



Town of Newmarket
395 Mulock Drive P.O. Box 328,
Newmarket, Ontario, L3Y 4X7

Email: info@newmarket.ca | Website: newmarket.ca | Phone: 905-895-5193

Construction Vibration Staff Report to Council

Report Number: 2020-74

Department(s): Legislative Services and Planning and Building Services

Author(s): Flynn Scott, Manager of Regulatory Services and Patricia Cho, Planner

Meeting Date: October 26, 2020

Recommendations

1. That the report entitled Construction Vibration dated October 26, 2020 be received;
2. That Council directs staff to prepare an amended version of Noise By-law 2017-76 to include provisions relating to vibration (Option #3) for non-Planning Act development, for Council's consideration at a later date;
3. That direction be provided to staff to revise the Town's current Vibration Policy's sections specifically dealing with maximum vibration limits, zones of influence, and applicability only to Planning Act developments; and,
4. That Staff be authorized and directed to do all things necessary to give effect to this resolution

Executive Summary

Impact of vibrations emanating from construction sites in or adjacent to residential areas has been identified by Council as a concern. Report 2019-29 proposed an approach to address vibration impacts during Planning Act development applications. Council directed staff to further investigate options to address vibration impacts for non-Planning Act development (e.g. driveway or parking lot paving).

This report recommends that Council amend the Town's current Noise By-law to include provisions relating to vibration. In addition, staff intend to make technical revisions to the Town's existing Vibration Policy for greater clarity.

Purpose

The purpose of this report is to provide options for Council's consideration in regard to how best to address issues relating to vibration impacts from non-Planning Act developments (e.g. repaving of driveways or parking lots).

Background

On March 18, 2019, [Report 2019-19](#) was presented to Committee of the Whole related to Construction Vibration Issues. The report laid out a proposed approach to assessing the potential impact of vibration during construction by requiring vibration assessments as part of complete Planning Act applications for development proposals. This report will refer to this approach as the "Vibration Policy".

Following adoption, staff began to implement the Vibration Policy. However, alongside this implementation, staff pursued Council's direction to further investigate the regulation of construction vibrations for non-Planning Act developments. After extensive research and review, there are several options available to Council to further mitigate concerns relating to vibration from these specific developments.

Discussion

Vibrations emanate from two general types of development: i) development that is permitted under the Planning Act (e.g., residential subdivisions and any other large developments), and ii) non-Planning Act development (e.g., driveway repaving, parking lot repaving).

The Town currently has a Vibration Policy to address vibration issues from Planning Act developments. However, the Town does not currently have means to address vibration from non-Planning Act developments.

The following outlines three options for consideration to address vibration from non-Planning Act developments.

Options for Council's consideration relating to non-Planning Act Development:

Options 1: Take no action and continue to monitor vibration complaints

Customer Service Vibration Complaint Data

The Town's Customer Services department compiled data on the number and description of complaints received related to vibrations from 2016 to 2020. There had been roughly 52 complaints received since January 1, 2016, equating to roughly 15 formal complaints per year. Of these, the vast majority were for private developments under the Planning Act, with numerous complaints lodged against one specific

development. However, we now have the Vibration Policy to address these types of complaints. The remaining, a minority number of complaints, were for public works projects commenced by either the Town or the Region, such as road repaving on Yonge Street and Eagle Street and sewer replacement. Most of the complaints on vibrations are tied with noise as being the offending element.

Due to the low number of vibration complaints received for non-Planning Act developments, no further action may be necessary from the Town at this time. Town staff would continue to monitor complaints received in relation to vibration for non-Planning Act developments and assess the need to report back with proposed changes. Staff would continue to take an educational approach to vibration complaints to achieve voluntary compliance with contractors or property owners directly. In the event that damage is sustained to an adjacent property due to vibration, property owners would have an opportunity to pursue civil litigation for remediation or financial recovery.

Option 2: Increase enforcement through monitoring devices and training for Property Standard Officers (not recommended)

For Planning Act developments, vibration assessments are conducted by the developer's consulting engineer, who has noise and vibration monitoring devices available and has the expertise to read these meters correctly.

Non-Planning Act developments could require a similar level of monitoring to ensure vibration levels are in order to accurately monitor the levels of vibration. In order to properly enforce vibration levels, vibration monitoring devices would be required to be obtained. Vibration monitoring devices cost approximately \$1,000 - \$2,000 per device. Along with equipment to be purchased, there will be training requirements for officers to be certified to read these meters correctly. Training for each officer will be approximately \$750 - \$1,000, with a requirement to renew certifications on an annual basis.

It is relevant to note that there will also be a significant service level change, as Property Standards Officers do not currently monitor or enforce vibration complaints to this extent. Under this option, Property Standard Officers would be required to be on-site more frequently and for a longer duration, which will ultimately have service level interruptions to other residents' complaints received.

Considering the complaint data received from Customer Service, with the low number of vibration complaints related to non-Planning Act developments, Town staff do not believe this would be the best use of resources available to the Town.

Option 3: Amend Noise By-law 2017-76 (Recommended)

Jurisdictional Scan of York Region Municipalities

Over the course of the review, staff researched numerous municipalities to determine how they deal with vibration issues from construction activities on non-Planning Act developments within their communities. The following municipalities regulate sound,

vibration, or nuisance that cause disturbance to residents directly through their Noise By-laws:

Municipal Comparison of Vibration in Non-Planning Act Developments		
Municipality	Noise By-law	Other
City of Vaughan	•	
Township of King	•	
Town of Aurora		N/A
City of Richmond Hill	•	
City of Markham	•	
Town of Whitchurch-Stouffville	•	
Town of East Gwillimbury	•	

Additionally, the City of Toronto has established a Vibration Control Bylaw 514-2008, Chapter 363 – Building Construction and Demolition, enacted under the Toronto Municipal Code, which requires a Vibration Control Form as part of the building permit application package. However, speaking with the Deputy Chief Building Official and Director at Toronto Building – Scarborough District, the Vibration Control Form is primarily for building and structures from construction and demolition and does not address vibration impacts from non-Planning Act development (e.g. driveway or parking lot paving). For residential driveway/parking lot repaving, a paving permit is required to be obtained from Transportation Services, to ensure that the driveway width complies with zoning regulations but does not deal with construction vibrations.

Other municipalities, such as Toronto, Markham, and Vaughan directly licence driveway paving contractors through their business licensing divisions. Any driveway paving work is required to be completed by a licensed contractor, where they have regulations to properly control the work they complete in terms of insurance, noise monitoring, etc. This is an additional tool used to further mitigate or prevent the potential for vibration or noise complaints that relate to paving or repaving directly.

Overall, By-law Enforcement Officers at the Township of King and City of Vaughan were able to provide insight on how they regulate vibrations. Vibration complaints they received were generally correlated to noise and the permitted construction time which was resolved through the Noise By-law. Concerns about the impact of vibration, such as structural damage to the foundation of adjacent properties, are considered a civil matter

and recourse for damage is pursued by private landowner against the other property owner. If the complaint is part of a Planning Act development or building permit process, the matter gets referred to the Engineering Department.

Amending the Town's Noise By-law

In accordance with the Municipal Act, Council adopted [Noise By-law 2017-76](#). This by-law is designed to regulate noises and sounds that disturb residents of the Town. The definition of "sound" within the by-law is, "the sensation produced by stimulation of the organs of hearing by vibrations transmitted through the air or other medium." In order to properly enforce vibration under the Noise By-law, an amendment to the definition of "sound" will be required. In addition to this amendment, new regulations will need to be proposed to meet the compliance objectives of the by-law.

If Council elects this option, the Noise By-law will be amended to mirror the existing practices that Property Standards Officers follow in relation to noise. This process includes the following:

- A formal complaint is received in relation to vibration;
- Complainants will be provided a Noise/Vibration Log to monitor these occurrences;
- A Property Standards Officer will review the complainant's log to determine if the reported vibrations are in contravention of the Noise By-law (e.g. time of day, length of time, and location of where the vibration is occurring);
- If a violation is confirmed, Property Standards Officers will take an education-first approach to resolve any complaints; and
- If voluntary compliance cannot be reached, an AMPS ticket will be issued and further action may be taken.

Under this option, Council would also have an opportunity to increase regulations specifically pertaining to vibration. This could include by-law provisions which requires vibration to be monitored on large sites that employ construction methods which can result in vibrations being transmitted to neighbouring properties. Other vibration-producing activities (e.g. pile driving) on smaller residential sites could also be clearly established within the regulations of the by-law.

It is relevant to note that the process for measuring noise within Newmarket is currently subjective, as the Property Standards Officer enforces the Noise By-law by considering the logs that are provided by the resident. However, the noise level is not being measured (i.e. decibel readings) as the appropriate tools are not available and the by-law does not specifically identify measurable restrictions. Should Council wish to establish more objective standards for measuring noise or vibration, then Option #2 would be the proposed solution for doing so.

Should Option #3 be pursued as per the recommendations of this report, an updated Noise By-law would be prepared and presented to Council at a future date.

Planning Act Applications: The Vibration Policy (already in place)

The Town's Vibration Policy applies only to Planning Act development. It discusses the activities that can cause vibrations, the impacts that vibrations can have, the challenges of regulating vibrations, and the range of sensitivity to vibration that people can experience. The Policy sets vibration limits depending on the types of structures that may be impacted by the anticipated vibrations.

Under this Policy, proponents of development applications are required to provide a "Vibration Impact Assessment", prepared by a professional engineer. Based on the construction methods that would be employed, this assessment estimates the vibrations that would be caused. The assessment would demonstrate what vibrations might be expected within a "zone of influence".

According to the Vibration Policy, when complaints regarding vibration are received, development applicants are required to cease construction, measure vibrations, meet with complainants, and reduce the vibration-causing activities to below the thresholds of the Vibration Policy.

The Policy sets limits on vibration as set out in Table 1, which varied depending on whether the vibrations caused were expected to impact buildings which are considered more sensitive to vibration impacts.

Type of Structure	Vibration limit at the foundation
1. Dwelling with concrete foundations, wood framed, drywall finish or equivalent	5 mm/sec
2. Structures that are particularly sensitive to vibrations due to their age or construction technique	3 mm/sec

Proposed Revisions to the Vibration Policy

At this time, staff are taking the opportunity to update specific parts of our current Vibration Policy in order to strengthen policies associated with maximum vibration limits and zones of influence, as well as further clarify the Policy's applicability only to Planning Act developments. These changes are technical in nature and are intended to result in greater clarity and ease of implementation.

Conclusion

To address the issue of the impact of vibrations on properties arising from non-Planning Act developments, Town staff has provided three (3) options within this report for Council's consideration. In addition, staff intend to make technical revisions to the Town's existing Vibration Policy for greater clarity.

Business Plan and Strategic Plan Linkages

- Extraordinary Places and Spaces

Consultation

- Building Services
- Legal Services

Human Resource Considerations

If Council elects to introduce vibration monitoring equipment (Option #2), there will be significant impacts to service levels pertaining to Regulatory Services and the availability of staff to respond to other complaints received. Again, this is largely due to the necessity for staff to remain onsite and monitor vibration levels during construction projects.

If regulatory amendments are made to the Noise By-law (Option #3), Regulatory Services will have greater responsibility for investigating and enforcing complaints relating to vibration.

Budget Impact

If Council directs staff to move forward with Option #2, there will be budget implications for purchasing vibration monitoring devices and training costs associated for proper certifications to be obtained.

Attachments

None.

Submitted by

Patricia Cho, Planner, Planning Services

Flynn Scott, Manager of Regulatory Services

Approved for Submission

Adrian Cammaert, Acting Manager, Planning Services

Jason Unger, Acting Director, Planning and Building Services

Peter Noehammer, Commissioner, Development & Infrastructure Services

Esther Armchuk, Commissioner, Corporate Services

Contact

For more information, please contact Patricia Cho, Planner, Planning Services, at pcho@newmarket.ca