



## REFERRAL REPORT

Report Date: October 26, 2020  
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Meeting Date: November 24, 2020

TO: Vancouver City Council

FROM: General Manager of Planning, Urban Design and Sustainability in consultation with the Director of Legal Services

SUBJECT: Zoning and Development By-Law Amendments for Mass Timber Construction

### **RECOMMENDATION**

THAT the General Manager of Planning, Urban Design and Sustainability be instructed to make application to amend the Zoning and Development By-law to introduce a definition for mass timber building, and variances to regulations for height, yards, setbacks, site coverage, building depth, and external design to provide more flexibility to enable mass timber projects, as generally set out in Appendix A, and that the application be referred to Public Hearing;

FURTHER THAT the Director of Legal Services be instructed to prepare the necessary amending by-law, generally in accordance with Appendix A, for consideration at Public Hearing.

### **REPORT SUMMARY**

This report proposes amending the Zoning and Development By-law to support low embodied carbon construction that utilizes mass timber construction in new buildings, 7 storeys and higher. The proposed amendments would define mass timber buildings, allow a variance in building height regulations of up to 18 cm per floor, and allow design flexibility for mass timber buildings in all zones.

## **COUNCIL AUTHORITY/PREVIOUS DECISIONS**

In January 2019, Council declared a Climate Emergency and directed staff to respond with a plan of action.

In April 2019, Council approved 54 Accelerated Actions and 6 Big Moves to address the Climate Emergency. Big Move 5 set a target of a 40% reduction in embodied emissions associated with construction materials and designs by 2030.

In July 2019, Council adopted the 2019 Vancouver Building Bylaw, which introduced encapsulated mass timber construction as an option to provide fire separation between commercial and residential occupancies in mixed-use buildings.

In November 2019, Council approved the Rental Incentives Review Phase II, which directed staff to report back with recommendations to address the climate emergency, including the reduction of embodied emissions, through the removal of regulatory barriers.

In April 2020, Council approved amendments to the Building By-law to allow encapsulated mass timber construction up to 12 storeys for residential and commercial uses.

## **CITY MANAGER'S/GENERAL MANAGER'S COMMENTS**

The City Manager recommends approval of the foregoing.

## **REPORT**

### ***Background/Context***

A mass timber building is one in which the primary load-bearing structure is made of solid or engineered wood. Mass timber is typically made of lumber that is laminated to form structural components for floors, walls, columns and beams.

There are several advantages to enabling mass timber construction in Vancouver:

- *low carbon construction*: mass timber can reduce the embodied carbon pollution of construction by 25-45%
- *local/regional jobs*: mass timber construction will support BC forestry, and high value-add jobs in manufacturing, design, engineering, and construction industries
- *energy efficiency*: wood is a natural insulator, and using mass timber can make it easier to achieve high levels of energy efficiency
- *quicker, quieter, cleaner construction*: mass timber components are usually fabricated off-site, so on-site construction is faster and less intrusive than traditional construction

Because mass timber construction aligns with Council's goal to reduce carbon pollution from construction materials and designs (embodied carbon), and because of the advantages noted above, Council directed staff in November 2019 to "amend City by-laws, policies, and guidelines to remove barriers and encourage mass timber development in appropriate locations, by Q4 2020".

Accordingly, in April of this year, Council approved new taller (up to 12 storey) mass timber buildings in the building code. Following on that work, this report proposes amendments to the Zoning and Development By-law, which will remove the most significant barriers to mass timber construction in zoning regulation.

## ***Strategic Analysis***

### Proposed Zoning Amendments

After consulting with the mass timber design, engineering and development representatives; relevant City staff; and review of a Perkins + Will report that confirmed the need and parameters of zoning flexibility, staff explored several options to amend the zoning. After evaluation, staff focussed on two key items that balanced external advice with efficient implementation in the permit process. The following regulatory amendments are proposed for Section 10 General Regulations of the Zoning by-law, in order to be available throughout the city of Vancouver:

1. *Allow a variance to the maximum height for mass timber buildings 7 storeys and higher, of up to 18 cm (approx. 7") per floor.*

Providing flexibility to increase the height of each wood floor was recommended to address the inequity between floor to ceiling heights in concrete compared to mass timber construction. More specifically, heating, cooling, and electrical duct runs can be readily built into concrete floor slabs but not into mass timber floor slabs, so some ceiling height is lost in mass timber construction unless the permitted height can be adjusted. The proposed increase is intended to be a measured but useful offset of this inequity, and can be applied to a variety of building types and uses.

Staff considered whether there might be additional requirements or requests for variances that could be activated by the proposed height increase. While there can be minor implications to increases in height – for example, increased floor area for vertical circulation – staff do not anticipate significant issues arising from this amendment.

2. *Allow design flexibility for mass timber buildings 7 storeys and higher.*

Providing an opportunity to potentially vary building articulation requirements was seen as a key way to encourage mass timber construction. Upper level stepback requirements in zoning can greatly complicate mass timber construction assemblies. Creating flexibility to reduce or remove building stepbacks – where appropriate - will simplify mass timber construction. It is clear that there will be sites/projects in which varying stepback requirements will have little to no impact, and others where it may not work well. The intent of this amendment is to provide the Director of Planning with the flexibility to assess that opportunity, and to balance facilitating mass timber construction with urban design goals.

In the proposed regulations, the interaction between policy that requires or encourages building stepbacks and the goal of facilitating the use of mass timber will be limited by two factors:

- a) the proposed variances are subject to approval by the Director of Planning, who retains the ability to permit or decline variances based on the circumstances of a development; and

- b) the proposed variances would apply only to mass timber buildings that are 7 storeys or more, which represent a small proportion of overall permit volumes.

If these variances are supported by Council, the Director of Planning in consultation with the Director of Sustainability will provide an administrative bulletin to provide guidance to applicants on the appropriate balance of mass timber relaxations and urban design goals, in advance of enactment.

In order to be able to qualify for the proposed variances, a project would have to meet the proposed definition of mass timber, to be located in Section 2 of the Zoning and Development By-law. The proposed definition and regulations can be found in Appendix A of this report. This definition ensures that the variances will apply only to buildings where the majority of the structure is mass timber, rather than conventional lightweight frame construction that do not face the same barriers to adoption.

It should be noted that while the proposed variances would remove zoning barriers to a key type of mass timber building, there are other examples of mass timber building that Council may want to facilitate in the future. These include buildings with structural dimensions that are smaller than the proposed definition or hybrid assemblies where wood is a significant component but not the majority of material used. There is more complexity in defining and potentially administering these other types. Staff therefore propose to start with the larger, readily securable form proposed in this report, and use the initial projects to evaluate the outcomes for mass timber. The work proposed in this report is intended as a first step in response to Council's direction to remove zoning barriers to mass timber construction.

### Consultation

Internal discussions focused on relevant staff groups including Development Review, Development Planning, Regulation Policy, Building Policy, and Legal Services. The proposed changes were also brought to the internal Policy Implementation Advisory Committee for input and were supported.

External consultations were based on multiple discussions with mass timber industry members, including the City's Mass Timber Advisory Committee. Industry representatives were key to identifying meaningful zoning changes, and were generally supportive of zoning flexibility. The representatives also requested that staff simplify the administration of variances, where possible. This aligns with internal goals that new regulations should not create undue complexity for staff or applicants, or lengthen permit processing times.

### Implementation

The proposed amendments should have minimal impact on permit processing, as the form of construction (mass timber, 7 storeys and above) is a low permit volume form, and will use verification by Registered Professionals that is within the typical scope of an engineering consultant's work.

In terms of resourcing, extra costs or new technology, the recommended implementation tools are as follows:

- publish Director of Planning Bulletin to provide guidance on the proposed zoning variances and application requirements
- train identified intake and enquiry staff (including development and rezoning planners) in the application process – i.e. criteria and submission requirements - for this regulatory change
- train key staff on mass timber fundamentals to provide an informed basis for discussions around the proposed variances, and put staff on more solid footing. Sustainability will provide this training.
- provide general internal and external communication on the proposed amendment

### ***Implications/Related Issues/Risk***

#### ***Financial***

There are no financial implications.

#### ***Environmental***

The recommended zoning amendments will make it easier to build with mass timber, which can reduce embodied carbon pollution by 25-45%, saving hundreds of tonnes of emissions per building.

### ***CONCLUSION***

Approving the recommendations in this report will simplify zoning regulations for and remove barriers to mass timber construction. As the City facilitates mass timber development and better integrates this form of construction into policy and regulation, it will help grow the local economy for this form of construction. Most importantly, facilitating mass timber construction will reduce the embodied carbon pollution of new construction and will thus play a role in supporting the City's response to the global climate emergency.

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**DRAFT By-law to amend  
Zoning and Development By-law No. 3575  
Regarding Regulations for Mass Timber Buildings**

*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 By-law No. 3575.

2. In section 2, Council adds the following new definition in the correct alphabetical order:

“Mass Timber Building            A building where the majority of structural members are made of wood with a minimum dimension of 96 mm.”.

3. In section 10, Council adds the following new section 10.21A in the correct numerical order:

**“10.21A            Mass Timber Buildings**

10.21A.1            For a mass timber building that is 7 storeys or more, the Director of Planning may vary the following regulations if the Director of Planning first considers the intent of the relevant district schedule and all applicable Council policies and guidelines:

(a)            building height by up to 18 cm per floor, except that height regulations related to the distance of a building from a property line may be varied by more than 18 cm per floor; and

(b)            yards, setbacks, site coverage, building depth, and external design.”.

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