstanding the height limitation in section 4.3.1, the Director of Planning may permit a building to exceed a height of 9.5 m but not to exceed a height of 10.7 m provided that:
- (a) for all uses other than one-family dwelling with secondary suite, the Director of Planning considers:
 - (i) the impact of the increased height on views from surrounding development,
 - (ii) the extent to which the increased height improves the roof lines of the building, and
 - (iii) the effect of the increased height on adjacent properties and the character of the area; and
 - (b) for one-family dwelling with secondary suite:
 - (i) all roofs, except roofs covering only the first storey, have no flat portions, have a minimum slope of 7:12 ratio over the whole roof area and are limited to gable, hip or gambrel roofs, and
 - (ii) the Director of Planning considers the relationship between the height of the floors above the basement floor and the adjacent finished grade.”.
5. In the RS-1, RS-3 and RS-3A, and RS-5 District Schedules, Council strikes out section 4.17.2 and substitutes:
- “4.17.2 There shall be no more than:
- (a) one separate and distinct front entrance to a one-family dwelling; and
 - (b) two separate and distinct front entrances to a one-family dwelling with secondary suite.”.
6. In the RS-6 and RS-7 District Schedules, Council strikes out section 4.17.3 and substitutes:
- “4.17.3 There shall be no more than:
- (a) one separate and distinct front entrance to a one-family dwelling; and
 - (b) two separate and distinct front entrances to a one-family dwelling with secondary suite.”.
7. In the RS-1, RS-3 and RS-3A, and RS-5 District Schedules, Council strikes out section 4.17.4 and substitutes:
- “4.17.4 The surface of the ground adjoining a building can be lowered only for the purpose of providing:

-
- (a) a window well for a basement or a cellar, provided that the lowered surface does not extend more than 1.0 m from the surface of a wall;
 - (b) a sunken entrance for a basement, provided that:
 - (i) the portion of the building abutting the lowered surface faces either the front street or the rear property line,
 - (ii) the lowered surface does not extend more than 3.1 m into the required front or rear yard, measured from the street-facing wall and including stair runs or vertical change in grade between the basement and the existing grade, and
 - (iii) the sum of the widths of all lowered surfaces abutting the building is not greater than half the width of the building or 4.6 m, whichever is the lesser; or
 - (c) a sunken entrance for a cellar in buildings existing prior to [the date of enactment], provided that:
 - (i) it complies with sections 4.17.4(b)(i) through (iii), and
 - (ii) the depth of the lowered surface does not exceed 1.83 m below the average finished grade.”.
8. In the RS-6 District Schedule, Council strikes out section 4.17.5 and substitutes:
- “4.17.5 The surface of the ground adjoining a building can be lowered only for the purpose of providing:
- (a) a window well for a basement or a cellar, provided that the lowered surface does not extend more than 1.0 m from the surface of a wall;
 - (b) a sunken entrance for a basement, provided that:
 - (i) the portion of the building abutting the lowered surface faces either the front street or the rear property line,
 - (ii) the lowered surface does not extend more than 3.1 m into the required front or rear yard, measured from the street-facing wall and including stair runs or vertical change in grade between the basement and the existing grade, and
 - (iii) the sum of the widths of all lowered surfaces abutting the building is not greater than half the width of the building or 4.6 m, whichever is the lesser; or
 - (c) a sunken entrance for a cellar in buildings existing prior to [the date of enactment], provided that:
 - (i) it complies with sections 4.17.5(b)(i) through (iii), and
 - (ii) the depth of the lowered surface does not exceed 1.83 m below the average finished grade.”.
9. In the RS-1 and RS-5 District Schedules, Council strikes out section 4.17.5 and substitutes:
- “4.17.5 Notwithstanding section 4.17.2 or section 4.17.3, the Director of Planning may, on the advice of the Chief Building Official, permit one additional entrance facing a front yard or a side yard if it provides access to a building existing prior to March 14, 1989.”.

10. In the RS-3 and RS-3A Districts Schedule, Council:
 - (a) strikes out section 4.17.5 and substitutes:

“4.17.5 Notwithstanding section 4.17.2, the Director of Planning may, on the advice of the Chief Building Official, permit one additional entrance facing a front yard or a side yard if it provides access to a building existing prior to March 14, 1989.”; and
 - (b) adds a new section 4.17.6 as follows:

“4.17.6 Exterior windows in a secondary suite or lock off unit must have:

 - (a) a minimum total glazing area of 10% of the total floor area of the room, in each of the kitchen, living room and dining room; and
 - (b) a minimum total glazing area of 5% of the total floor area of the room, in all other rooms, except bathrooms and laundry rooms.”.
3. In the RS-6 District Schedule, Council strikes out section 4.17.6 and substitutes:

“4.17.6 Notwithstanding section 4.17.3 or 4.17.4, the Director of Planning may, on the advice of the Chief Building Official, permit one additional entrance facing a front yard or a side yard if it provides access to a building existing prior to March 14, 1989.”.
4. In the RS-7 District Schedule, Council strikes out section 4.17.5 and substitutes:

“4.17.5 Notwithstanding section 4.17.3 or 4.17.4, the Director of Planning may, on the advice of the Chief Building Official, permit one additional entrance facing a front yard or a side yard if it provides access to a building existing prior to March 14, 1989.”.

* * * * *

EXAMPLE OF PROPOSED CHANGES TO RS-1 DISTRICT SCHEDULE

Note: Bold italics and strikethrough denote changes. Only relevant provisions of the Schedule have been included.

RS-1 District Schedule**4.3 Height**

4.3.1 Height shall not exceed:

- (a) for all uses other than two-family dwelling or two-family dwelling with secondary suite, 9.5 m in height and 2½ storeys, nor exceed the maximum dimensions created by the combination of:
 - (i) a primary envelope located in compliance with the side yard regulation and formed by planes vertically extended 4.9 m in height and then extending inward and upward at an angle of 30 degrees from the horizontal to the point where the planes intersect; and
 - (ii) a secondary envelope located between the required side yards and equal to 60 percent of the site width (except as provided for by section 4.3.2) and formed by planes vertically extended 7.6 m in height and then extending inward and upward at an angle of 45 degrees from the horizontal to the point where the planes intersect.
- (b) for two-family dwelling or two-family dwelling with secondary suite, 10.7 m and 2 ½ storeys.

4.3.2 The secondary envelope need not be less than 9.8 m in width except as limited by the required side yard.

4.3.3 Height shall be measured from a hypothetical surface determined by joining the existing grades at the intersections of the hypothetical lines defining the front and rear yards and the side property lines, except that if the Director of Planning is of the opinion that the hypothetical surface determined by joining the existing grades is not compatible with the existing grades of adjoining sites or general topography of the area, the Director of Planning may instead require that height be measured from base surface.

4.3.4 ~~Notwithstanding the height limitation in section 4.3.1, the Director of Planning may permit a building to exceed a height of 9.5 m but not to exceed a height of 10.7 m provided that the Director of Planning considers:~~

- ~~(a) the impact of the increased height on views from surrounding development;~~
- ~~(b) the extent to which the increased height improves the roof lines of the building; and~~
- ~~(c) the effect of the increased height on adjacent properties and the character of the area.~~

Notwithstanding the height limitation in section 4.3.1, the Director of Planning may permit a building to exceed a height of 9.5 m but not to exceed a height of 10.7 m provided that:

- (a) for all uses other than one-family dwelling with secondary suite, the Director of Planning considers:***
 - (i) the impact of the increased height on views from surrounding development,***
 - (ii) the extent to which the increased height improves the roof lines of the building, and***
 - (iii) the effect of the increased height on adjacent properties and the character of the area; and***

- (b) for one-family dwelling with secondary suite:*
- (i) all roofs, except roofs covering only the first storey, have no flat portions, have a minimum slope of 7:12 ratio over the whole roof area and are limited to gable, hip or gambrel roofs, and*
 - (ii) the Director of Planning considers the relationship between the height of the floors above the basement floor and the adjacent finished grade.*

4.3.5 Where the Director of Planning is prepared to approve an increase in floor space ratio pursuant to section 4.7.1(c), the Director of Planning may permit a building to exceed any of the maximum dimensions of section 4.3.1 provided that in no case shall the height be increased to more than 10.7 m.

4.3.6 Notwithstanding any other provisions in this By-law, the Director of Planning may relax the height requirement to accommodate building features designed to reduce energy consumption in a Passive House, if the Director of Planning first considers:

- (a) the intent of the relevant schedule;
- (b) all applicable Council policies and guidelines;
- (c) the relationship of the development to nearby residential development;
- (d) the submission of any advisory group, property owner or tenant; and
- (e) the relaxation does not exceed .5 m,

except that this relaxation shall not apply to laneway houses.

4.17 External Design

4.17.1 For the purpose of section 4.17, a front entrance means a door facing the front yard and located at or within 1.8 m of grade or connected to grade by stairs, a ramp or other means and a side entrance means a door located on that part of a building facing a side yard and at or within 1.8 m of grade or connected to grade by stairs, a ramp or other means.

~~4.17.2 There shall be no more than one separate and distinct front entrance to a one-family dwelling or one-family dwelling with secondary suite.~~

There shall be no more than:

- (a) one separate and distinct front entrance to a one-family dwelling; and*
- (b) two separate and distinct front entrances to a one-family dwelling with secondary suite.*

4.17.3 A side entrance to a one-family dwelling or one-family dwelling with secondary suite shall face a street or lane, or be located no less than 5.0 m from the side property line, except that there shall be no more than one side entrance facing each side property line.

~~4.17.4 For the purpose of providing light or access to a basement or cellar, the surface of the ground adjoining a building can be lowered without affecting the calculation of average elevation, provided that:~~

- ~~(a) the lowered surface does not extend more than 3.1 m into the required front or rear yard; and~~
- ~~(b) that portion of the building abutting the lowered surface:~~
 - ~~(i) faces either the front street or the rear property line; and~~
 - ~~(ii) is not greater than half the width of the building, or 4.6 m, whichever is the lesser.~~

The surface of the ground adjoining a building can be lowered only for the purpose of providing:

- (a) *a window well for a basement or cellar, provided that the lowered surface does not extend more than 1.0 m from the surface of a wall;*
- (b) *a sunken entrance for a basement, provided that:*
 - (i) *the portion of the building abutting the lowered surface faces either the front street or the rear property line,*
 - (ii) *the lowered surface does not extend more than 3.1 m into the required front or rear yard, measured from the street-facing wall and including stair runs or vertical change in grade between the basement and the existing grade, and*
 - (iii) *the sum of the widths of all lowered surfaces abutting the building is not greater than half the width of the building, or 4.6 m, whichever is the lesser; or*
- (c) *a sunken entrance for a cellar in buildings existing prior to [the date of enactment], provided that:*
 - (i) *it complies with sections 4.17.4(b)(i) through (iii), and*
 - (ii) *the depth of the lowered surface does not exceed 1.83 m below average finished grade.*

4.17.5 ~~Notwithstanding section 4.17.2 or section 4.17.3, the Director of Planning may:~~

- ~~(a) on the advice of the Chief Building Official, permit one additional entrance facing a front yard or a side yard if it provides access to a building existing prior to March 14, 1989 in the RS-1 District; or~~
- ~~(b) permit one additional entrance facing a front yard for a one-family dwelling with a secondary suite if both entrances facing the front yard are located at or above grade.~~

Notwithstanding section 4.17.2 or section 4.17.3, the Director of Planning may, on the advice of the Chief Building Official, permit one additional entrance facing a front yard or a side yard if it provides access to a building existing prior to March 14, 1989.

- 4.17.6 In two-family dwellings and two-family dwellings with secondary suite, there must be two main entrances, one to each principal dwelling unit.
- 4.17.7 In two-family dwellings and two-family dwellings with secondary suite on a corner site, one main entrance must face the front street and one main entrance must face the flanking street.
- 4.17.8 In two-family dwellings and two-family dwellings with secondary suite, there must be a covered entry at each main entrance, with a minimum width and depth of 1.8 m.
- 4.17.9 In two-family dwellings and two-family dwellings with secondary suite, roof design must comply with the following provisions:
- (a) all roofs except for dormer roofs shall have a minimum slope of 7:12 and a maximum slope of 12:12 and shall be either hip or gable or a combination of both, and shall intersect at its lower portion with the exterior wall face of the building or the vertical projection thereof at a line no higher than the lesser of 7.9 m above the base surface or the floor level of a half-storey or attic above the second storey;
 - (b) dormer roofs shall be gable, hip or shed in form and shall have a minimum slope of 4:12;
 - (c) the maximum total width of dormers provided on a half storey above the second storey must not exceed 50% of the width of the elevation of the storey below;
 - (d) all exterior dormer walls shall be set back a minimum of 0.6 m from the exterior face of the wall of the storey below; and
 - (e) notwithstanding section 4.17.9(d), one dormer, which faces an interior side yard and which provides headroom over a stair and any intermediate and top landings which provide access from the second storey to the half-storey above may have its face wall flush or continuous with the second storey exterior wall face below.

- 4.17.10 Exterior windows in a secondary suite or lock off unit must have:
- (a) a minimum total glazing area of 10% of the total floor area of the room, in each of the kitchen, living room and dining room; and
 - (b) a minimum total glazing area of 5% of the total floor area of the room, in all other rooms, except bathrooms and laundry rooms.
- 4.17.11 The Director of Planning may vary the requirements of section 4.17 for two-family dwellings and two-family dwellings with secondary suite if, in the opinion of the Director of Planning, the design meets the intent of the regulations for quality and durability of design and architectural expression, or to facilitate a building designed for certification under the Passive House standard or International Living Future Institute's Zero Energy standard, or an equivalent to the satisfaction of the Director of Planning.

* * * * *

Public and Industry Engagement Summary

Public Engagement

Pop-Up Events

Staff held 14 pop-up engagement events over the summer months at various locations throughout the city to ask the public for feedback on duplexes and implications of deep basements in new homes. The date, location, and attendance for these events were as follows:

Date	Location	# of People Engaged
Tuesday July 9, 2019	Sunset Community Centre	4
Thursday July 11, 2019	33 Acres Brewing (sidewalk out front)	10
Saturday July 13, 2019	Dunbar Stong's Market	35
Thursday July 18, 2019	Collingwood Neighbourhood House	25
Saturday July 20, 2019	Seawall near Science World	20
Tuesday July 23, 2019	Jonathan Roger's Park	40
Wednesday July 24, 2019	Maple Grove Pool	20
Saturday July 27, 2019	T&T Norquay	28
Wednesday July 31, 2019	London Drugs – Hastings Sunrise	15
Saturday August 10, 2019	Trout Lake Farmers Market	35
Monday August 19, 2019	Hillcrest Community Centre	120
Thursday August 22, 2019	Mount Pleasant Park	20
Saturday August 24, 2019	Champlain Independent Grocer	35
Total		407

Staff were available at the pop-up events to respond to questions, and display boards contained information about what can currently be built in single-family (RS) zones today as well as duplexes and issues with deep basements in new homes. The pop-up events were advertised on social media (Instagram, twitter, Facebook) and the Making Room webpage, and an email was sent to the Making Room mailing list to notify subscribers of the events.

Talk Vancouver Survey

Related to the pop-up engagement events, a survey was live on Talk Vancouver from July 9th to September 15th which asked the public for their input on duplexes and issues and implications of deep basements.

In total, there were 3,382 Talk Vancouver survey respondents, with results showing that the majority of respondents viewed the issues identified with deep basements as important to address. Response percentages indicating opinions of the importance of addressing each topic were as follows:

- **Livability:** 81% very important or important, 2% don't know, 17% not important or not important at all.
- **GHG Emissions:** 56% very important or important, 4% don't know, 40% not important or not important at all.

- **Site Impacts:** 66% very important or important, 3% don't know, 31% not important or not important at all.
- **Groundwater:** 83% very important or important, 5% don't know, 12% not important or not important at all.
- **Design Flexibility:** 76% very important or important, 5% don't know, 19% not important or not important at all.
- **Emergency Preparedness:** 79% very important or important, 3% don't know, 18% not important or not important at all.

Comments regarding other issues related to the construction of new houses with deep basements commonly listed by respondents included:

- Safety
 - Break-ins
 - Fire evacuation and earthquake preparedness
 - Radon
 - Number of exits
 - Illegal suites and unsafe/unjust living situations
- Flooding
- Health & Well-being
 - Mental health implications of lack of light and sightlines to outdoors
 - Access to common yard space
 - Mold/mildew
 - Ventilation
- Colder temperatures and proper insulation
- Pests & bugs
- Ceiling height
- Soundproofing/noise transfer
- Basements should not be living space
- Equity – homeowner vs. renter
- Too many regulations and restrictions
 - Need more flexibility in design
 - Overly stringent requirements are discouraging suite construction
 - Barriers to creating housing
- Loss of mature trees
- Affordability & housing crisis
- Accessibility
 - Issues with accessing deep basements but also with accessing main floor if basements are pulled up out of ground. People with disabilities should be able to access houses via ground level.
- Design aesthetic
- Demolitions
 - Replacing an existing house with new one which provides no additional dwelling units
- Construction costs
- Impacts to neighbours/neighbourhood
 - Geotechnical impacts – excavation impacting integrity of neighbouring foundations
 - Street parking and traffic impacts

- Daylight impacts to neighbouring properties due to increased height above grade if no basement
- Construction noise
- Short-term rentals

A more fulsome analysis of open-ended responses to all Talk Vancouver survey questions is forthcoming and will be shared prior to public hearing.

Open House

Staff hosted an Open House on September 17th to share the proposed changes to repair and strengthen regulations for basements and cellars. This event provided an opportunity for the public and industry to learn more about the proposed changes, provide feedback, and learn what had been heard so far through engagement. The Open House was advertised twice in the Vancouver Courier, through posters in community centres, libraries, and the Services Centre, and on the Making Room webpage. Emails were sent to the Making Room mailing list, all members of industry who had been invited to the industry workshop, and all Talk Vancouver survey participants who requested to receive updates on Housing Choices in Low-Density Neighbourhoods.

Feedback was received from 34 respondents, with the majority agreeing or strongly agreeing with the proposed changes. Specifically, 66% agreed or strongly agreed with the proposed regulations to limit basement depths and the location of suites to increase livability, 11% were neutral, and 22% disagreed or strongly disagreed. With respect to proposed changes to align regulations with existing policy and increase design flexibility on challenged lots, 85% agreed or strongly agreed, 9% were neutral, and 6% disagreed. Additional comments included: reaffirmation of the importance of increasing affordability and livability in housing in Vancouver; a desire for greater relaxations (e.g. height), less restrictions, and more flexibility; and, a desire for more housing choices in these neighbourhoods (e.g. triplex, fourplex, 4 storey apartment).

Industry Engagement

Staff discussed the concerns with deep basements and cellars with local small-scale home builders and designers at a workshop held in June and got further industry feedback through a survey which was live online from August 1st through September 6th to allow those in the industry who were not able to attend the workshop an opportunity to provide their thoughts.

The workshop included a presentation from staff and facilitated breakout sessions to explore key issues and gather ideas on potential solutions. It was attended by 26 people and 15 comment forms were returned; the survey had 15 respondents. Participants in the workshop and survey confirmed that their experiences align with observations and challenges outlined by staff. Common issues that participants expressed agreement about on their comment forms and in surveys included the livability of the suite (i.e. light and size of spaces), compromised accessibility of the suite and/or main house, sewer concerns around pumping, compromised tree retention due to deep excavation, and the amount of concrete used for basements. In addition to issues and observations presented by staff, industry also raised concerns about issues related to:

- Equity - lower standards of health and well-being for the tenant in the basement suite;
- Parking and transportation issues related to an increase in suites;

-
- Additional costs for shoring, soil removal, and concrete foundations;
 - Limitations on light wells in front yards;
 - Compromised design due to tree retention;
 - Arbitrary zoning regulations; and,
 - Requirement of extra insulation in high performance houses adding to the massing of the building envelope which pushes additional mass below grade and could increase the risk of encountering groundwater and requirement of pumping.

Participants identified the following driving factors:

- Challenging RS-1 building height restriction;
- A focus on external aesthetics rather than internal design standards;
- The requirement to have suite entrances at rear of site;
- Restrictions on deck sizes and height if main floor is raised above grade;
- Inflexible above-grade FSR limit;
- Market demand for high ceilings and modern designs with main floor closer to grade;
- High demand and shortage of units in current market leaving renters with no other choice but to rent poor quality suites; and,
- High land values and a desire to max out FSR, even in basements.

Potential solutions identified by participants included:

- Increased building height in RS-1;
- Establishing a maximum below-grade floor area requirement;
- Introduction of a maximum floor-to-ceiling height;
- Redistribution of FSR between house and laneway house to allow larger laneway house;
- Less restriction on above-grade FSR;
- Relaxations for window wells and suite entrances;
- Requirements to future proof new construction to facilitate conversion to add suite(s) after house is built;
- Landscaping window wells and sunken patios; and,
- No more character designs.

* * * * *