

City of **MARKHAM**

Task 12: Infill Zoning Standards and Interface between Residential and Non-Residential Uses

Comprehensive Zoning By-law Project



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1. INTRODUCTION

This paper addresses infill zoning standards and the interface between residential and non-residential uses as part of a series of discussion papers prepared for Phase 1 of Markham's New Comprehensive Zoning By-law Project. The intent of this paper is to provide guidance for the overall strategy to inform the drafting of the new comprehensive zoning by-law.

Markham Council has approved several infill zoning by-laws over the years to address issues relating to the compatibility of redeveloped houses and new lot creation in established residential areas and to protect the existing character of these neighbourhoods. The by-laws are reviewed in this paper and compared to approaches in other municipalities.

The interface between residential and non-residential uses is intended to address land use compatibility. At one time this concern was at the foundation of modern zoning which resulted in zones with distinct land use categories. Over the past number of years many municipalities have moved away from strictly segregating all zoning categories by use towards more zones with a rich blend of uses, instead focussing zoning regulations in these areas on built form issues. Nevertheless, mitigating the impact of incompatibility between certain non-residential uses and residential uses continues to be an important challenge for modern zoning. The paper will explore how current Markham zoning by-laws address this issue and compare this with a number of approaches by other municipalities to draw lessons and options for the new zoning by-law.

A list of reference documents that were consulted as part of this review is provided at the conclusion of the paper. This paper will be included as part of the public consultation for Phase 1, scheduled for the Fall of 2015.

2. INFILL ZONING

The intent of this part of the report is to provide guidance for the new comprehensive zoning by-law to regulate redevelopment in established neighbourhoods in order to ensure compatibility with the pattern of existing development in the area. It builds on previous work completed by the City in 2010 and 2012 reviewing the implications of infill housing on a number of parent by-laws, as well as regarding specific neighbourhoods such as Sabiston/Oakcrest/Riverbend, Hughson Drive and Varley Village.

For the most part, the infill standards examined in this report will address the redevelopment of individual properties within established neighbourhoods. However, these standards would also apply to larger lots which could be subdivided and require a plan of subdivision for redevelopment to occur within established neighbourhoods. This paper does not address infill developments that are outside of established residential neighbourhoods.

The redevelopment of houses within established residential neighbourhoods, is a trend that the City of Markham has been increasingly experiencing for approximately the past two decades or so. Typically, older, established neighbourhoods are characterized by generous lot sizes with an original and predominant building form from the 1950's and 1960's that is much more modest than today's standards. Houses in these established neighbourhoods have been demolished and rebuilt, or altered, and in many cases, have resulted in an increase in the total gross floor area. This has raised local resident concerns with respect to the compatibility of these larger houses within established neighbourhoods and the impact of these homes on the existing character of the area. In addition, in some instances severances of larger lots in established neighbourhoods have also raised concerns with the compatibility of the newly created smaller lots and the predominant pattern of existing lot sizes in the area.

The redevelopment of established residential neighbourhoods, as described above, was largely made possible because the zoning by-laws enacted at the time that these earlier neighbourhoods were created, did not include a full range of regulations to control new development to adequately fit in with the then established pattern of development.

Markham Council responded in the early 1990's with a series of amending infill overlay by-laws for certain established neighbourhoods, identified based on public input and Council direction, to ensure compatibility of redevelopment and to help maintain the character of neighbourhoods experiencing development pressures. More recent by-laws for low rise residential areas developed after the 1990's, have incorporated regulations that fit these areas better, directly into the body of the zoning by-laws.

It is clear that Markham's original neighbourhoods have evolved and undergone some change over the years. In some cases what was once an area of one storey houses has evolved to become a mix of one and two storey houses that coexist quite well together. In other areas some lots have been severed and built on to create a greater variety of lot sizes and building conditions. Markham's zoning and infill standards have also evolved to address these changes and will need to be reflected in the new zoning by-law. Some of these changes are echoed in studies on lot severances and infill standards that have recently been completed for a number of areas.

The amending by-laws affecting pre 1990 residential neighbourhoods will be reviewed and compared to similar by-laws passed around the same time in other Ontario municipalities, to determine options for addressing infill development as part of the new comprehensive zoning by-law. The more recent Markham infill studies will also be reviewed to assess how standards have evolved to fit particular circumstances.

An important consideration in addressing infill standards for the new comprehensive by-law is that these regulations and standards need to be as simple as possible in order to make them easily understood by residents of Markham's neighbourhoods who will be most directly affected by them.

2.1 Markham Official Plan

Section 8.2.3.5 of the new Official Plan contains policies relating to infill development that directly affect development approvals for redevelopment within existing residential neighbourhoods.

They can also be used to help guide regulations that are incorporated into the new comprehensive zoning by-law. The Section is reproduced below in full.

"In considering an application for *development approval* on lands designated 'Residential Low Rise', Council shall ensure infill development respects and reflects the existing pattern and character of adjacent development, by adhering to the development criteria outlined below, in addition to the criteria in Section 8.2.1.3 and the area and site specific policies of Sections 9.3.3, 9.13.2, 9.14.2, 9.18.5, 9.19.2, unless otherwise specified in a *heritage conservation district* plan:

- a. the lot frontage(s) and lot area(s) of the proposed new lot(s) shall be consistent with the sizes of existing lots on both sides of the street on which the property is located;
- b. the proposed new building(s) shall have heights, massing and scale appropriate for the site and generally consistent with that permitted by the zoning for adjacent properties and properties on the same street;
- c. front and rear yard setbacks for the new building(s) shall be consistent with the front and rear yards that exist on the same side of the street;

- d. the setback between new building(s) and the interior side lot line shall increase as the lot frontage increases;
- e. the new building(s) shall have a complementary relationship with existing buildings, while accommodating a diversity of building styles, materials and colours;
- f. existing trees and vegetation shall be retained and enhanced through new street tree planting and additional on-site landscaping;
- g. the width of the garage(s) and driveway(s) at the front of new building(s) shall be limited to ensure that the streetscape is not dominated by garages and driveways;
- h. new driveways and service connections shall be sited to minimize tree loss;
- i. impacts on adjacent properties shall be minimized in relation to grading, drainage, access and circulation, privacy and microclimatic conditions such as shadowing;
- j. the orientation and sizing of new lots shall not have a negative impact on significant public views and vistas that help define a residential neighbourhood;
- k. proposals to extend the public street network should be designed to improve neighbourhood connectivity, improve local traffic circulation and enhance conditions for pedestrians and cyclists;
- l. road and/or municipal infrastructure shall be adequate to provide water and wastewater service, waste management services and fire protection; and
- m. other criteria as identified in plans approved by Council.

Although this section is directed at development approvals such as zoning by-law amendments, site plan approvals, plans of subdivision and severances, the policies can also assist in providing guidance when crafting regulations regarding infill developments for the new by-law. The following sub sections of 8.2.3.5 can provide such guidance and may help in the formulation of standards for residential zones:

- a. compatibility of lot frontages and lot areas with adjacent lots (minimum lot frontages and lot areas);
- b. height, building mass and scale that is consistent with adjacent sites (maximum height limits, maximum lot coverage, possibly floor space limitations);
- c. consistent minimum front and rear yard setbacks, adapted to each neighbourhood;
- d. minimum interior side yard setbacks that increase as the size of the building increases; and
- e. limiting garage and driveway widths.

The other subsections in 8.2.3.5 address issues that can be best achieved through site plan approval, plan of subdivision or through the application of other City by-laws such as the Tree By-law.

The specific policies referred to in the introductory statement to Section 8.2.3.5 reference implementing zoning standards in Berczy Village/Wismer Commons/ Greensborough/Swan Lake, Markham Village, Markville, Thornhill and Unionville to ensure that infill development respects and reflects the pattern and character of existing development. The specific requirements for these areas will need to be carried forward into the new zoning by-law.

There are also general policies in Section 6 of the Official Plan which speak to the placement of buildings and the relationship of buildings to their context which have some implications for infill

housing. For example, Section 6.1.8.2 states that the policy of Council is “to design and place buildings on sites based on their relationship to their location and context, their character and use, and their ability to enhance existing site conditions and positively contribute to adjacent development and the public realm”. Section 6.1.8.4 states in part that buildings be designed and placed on a site to address continuity of building placement and minimize the appearance of garage entrances and provide screening of parking along public streets. These objectives can be addressed by applying a range of appropriate standards as described in the next sections of this paper, adapted in each case to reflect local circumstances.

Official Plan policies regarding infill housing are summarized in Appendix 1 of this report.

2.2 Existing Markham By-laws

In the early 1990’s the Town of Markham passed four separate “infilling” by-laws that amended a number of existing Markham parent zoning by-laws to deal with concerns regarding the severance of existing lots within established neighbourhoods and the replacement or alteration of existing houses, resulting in newer and much larger houses that were considered out of scale with the neighbourhood.

The intent of Markham’s infill by-laws was to ensure that redevelopment in established neighbourhoods was compatible with existing development and that the impact of redevelopment on the character of the area was neutralized. The types of controls that were introduced at the time affected the massing and height of buildings, setbacks from the street, placement of the building on the lot, location of driveways and garages. A table is included as Appendix 2 to this report summarizing the provisions in Markham’s infill by-laws.

The regulations and standards for the new zoning by-law will need to incorporate the considerable work that has already been completed over the years on infill zoning in the various parts of Markham, updated to reflect current circumstances, as discussed further in this report. In all instances compatibility with the predominant character of development in the area will be the guiding principle. The issue will be to determine how many standards need to be applied in each area. For certain areas where infill standards have been incorporated into existing zoning by-laws or Heritage Conservation Plans have been prepared, such as Berczy Village/Wismer Commons/Greensborough/Swan Lake, Markham Village, Markville, Thornhill and Old Unionville, the regulations in the new by-law will directly reflect the still relevant standards already in place for these areas. In other areas standards may need to be updated to reflect the evolution of the area.

Some of the infill by-laws amend existing parent by-laws and have thus been incorporated into the parent by-law. In other cases infill by-laws represent overlays on existing by-laws. In preparing the new zoning by-law a decision will need to be made whether to continue to have overlays or to incorporate the standards directly into the comprehensive zoning by-law.

The option of retaining overlay by-laws would result in a more complicated by-law containing provisions in a number of places and the need for the public and staff to cross reference more than one by-law to determine compliance. This would contradict one of the guiding principles of the comprehensive zoning by-law project, which is to simplify the Markham zoning by-law and make it more accessible to the public. It would also make it more of a challenge for by-law enforcement who would need to interpret multiple layers of regulations. The option of incorporating the standards directly into the by-law would still reflect the unique characteristics of each area, but provide a more straightforward and understandable framework.

The following sub sections examine Markham's approach in its infill by-laws for each type of standard.

2.2.1 Heights

Height limits for infill development in Markham differentiate between pitched and flat roofs. The heights range from 8.6 to 11 metres for pitched roofs, depending on the area and zone and 8 metres for buildings with flat roofs.

Height and grade are measured in a number of different ways in the Markham parent zoning by-laws. In some cases, such as Varley Village, height is measured from established grade to the mid-point between the eaves and the ridge. In other cases, height is measured from the crown of the road and not established grade. The section on heights in the discussion paper on Definitions (Task 5) more fully describes the various ways that height is defined and measured. As discussed in that paper it would make sense to adopt a uniform way of measuring height for all residential areas in Markham, based on the options explored in the Definitions paper.

As discussed below, the heights in the Markham infill by-laws are similar to heights in the infill by-laws in other municipalities. Markham may decide to continue with this practice. However, if there are going to be height limits across all zones, (residential, mixed use, commercial and employment) Markham may decide to adopt the practice used by other municipalities to show maximum height limits on zoning maps covering the entire municipality.

2.2.2 Number of Storeys

Although similar to height limits, the limitation on the number of storeys is intended to measure whether a building appears similar to other buildings on the street. All Markham infill by-laws limit buildings to two storeys to prevent additional storeys from being built within the height limit.

In preparing its new zoning by-law Markham may wish to continue to include the maximum number of storeys as part of its regulations, if the outward appearance of the storeys at the front of the buildings was determined to be an essential planning and design consideration. However, this will need to be weighed against the possible confusion created by having two similar measures, height and storeys, which could at times result in conflicts.

Another option would be to include only a limit on heights, not on the number of storeys, as has been done in a number of other municipalities, and to calculate the height limit as a proxy to reflect the acceptable limit on storeys. The rationale for doing this would be based on achieving compatibility with adjacent buildings based on the scale and bulk of buildings, rather than storeys, while accepting that in some cases this may lead to a limited degree of diversity in the number of storeys within the height limit.

2.2.3 Depth of Dwelling

Placing limits on the depth of buildings in established residential neighbourhoods is intended to address shadowing and overlook into adjacent back yards. It also helps to establish a building envelope (together with setbacks, building heights and lot coverage) which provides certainty with respect to massing and scale of buildings. All the Markham Infill by-laws limit the depth of a dwelling to 16.8 metres, while allowing for an extension to 18.9 metres, provided it is limited to 1 storey, less than 4.6 metres in height and is only half as wide as the widest part of the dwelling. In considering how to incorporate this regulation for its new zoning by-law, Markham may wish to vary

the building depth by zone to reflect differences across the City, where appropriate. To do this will require a detailed, area by area analysis.

2.2.4 Garage Projections and Widths

Limiting the distance that a garage can project from the main wall of a building is intended to address the character and appearance of a street, particularly where many building facades include double, or even triple, garages. In considering whether to apply controls on garage projections, Markham will need to differentiate between areas where the main buildings extend to the front yard setback and there is no need to limit garage projections, while ensuring that garages comply with the same setback requirement, as compared to areas where the main buildings are located further back than the front yard setback, in which case restrictions on garage projections may be appropriate. Markham's infill by-laws limit garage projections to no more than 2.1 metres beyond the main building closest to the lot line and can be no wider than 7.7 metres on lots with less than 18.3 metres of frontage.

There are also other standards to control garage widths in the body of a number Markham's zoning bylaws. Markham By-law 177-96 restricts the width of garages at the front of buildings by zone provided there is no laneway (50 percent of lot frontage in an R1 zone; for single detached dwellings in R2 zones with conventional lots--3.5 metres for a lot with less than 11.6 metres of frontage and 6.1 metres for lots with 11.6 metres of frontage or greater; as well as other variations for semi-detached dwellings, townhouses, duplexes, triplexes and fourplexes; etc. for other zones). The existing standards for garage widths in Markham's parent by-laws vary from zone to zone. The new by-law will need to take into account these differences to accommodate varying lot sizes, building types and frontages.

As discussed below, these standards are generally in tune with the standards in other municipal zoning by-laws in Ontario.

2.2.5 Floor Area Ratio (FAR)

In Markham zoning by-laws the FAR restricts the amount of floor area that can be built on a lot, based on the percentage of the net area of the lot. It appears that the intent of this regulation is to control the bulk and footprint of the building by limiting floor space. In fact, calculating the net lot area is very complicated and produces uneven results for calculating permitted floor area. If the intent is to limit the amount of floor area and to relate it to the size of the lot, then a better, similar but simpler measure would be to apply a floor space index standard (FSI), which relates the ratio of gross floor area of a building to the size of the lot. This measure is used and defined in Markham's new Official Plan.

On the other hand, Markham may decide that neither an FSI nor an FAR limit is necessary in established low rise residential neighbourhoods to control building bulk, although FSI limits may still be appropriate in other residential, mixed use or employment zones. Both the FAR and FSI measures are somewhat abstract as applied to low rise residential neighbourhoods, whereas a combination of restrictions on setbacks, height, building frontage, building depth, and lot coverage can effectively achieve the same result in terms of bulk and building envelope controls.

The Markham infill by-laws restrict the FAR to 42, 45, 47 and 50 percent of the net lot area depending on location.

2.2.6 Maximum Floor Area Cap

Some of Markham's infilling by-laws include a maximum cap on floor area of 278.8 metres exclusive of garage and 41.8 metres for garages. As with the regulation of FAR, Markham will need to decide whether to continue to apply a restriction on maximum floor area in some of its zones, or if the objective of limiting the scale and footprint of the building can more effectively be achieved through a combination of other controls as outlined above.

2.3 Other Municipal Infill Zoning By-laws

A number of other Ontario municipalities amended their zoning by-laws to address similar issues related to infill housing around the time that Markham passed its infill housing by-laws. As summarized below, the types of provisions included in these by-laws were very similar to Markham's amendments. In newer by-laws these infill provisions are generally folded into the requirements for particular zones. Some are formulated as area specific amendments to the zoning by-law. A summary of zoning standards for a number of Ontario Municipalities is included as Appendix 3.

2.3.1 Height

Generally other municipal zoning by-laws do not distinguish between flat roofs and sloped roofs. The distinction is usually embedded in the definition of height itself. Maximum heights in the infill zoning by-laws generally range from 9.0 to 9.5 metres. The City of Burlington includes a height restriction of two and half storeys whereas Richmond Hill restricts height to 6 metres in some zones and 8.5 metres in other zones. These are comparable to Markham's height limits of 8.6 to 11 metres for pitched roofs, and 8 metres for buildings with flat roofs.

As discussed previously and explored more fully in the discussion paper of Definitions (Task 5), Markham's existing zoning by-laws define height in a number of ways. These definitions should be standardized for residential buildings in the new zoning by-law. A common approach in other municipalities is to define grade as the mid point or average elevation along the frontage of a property, or the average across the property. Height for residential buildings will need to be measured either to the top of flat and peaked roofs or, as is done in several other municipalities, as the mid-point between the eaves and the top of a peaked roofs.

As discussed previously, Markham may decide to establish heights for all parts of the City differentiated by design considerations and existing conditions for each zone and show these on zoning height maps covering the City. If this approach is adopted, the appropriate heights for the zones that affect the areas covered by the infill zoning by-laws will need to take into account the approved heights in these by-laws and reflect local conditions.

2.3.2 Maximum Number of Storeys

Most other municipal zoning by-laws do not place a restriction on the number of storeys, but rely instead only on height limits. The City of Burlington is an exception, with a height limit of 2.5 storeys for the areas covered by its infill by-laws, with no corresponding metric limit. As discussed previously, having limits on both the number of storeys and height measures may cause confusion. Since the metric height limit is a simple, precise measure and is the primary standard used by many municipalities across Ontario, Markham may wish to consider only using this standard to regulate height of buildings in its new zoning by-law.

2.3.3 Depth of Dwelling

A number of municipalities control the depth of dwelling, including Oakville and Toronto. In Oakville, residential buildings may extend to a depth of 20 metres with a further 3 metre extension for a one storey addition provided it meets 9 metre setback requirements. In Toronto, the building depth varies by residential zone and building type. For example, in the R1 zone the maximum building depth is 17 metres for detached and semi-detached dwellings and 14 metres for other types of residential buildings. In an RD zone the maximum depth is 18 metres. Markham restricts the depth of a dwelling to 16.8 metres, while allowing for an extension to 18.9 metres provided it is limited to 1 storey, less than 4.6 metres in height and only half as wide as the widest part of the dwelling.

If Markham decides to include a restriction of building depth in its new comprehensive zoning by-law, it may need to be differentiated to reflect the circumstances in particular zones, such as in Toronto. There may not be one uniform standard to fit all circumstances.

2.3.4 Garages

Garage widths are restricted in a number of municipal bylaws and, as in Markham, often vary by zone to reflect predominant building characteristics in an area. In Mississauga the garage width is limited to 6 metres in its R4 and R5 zones, which permit detached dwellings on smaller lots and lot frontages compared to other residential zones with detached dwellings. In Richmond Hill the garage width is limited to 6.5 metres for lots of less than 18.3 metres and 9.7 metres for lots greater than 18.3 metres. Zones in municipal zoning by-laws with rear lane access and zones that include certain types of townhouses may not permit garages along the frontage of buildings at all. This reflects Markham's approach in by-law 177-96.

2.3.5 Maximum Floor Area Ratio (FAR)

Oakville includes FAR restrictions in its zoning by-law for low density residence areas, which vary by lot size (26% for lots over 300 square metres and 41% for lots less than 300 metres in size); most other municipalities do not. Unlike Markham, Oakville's measurement is based on total lot area, rather than net lot area.

As discussed earlier, restrictions on FARs are problematic because of difficulties and ambiguities with measurement. A preferred, similar standard which is defined in the Markham Official Plan is Floor Space Index. However, as already discussed, this type of limit may not be necessary in low density residential zones. The same objectives can effectively be achieved through a combination of other regulations to define building scale and envelope as is the case with many other municipalities which control heights, setbacks and lot coverage, adjusted for each zone, to reflect local circumstances.

2.3.6 Lot Coverage

Lot coverage can be a useful control to provide certainty regarding the size of the footprint of a building in a residential area. Many Ontario municipalities rely on lot coverage as part of an arsenal of other initiatives to achieve compatibility of new infill development with existing areas. Markham's parent by-laws include lot coverage restrictions of between 25 and 35 percent. Other municipalities have restrictions that range from 20 to 50 percent, depending on the characteristics of development in these zones. As with all of the other standards examined in this report, if restrictions on lot coverage are included as part of the comprehensive zoning by-law, they will need to be calibrated to reflect local circumstances.

2.4 Recent Markham Studies on Infill Development

The issue of infill zoning standards has been extensively studied over the years for a number of neighbourhoods in Markham. The common objective of these studies is to review existing zoning regulations to determine the appropriateness of these regulations within the context of the neighbourhood and to determine if new zoning regulations are required to ensure that redevelopment is compatible with the existing character of the area. Highlights from some of the more recent studies undertaken by the City are summarized below:

Oakrest/Sabiston/River Bend neighbourhood in South Unionville (2010)

The Oakrest/Sabiston/River Bend study reviewed the issue of whether additional lot creation should be permitted in the area. Based on an analysis that included consideration of a favourable OMB decision with respect to a severance application at 19 Oakcrest Avenue, which also triggered a site specific rezoning, the report recommends that severances could be accommodated in the future provided that a number of amendments regarding infilling were made to the by-law for the area. These amendments included specific provisions for minimum front, rear, interior and exterior side yard setbacks, maximum height limits and maximum garage projections.

The OMB's reasons for approval of the severance at 19 Oakcrest were based on: an analysis of previously approved similar site specific rezoning amendments in the area, particularly for 16 Oakcrest across the street; an assessment of lot frontages in the area; and a determination that approval would not set a precedent that would affect future development in the area.

Hughson/Lunar/Ankara neighbourhood in Brown's Corners. (2010).

The Hughson/Lunar/Ankara study also considered whether additional lot creation should be permitted in the area. The study recommends that additional lot creation not be permitted and that zoning standards be updated to reflect the character of the area. The then existing zoning by-law for the area (By-law 1507) only included standards for minimum ground floor areas for one and two storey dwellings, minimum front yard setbacks and the same minimum setback to the side and rear lot lines.

The report recommends that additional standards be included in the zoning by-law to protect the character of the area including: lot coverage, floor space index, building height, different setbacks between rear and side yards, lot frontage, building frontage and lot area. These standards are similar to the types of standards included in by-laws passed in Markham for residential neighbourhoods in the 1990's and are included in by-laws of other municipalities dealing with the same challenges. In reaching its conclusion the study draws on a series of OMB decisions supporting the objective of achieving compatibility through zoning measures designed to retain the character of lot patterns in existing neighbourhoods.

Varley Village area in Unionville (2012)

This study reviewed existing zoning standards to determine if an infill zoning by-law for the area had merit. The area was developed in the 1970's and the zoning for the area (By-laws 11-72 and 122-72) from that time includes provisions regarding lot frontage, lot area, front, side and rear yard setbacks, maximum percentage lot coverage and height. The study explored adding a number of additional restrictions including: maximum number of storeys; maximum building depth; maximum garage projection; maximum garage width; and maximum floor area ratio.

The study recommends that, based on the results of an extensive consultation process including a survey of residents, no additional or more restrictive standards should be applied to the area. In fact, the study concluded that many examples of perceived overbuilt development that had occurred in the neighbourhood were the result of minor variance approvals at the Committee of Adjustment. If there was an issue, it was not due to a lack of standards or regulations in the zoning by-law, but approval of variances from these standards and regulations through the Committee of Adjustment.

In Oakrest/Sabiston/River Bend neighbourhood in South Unionville and Hughson/Lunar/Ankara neighbourhood in Brown's Corners the original by-laws included only a minimal list of regulations and standards that failed to protect the predominant neighbourhood character. The infill by-laws and studies update and add to these standards. In the case of Varley Village, it was decided that the existing range of zoning standards were adequate to protect the neighbourhood from undesirable development, provided they were not significantly varied by the Committee of Adjustment.

What is clear from these examples is that infill zoning standards and regulations for residential areas in Markham will vary from area to area and that these different regulations will need to be crafted in the new comprehensive zoning by-law to reflect the dominant lot pattern and development characteristics of each area zone by zone. For example, in certain zones minimum lot frontages of 60 metres may be appropriate while in other areas 15 metres or less may be appropriate. Similar variations from one zone to another will apply to setbacks, lot coverage, building depth, garage projections and other regulations already discussed. Even the types of standards applied in each zone may differ with, for example, some zones including restrictions on garage projections and others not including them.

The choice, in all instances, is whether to apply more restrictive standards, which may lead to more applications to the Committee of Adjustment for variances to these standards. Alternatively, more flexible standards may be applied which may increase as of right permissions and may potentially risk some inappropriate development.

2.5 Conclusions and Options Regarding Infill Zoning

Markham's infill zoning by-laws include standards that reflect the characteristics of areas to which they apply. Some of these standards are similar for all low density residential areas; others vary from area to area or for different building and/or lot types. As outlined in this report, these variations, some of which are summarized in Appendix 2, should inform the standards that will apply in the residential zones that are created for these areas as part of the new comprehensive zoning by-law. The following list summarizes regulations regarding infill zoning that will need to be assessed as part of the new comprehensive zoning by-law to determine if, and where, they should be applied.

- The specific zoning standards to control infill development in Berczy Village/Wismer Commons/ Greensborough/Swan Lake, Markham Village, Markville, Thornhill and Unionville which remain relevant today will need to be carried forward into the new zoning by-law, to comply with the policies of the new Official Plan.
- The conclusions of other approved infill by-laws as well as studies, some of which are specific to particular areas, should provide the basis for incorporating standards into the new by-law on an area by area basis.

- In preparing the new zoning by-law, a decision will need to be made on whether to continue to have infill by-law overlays as is currently done in a number of areas in Markham. This approach could make the zoning by-law somewhat cumbersome to navigate. Alternatively Markham can decide to simply incorporate the standards directly into the comprehensive zoning by-law, adapted to fit each particular zone.
- Heights--Markham's current infill by-laws attach heights to the infill standards. Markham may decide to continue with this practice. However, if there are going to be height limits across all zones (residential, mixed use, commercial and employment), Markham may decide to adopt the practice used by some other municipalities and show maximum height limits on zoning maps covering the whole municipality. In any case, heights should be measured in a consistent way for low density residential areas and should reflect the characteristics of the local area.
- Number of storeys--In preparing its new zoning by-law, Markham may wish to include the maximum number of storeys as part of its regulations, if the outward appearance regarding storeys at the front of the buildings represents an essential planning and design objective. However, this approach will need to be weighed against the possible confusion created by having two similar measures, height and storeys, which could at times result in conflicts. Another option would be to include only a limit on heights, not on the number of storeys, but to adjust the height measure to simulate the desirable number of storeys in each zone.
- Setbacks and minimum lot frontages—Setback and lot frontage limits were not discussed in this report as a separate topic, since these have generally not been included as part of the infill by-laws, but are incorporated as controls for most zones in Markham's parent by-laws. However, references to setbacks and minimum lot frontage requirements are made throughout the report since these are critical elements in determining and controlling the pattern of lot configuration and the footprints of residential buildings to ensure compatibility with other lots and buildings. Lot frontage requirements, as well as front, rear, interior and exterior side yard setbacks should be included in the new by-law for all low rise residential zones and adjusted to reflect existing standards and local conditions.
- Depth of buildings—This is a useful control for limiting overlook and shadowing into adjacent back yards. Markham may wish to vary the building depth by zone to reflect differences across the City, where appropriate, as is done in other municipalities. To do this will require an in depth, area by area, assessment.
- Garage projections-- Controls on garage projections may not be necessary if the main buildings are built to the limit of front yard setbacks and garages are subject to the same setbacks. In some cases, it may be appropriate to not permit any garage projections. Where controls on garage projections are appropriate because the main building is set back further than the front yard setback, the approved restrictions in the infill by-laws could provide guidance on this issue.
- Garage widths-- The standards for garage widths in Markham's existing by-laws vary from zone to zone. The new by-law will need to take into account these differences to accommodate varying lot sizes, building types and frontages.
- Floor Area—Applying Markham's FAR standard in the existing parent by-laws, which requires calculating net lot area, is very complicated and produces uneven results for determining permitted floor area. If the intent is to limit the amount of floor area and to relate it to the size of the lot, then a better, similar but simpler, measure would be to apply a floor space index standard (FSI), which relates the ratio of gross floor area of a building to the size of the lot. This measure is used and defined in Markham's new Official Plan.

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On the other hand, Markham may decide that neither an FSI nor an FAR limit is necessary in established low rise residential neighbourhoods to control building bulk and footprint since this can be more effectively achieved through a combination of controls on setbacks, heights, building frontages, building depths and lot coverages.

- Lot coverage--This type of regulation can be useful to provide certainty regarding the footprint of a building in a residential area. As with all of the other standards examined in this report, if restrictions on lot coverage are included as part of the comprehensive zoning by-law, they will need to be calibrated to reflect local circumstances.

3. INTERFACE BETWEEN RESIDENTIAL AND NON-RESIDENTIAL USES

There are a number of different ways to address the interface between residential and non-residential uses in zoning by-laws. In some cases interface issues are best addressed by restricting the types of non-residential uses that may locate adjacent to zones that permit residential dwellings to ensure compatibility, by either not allowing incompatible uses in the adjacent non-residential zones or imposing setbacks on some uses (from both single use residential and mixed use zones). Compatibility is also addressed by regulating built form through height limits, setbacks and angular plane restrictions. In addition, by-laws may also include standards that require enclosed loading spaces and garbage storage areas and/or providing landscaped buffers. A combination of all of these approaches is usually employed to achieve compatibility. These approaches will be examined in this part of this paper.

3.1 Ministry of the Environment D1 and D6 Guidelines—Land use Compatibility

The Ministry of Environment (MOE) D-1 and D-6 (DPS) Guidelines are the current standard for land use compatibility issues in the Province of Ontario. The guidelines were first developed as guidance materials for MOE staff in reviewing planning documents and now serve as general guidance for decision-makers and development proponents as they consider land use compatibility issues in the planning and development process. The legislative basis for the guidelines is section 14(1) of the Environmental Protection Act R.S.O. 1990. It is important to note that these are not requirements that must be addressed in planning by-laws, but guidelines generated by the Ministry of the Environment to assist decision makers regarding compatibility issues.

A table of suggested separation distances for each category of use based on the guidelines is reproduced in Appendix 4 of this report. The suggested separation distances are intended to be adjusted depending on local context or mitigation measures. They may assist in providing guidance for Markham's comprehensive zoning by-law to determine the range of appropriate uses in employment zones that are adjacent or within 1000 metres of residential zones.

3.2 Provincial Policy Statement 2014

Planning matters in Ontario need to be consistent with the Provincial Policy Statement. The 2014 Provincial Policy Statement was issued subsequent to the DPS Guidelines referred to above and represents the most relevant planning policy framework to guide the drafting of the new zoning by-law. Section 1.2.6.1 of the 2014 Provincial Policy Statement states that "*major facilities and sensitive land uses* should be planned to ensure they are appropriately designed, buffered and/or separated from each other to prevent or mitigate *adverse effects* from odour, noise and other contaminants, minimize risk to public health and safety, and to ensure the long term viability of *major facilities*". "Major facilities", "sensitive land uses" and "adverse effects" are defined terms.

"Major facilities" that are relevant for Markham include such things as airports, transportation infrastructure, rail facilities, sewage treatment facilities, waste management systems, oil and gas pipelines, industries, energy generation facilities and transmission systems." Sensitive land uses" include parts of the natural or built environment such as residences, day care centres and educational and health facilities. "Adverse effects" is defined in the same way as in the Environmental Protection Act and generally refers to impairment or harm to the natural or human environment.

The emphasis of this policy is to ensure the viability of major facilities and to address public health and safety, which has implications for separation distances between major facilities and sensitive land uses in the new comprehensive zoning by-law. These have been addressed in the new Official Plan. Options for incorporating appropriate standards into the new comprehensive zoning by-law are discussed below.

3.3 Markham Official Plan Policies Regarding Residential and Non-Residential Interface

Markham's new Official Plan represents a departure from the previous Official Plan by introducing extensive areas and policies for mixed use development. This provides for the mixing of residential and non-residential uses (such as retail and office), which can coexist within the same designation and, by extension, the same zone. The residential and non-residential uses included in these designations, and the future zones in these areas, are considered compatible with each other. Some of the policies for these mixed use designations address the interface between residential and non-residential uses. Section 8.3.1.4 h), which identifies development criteria within these designations, states that "loading and parking spaces shall be screened from public view and buffered so as to reduce impacts on lands designated Residential" and Section 8.3.1.4 i) states that "landscaped buffers shall be provided adjacent to residential uses".

Other development criteria for lands designated mixed use emphasize compatibility of built form which, while not directly addressing the interface between residential and non-residential uses, can have implications for the massing of buildings and height transitions between lands designated mixed use and adjacent low rise areas. Section 8.3.1.4 d) directs height and density in mixed use areas away from low rise designations and Section 8.3.1.4 e) states that development in mixed use

areas needs to respect angular planes from areas designated for low rise development. Section 8.3.5.1 has a similar policy regarding the transition in height and massing between Mixed Use Office Priority areas and adjacent Residential Low Rise and Mid Rise areas.

There are also policies that speak directly to the interface between residential and non-residential uses in Sections of the Official Plan dealing with Commercial designations and Employment Lands. Policy 8.4.1.7 l), which establishes development criteria on Commercially designated lands, states that “landscaped buffers will be provided adjacent to residential uses”. Other policies in this Section, which speak to built form compatibility, are similar to the policies for mixed use designations referenced above.

Policy 8.5.1.2 speaks to criteria that must be met before considering a site specific zoning by-law amendment for locating a “sensitive land use”, such as a residence, day care facility or place of worship, within an area designated as Employment Lands. Policy 8.5.1.6 k) states that “loading and parking facilities shall be buffered so as to reduce the impacts on lands adjacent to residential uses”. Policy 8.5.1.6 m) states that “landscaped buffers shall be provided adjacent to residential uses”. There are also policies regarding the compatibility of built form in these areas and adjacent areas, similar to policies for mixed use designated lands.

Section 3.4.2.4 states that sensitive land uses such as day care centres and public schools should not be located near significant known air emission sources including the provincial 400 series highways.

Policy 7.1.7.2 states that it is Council policy “to protect rail corridors from the encroachment of incompatible land uses that are sensitive to the noise, vibration and possible safety hazards associated with rail operations by imposing separation distances and/or forms of screening or buffering”. There are also statements in Section 7.2.3.7 requiring buildings or structures adjacent to the Trans Canada Pipeline or a natural gas compressor station to locate a minimum setback from the pipeline right of way, as determined by Trans Canada Pipelines and the National Energy Board, and to consult with Trans Canada Pipelines if the development is planned within 200 metres of the pipeline right-of-way or natural gas compressor station.

Section 8.1.6 requires all uses on lands adjacent to the Greenway, Hamlets and Countryside to comply with provincial minimum distance separation formulae which are developed by the Province to separate uses so as to reduce incompatibility concerns regarding odours from livestock facilities.

In summary, the main zoning by-law implications in the new Official Plan regarding the interface between residential and non-residential uses are:

- to separate sensitive land uses from known air emission sources such as the 400 series of highways;
- to provide a setback from rail corridors and the Trans Canada Pipeline;
- in mixed use designations to provide landscaped buffers and screen parking and loading areas from residential uses and zones, as appropriate;
- to provide a landscaped buffer and to screen and buffer parking and loading areas for development in areas designated Commercial and Employment Lands that are adjacent to residential areas or uses; and
- to apply provincial minimum distance separation formulae regarding livestock facilities.

A summary of relevant Official Plan policies is provided in Appendix 5.

3.4 Markham Existing Zoning By-laws Regarding Standards for Compatibility Between Residential and Non-Residential Uses

A number of Markham's existing parent zoning by-laws impose some constraints and conditions on non-residential uses located adjacent to residential zones. These include some restrictions on uses, setback requirements and standards such as landscaping and enclosing of loading and garbage storage areas. These regulations are distributed throughout the by-laws and not part of any one section that deals with compatibility issues. A summary of provisions in a number of existing Markham zoning by-laws is included in Appendix 6.

3.4.1 Use Restrictions

Section 6.15 of By-law 177-96 does not permit obnoxious uses in any zone covered by the by-law. Obnoxious uses are defined as: "a use which, from its nature or operation, creates a nuisance or is liable to become a nuisance or offensive by the creation of noise or vibration, or by reason of the emission of gas fumes, dust or objectionable odour, or by any reason of the matter, waste or other material generated by the use, and without limiting the generality of the foregoing, shall include any use which may be declared to be a noxious or offensive trade or business".

Section 5.2 of By-law 1229, which applies to the Village of Markham, prohibits a number of uses including uses associated with animal slaughter, manufacture of cement, asphalt brick or concrete, a junk, salvage or automobile wrecking yard, uses associated with motor vehicle racing, trailer camps, an outdoor theatre and other noxious uses.

An issue with excluding noxious uses is that it leaves a lot of room for interpretation and subjectivity. The concept of an obnoxious use originally came from Health Protection and Promotion Act, which has since been repealed and thus may no longer be relevant. As mentioned elsewhere in this study, a preferred approach to prohibiting specific uses in areas or zones may be to include a general provision in the new zoning by-law that states that all uses that are not listed as permitted in any zone shall be prohibited in that zone.

Bylaw 177-96 also includes a restriction that applies to G1 (general Industrial) zones which does not permit outdoor storage within any yard adjoining a residential zone boundary (see Table A4 of November 1, 2014 consolidation).

3.4.2 Setbacks

Section 6.21 of By-law 177-96 requires setbacks of 14 metres from the Highway 404 and 407 streetline and 30 metres from a railway right of way for all buildings and structures.

A number of Markham zoning by-laws include setback provisions for non-residential zones which are located adjacent to residential zones. A sample is included here:

- In By-law 177-96 a minimum three metre setback is required for the interior side yard in NC1, NC2, and NC3 zones where the yard abuts a residential zone; a minimum 20 metre setback is required in AC1 and AC2 zones for a car wash from a residential zone boundary; and a six metre setback is required for an interior side yard and rear yard in an MJC zone if it abuts the boundary of a residential zone (see table B7 of November 1, 2014 consolidation).

- In By-law 1229 a minimum 50 foot (approximately 17 metres) rear yard setback is required in a Commercial Corridor Area if it is adjoining a residential use or zone (see section 11.1 as amended by By-law 266-1999).

3.4.3 Landscaping

Landscaping requirements in non-residential zones and uses that are adjacent to residential zones are the most common provisions included in Markham's existing zoning by-laws that address the interface between residential and non-residential uses. A sample of these provisions is included below:

- In By-law 177-96, a three metre width of landscaping is required adjacent to the interior and rear lot lines in NC 1, NC2 and CA4 zones if these abut a residential zone (see Table B7 in November 1, 2014 consolidation). There are other landscaping requirements in By-law 177-96 from interior and rear lot lines in CA4, AC1, AC2, BP, BC and G1 zones; these requirements apply to all lots in the zones and do not specifically reference residential zones.
- Section 4.7.2 of By-law 47-85 requires that any commercial lot adjoining a residential zone provide a six metre deep strip of land for landscaped open space.
- Section 11.2 (f) of By-law 1229 (amended by By-law 1306) requires that a ten foot (approximately three metre) wide strip of land be provided as landscaped open space on any side or rear yard in any commercial or industrial zone which abuts a residential zone.
- Section 6.2 (d) of By-law 193-81 requires that a three metre wide strip of land be provided as landscaped open space in a Local Commercial (LC) zone which is adjacent to a residential zone.
- Sections 6.2 (d) and 6.3 (d) of By-law 193-81 require that a three metre wide strip of land be landscaped in a Local Commercial (LC) and Institutional and Open Space zone adjacent to a residential zone.

3.4.4 Waste Storage Area

A typical provision in a number of Markham's existing zoning by-laws is that waste storage be located inside a building or structure on the lot. Although these provisions generally apply to all waste storage facilities for commercial, industrial and institutional uses (as well as some residential buildings) and do not specifically reference adjacency to residential uses, they do have the effect of indirectly addressing some of the interface issues between aspects of non-residential and residential uses. A typical example of this type of provision is included as section 6.23 of by-law 177-96.

3.5 Other Municipal Zoning By-law Standards Regarding the Interface Between Non-Residential and Residential Uses

A review of other recently prepared Ontario municipal zoning by-laws illustrates how various municipalities have incorporated provisions and regulations in their zoning by-laws to address the interface between non-residential and residential uses. As the summaries below show, these provisions and regulations are not found in only one section of the by-laws, but are located throughout the various by-laws, some in the general provisions sections, and others in sections dealing with various specific land use zones. The sections below summarize these provisions and regulations. An assessment of how these may inform the Markham's new comprehensive zoning by-law will be provided in section 3.6 of this report. A summary of zoning provisions in other municipal by-laws is contained in Appendix 7.

3.5.1 Oakville

The Oakville zoning by-law includes the following regulations that affect the interface between non-residential and residential uses.

- Section 4.8 of the Oakville Zoning by-law (General Provisions) requires all buildings, parking spaces, loading spaces and stormwater ponds to be located at least 14 metres from the lot line of a provincial highway.
- Section 4.19 (General Provisions) requires setbacks of 3, 20 and 7 metres from a number of pipelines, depending on type. Of relevance to Markham is a setback of 7 metres from the limit of the Trans Canada pipeline right-of-way.
- Section 4.21 (General Provisions) requires a 30 metre setback from a rail corridor for any dwelling, place of worship, daycare or school.
- Section 4.11.2 (General Provisions) requires the following landscaped widths:
 - three metres for a lot in a Central Business District (CBD) or Main Street (MU1, MU2) zone from an abutting residential zone;
 - 7.5 metres for a lot in a Main Street (MU3, MU4), Office Employment (E1), Business Employment (E2), Business Commercial (E4) or any Commercial zone from an abutting residential zone;
 - 4.5 metres for any surface parking lot from an abutting residential zone.
- Section 5.5 (Parking, Loading and Stacking Lane Provisions) requires a minimum 15 metre setback for a lot with a drive through facility from any residential zone.
- Section 5.6 c) (Parking, Loading and Stacking Lane Provisions) requires a 7.5 metre setback from any residential zone for a surface loading facility that is not located in a residential zone.
- Sections 7.2 (Midtown Oakville Zones) and 9.2 (Commercial Zones) do not permit a retail propane and transfer facility on any lot abutting a residential zone.
- Section 8.3 (Mixed Use Zones) requires a 3 metre minimum setback along the interior side yard and rear yard for lots in a CBD, MU1 or MU2 zone abutting a residential zone and a similar 7.5 metre setback for an interior side yard and rear yard in a MU3 or MU4 zone abutting a residential zone.

- Section 9.3 (Commercial Zones) requires a 7.5 metre minimum setback along the interior side yard and rear yard for lots in C1, C2, C3 or C4 zone abutting a lot in a residential zone.
- Section 10.2 (Employment Zones):
 - prohibits a waste processing station, a waste transfer station and an adult entertainment establishment within 800 metres of a residential zone;
 - does not permit a drive through facility, a motor vehicle body shop, a motor vehicle dealership or a motor vehicle washing facility on a lot abutting any residential zone; and
 - limits the net floor area of a sports facility to 1000 square metres on any lot within 100 metres of a residential zone.
- Section 10.3 (Employment Zones) requires a 15 metre minimum setback along the interior side yard and rear yard for lots in E1, E,2 E3 or E4 zone abutting a lot in a residential zone.
- Section 10.6 (Employment Zones) does not permit outside processing, outside storage and heavy vehicle parking areas within any yard abutting a residential zone boundary.
- Section 13.4 (Environmental Zones) requires that any livestock facility be in compliance with the Minimum Distance separation II formula (Publication 707) issued by the Ministry of Agriculture, Food and Rural Affairs in 2006.

3.5.2 Hamilton

The following provisions and regulations dealing with the interface between residential and non-residential uses are included in the City of Hamilton's zoning by-law:

- Section 4.23 (General Provisions) requires that all buildings be set back 14 metres from a provincial highway right-of way; that all buildings or structures within a residential zone be set back 30 metres from a railway right-of-way; and that all buildings or structures be set back 10 metres from a Trans Canada pipeline right-of-way.
- Section 8.3.2.2 (Institutional Zones) requires a minimum 6 metre setback where a property line abuts a residential zone property line.
- Section 9.2.3 f) (General Business Park Zone) requires that land used for a waste processing facility or a waste transfer station be located a minimum of 300 metres from a residentially zoned lot line.
- Section 9.3.3 (Prestige Business Park) requires:
 - that a 6 metre yard be provided from any portion of a property lot line abutting a property lot line within a residential zone; and
 - a minimum 20 metre setback for any building or structure used for manufacturing from a property lot line abutting a property lot line within a residential zone.
- Section 9.3.4 (Prestige Business Park) requires:
 - a 3 metre wide planting strip for any property lot line abutting a property lot line within a residential zone; and
 - a visual barrier for any portion of a property lot line abutting a property lot line within a residential zone.

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- Section 9.3.5 (Prestige Business Park) requires that outdoor storage and outdoor assembly be set back a minimum of 20 metres from any portion of a property lot line abutting a property lot line within a residential zone.
- Section 9.4.3 (Business Park Support Zone) requires:
 - that a 6 metre minimum yard be provided from any portion of a property lot line abutting a property lot line within a residential zone;
 - a maximum building height of 11 metres abutting a residential zone; and
 - a minimum 20 metre setback for any building or structure used for manufacturing from a property lot line abutting a property lot line within a residential zone.
- Section 9.4.5 (Business Park Support Zone) requires:
 - a 3 metre wide planting strip for any property lot line abutting a residential zone; and
 - a visual barrier for any portion of a property lot line abutting a residential zone.
- Section 9.4.6 (Business Park Support Zone) requires that outdoor storage and outdoor assembly be set back a minimum of 20 metres from any portion of a property lot line abutting a residential zone.
- Section 9.6.3 (Light Industrial Zone) requires :
 - that a 6 metre minimum yard be provided from any portion of a property lot line abutting a residential zone;
 - a maximum 11 metre building height abutting a residential zone; and
 - a minimum 20 metre setback for any building or structure used for manufacturing from a property lot line abutting a residential zone.
- Section 9.6. 4 (Light Industrial Zone) requires;
 - a 3 metre wide planting strip for any property lot line abutting a residential zone;
 - a visual barrier for any portion of a property lot line abutting a residential zone; and
 - outdoor storage and outdoor assembly to be set back a minimum of 20 metres from any portion of a property lot line abutting a residential zone.

3.5.3 Mississauga

The following provisions and regulations dealing with the interface between residential and non-residential uses are included in the City of Mississauga's zoning by-law:

- Section 2.1.2.1.1 (General Provisions) includes a table which lists minimum separation distances from residential zones for a number of uses as follows: restaurant, convenience restaurant, take-out restaurant—60 metres; animal boarding establishment—120 metres; adult entertainment establishment, body rub establishment, adult video store, night club, amusement arcade, composting facility, waste processing station and waste transfer station—800 metres; propane storage tank (with an aggregate capacity in excess of 7 571 litres)—120 metres; motor vehicle body repair facility (accessory)—15 metres.
- Section 2.1.19 (General Provisions) requires that outdoor garbage enclosures in non-residential zones be set back a minimum of 6 metres from a residential zone.
- Section 2.1.20 (General Provisions) requires that all buildings and structures be set back a minimum of 14 metres from a provincial highway right of way.

- Section 6.2.1 (Commercial Zones):
 - restricts the heights of buildings in C3 (general Commercial zones with sloped roofs to 20 metres and 4 storeys and flat roofs to 16.5 metres and 4 storeys where the lot abuts a residential zone;
 - requires a minimum 4.5-6 metre interior side yard and rear yard setback for any lot abutting a residential zone; and
 - restricts the non-residential gross floor area where a lot abuts a residential zone to 2,000 square metres in a C1 (Convenience Commercial) zone, 12,000 square metres in a C2 (Neighbourhood Commercial) zone and 300 square metres in a C5 (Motor Vehicle Commercial) zone.
- Section 8.2.1 (Employment Zones) requires:
 - a 30 metre minimum front yard in E1 (Employment in Nodes) and E2 (Employment) zones where the opposite side of the street on which the lot fronts is a residential zone;
 - a minimum exterior side yard of 15 metres in an E2 and E3 (Industrial) zone where the opposite side of the street on which the lot fronts is a residential zone;
 - a minimum interior side yard abutting a residential zone of 4.5 metres in an E1 zone, and 15 metres in a E2 or E3 zone; and
 - a minimum 7 metre deep landscaped buffer in E1, E2 and E3 zones measured from a lot line that abuts a residential zone.

3.6 Conclusions Regarding the Interface Between Residential and Non-Residential Uses

The by-laws that have been reviewed include a number of common measures to address the interface between non-residential and residential uses. The differences are mainly in how they are incorporated into the by-law (i.e. which section) and differences in the actual numerical standards. An assessment of the implications for the new Markham comprehensive zoning by-law is provided under the headings below.

3.6.1 Setbacks from Highways, Rail Corridors and Pipelines

All of the municipal zoning by-laws as well as Markham By-law 177-96 and other Markham zoning by-laws include setback requirements from provincial highways, railway corridors and pipelines in the general provisions section of their by-laws. The 14 metre setback from provincial highways, which is included in municipal zoning by-laws and is currently in effect in a number of Markham zoning by-laws, is based in provincial standards, and does not represent applicable law. It is therefore not required that this setback provision be included in Markham's zoning by-law. However, incorporating this setback as a regulation in the new comprehensive zoning by-law would represent a continuation of current practice in Markham and implement Official Plan policy 3.4.2.4 which states that sensitive land uses such as day care centres and public schools should not be located near significant known air emission sources including the provincial 400 series highways

The 30 metre setback for development from rail corridors has been accepted as general practice by municipalities in their zoning by-laws, including Markham, for a number of years. Railway operators have insisted that by-laws incorporate this restriction. In addition to continuing current practice in Markham, such a requirement in the zoning by-law would also implement policy 7.1.7.2, of the Official Plan, which is to protect rail corridors from the encroachment of incompatible land uses by imposing separation distances.

Oakville requires buildings to be set back 7 metres from the Trans Canada pipeline. In Hamilton the setback is 10 metres. Section 7.2.3.7 of Markham's Official Plan states that buildings or structures adjacent to the Trans Canada Pipeline or a natural gas compressor station need to be setback from the pipeline right of way, as determined by Trans Canada Pipelines and the National Energy Board. Based on current practise in other municipalities a setback of between 7 and 10 metres would appear appropriate in the new comprehensive zoning by-law.

3.6.2 Prohibited Uses Next to Residential Zones

As stated previously in this report, the preferred approach for prohibiting specific uses in areas or zones is to include a general provision in the zoning by-law which states that all uses not listed as permitted in any zone shall be prohibited in that zone. However, it may still be appropriate to include a prohibition for some specific uses (which are otherwise permitted in a particular zone), next to residential zones in the new comprehensive zoning by-law. For example, Oakville prohibits a retail propane transfer facility, a drive through facility, a motor vehicle body shop, dealership or washing facility, outside processing, outside storage and heavy vehicle parking next to a residential zone. These restrictions are located in the sections of the by-law dealing with provisions for the particular zones which allow these uses and may abut residential zones.

One option for Markham is to follow Oakville's example on this issue and restrict certain specific uses adjacent to residential zones. Another option is to only impose appropriate setback requirements on certain uses from residential zones. A third option is to have some combination of the two. Any one of these options can achieve a similar result, although prohibiting the uses adjacent to residential zones eliminates the need to calculate the appropriate setback for these uses from a residential zone, so this may have some advantages.

3.6.3 Setbacks for Non-Residential Uses from Residential Zones

All municipal zoning by-laws include setback requirements from residential zones for a waste processing station of between 300 metres (Hamilton in its general business park zone provisions) or 800 metres (Oakville and Mississauga in the general provisions section of the by-law). Mississauga includes a table with setbacks from residential zones for a variety of non-residential uses in the general provisions section of its by-law, which is reproduced earlier in this report (see section 3.5 Mississauga of this report). Oakville also includes requirements for setbacks from residential zones for adult entertainment establishments (800 metres) in its employment zones section, drive throughs (15 metres) and surface parking facilities (7.5 metres) in its parking and loading section. Hamilton, in a number of its non-residential zone sections, requires that buildings or structures used for manufacturing be set back 20 metres from residential zones and that outdoor storage be set back 20 metres from a residential zone.

Markham will need to decide what kinds of setbacks from residential zones are appropriate for particular uses. Waste management facilities and waste transfer stations seem to be likely candidates for setback requirements with a minimum range of between 300 to 800 metres, based on the practices of other municipalities. Other sets of uses that may be considered for setbacks

from residential zones include animal boarding establishments, adult entertainment uses, composting facilities, propane storage, automobile related uses, outdoor loading, outdoor storage, outdoor garbage disposal, drive throughs and manufacturing.

Mississauga's approach of placing the setback requirements for various uses in the general provisions section of its by-law seems to have merit, but this approach also requires that there be a cross reference to other sections of the by-law where these uses are mentioned, to ensure a comprehensive understanding of the requirements. Another approach would be to only include these setback requirements within the zones that these uses are permitted. If a use is permitted in more than one zone there will be some repetition.

The inclusion of setback requirements from residential zones for particular uses will need to be coordinated with the prohibition of certain uses adjacent to residential zones (if this approach is adopted), to minimize duplication or overlap.

3.6.2 Setbacks from Interior Side and Rear Lot Lines

All by-laws have setback requirements in non-residential zones from residential zones for interior side and rear lot lines. Markham's By-law 177-96 requires a three metre setback for the interior side yard in NC zones abutting a residential zone. Other Markham By-laws require interior side yard and rear yard setbacks of between three and six metres for a number of non-residential zones where they abut residential zones. Other municipalities include similar provisions in the sections of their by-laws dealing with requirements for particular non-residential zones ranging from three to 15 metres depending on the zone. Markham will need to determine the appropriate setbacks from residential zones for its non-residential zones based on contextual characteristics and compatibility of uses.

3.6.3 Landscaped Buffers (widths, strips)

The width of required landscaped buffers in industrial zones that are adjacent to residential zones varies by municipality and zone from between 3 to 7.5 metres. Markham's By-law 177-96 requires three metres of landscaping in a number of industrial zones that are adjacent to residential zones. Other Markham existing by-laws require between three to six metres of landscaping in industrial and commercial zones adjacent to residential zones.

Mississauga does not include a distinct landscape requirement for non-residential zones adjacent to residential zones that is different from the general landscape width required in each zone. Oakville includes its landscape width requirements in the general provisions section of its by-law, while Hamilton includes these provisions in the sections dealing with each specific zone. All approaches have merit. The actual landscaping width that is appropriate in the various non-residential zones in Markham will need to be determined based on local circumstances, but three metres appears to be the norm based on Markham's past practice and a review of other municipal by-laws.

3.6.4 Provincial Minimum Distance Separation Formula

To comply with section 8.1.6 of its Official Plan Markham will need to include a provision in its new comprehensive zoning by-law to address the provincial minimum distance separation formulae for agricultural uses regarding odour and livestock facilities in zones where agricultural uses are permitted. Oakville has included this requirement in its environmental zones (see section 3.5, Oakville, of this report).

3.6.5 Visual Barriers

Hamilton includes a requirement that there be visual barriers provided in a number of its non-residential zones for properties adjacent to residential zones. No other municipality includes such a requirement in its by-laws. Markham may wish to rely on requirements for landscaping and setbacks in its zoning by-law to address separation, while leaving details regarding visual barriers to site plan review. This would avoid having to define “visual barrier” in the zoning by-law and specifying heights, materials etc. all of which will need to be adapted to address local circumstances.

3.6.6 Limit on Floor Areas of Some Non-Residential Facilities Next to Residential Zones

Oakville limits the floor areas of sports facilities within 100 metres of a residential zone and Mississauga limits non-residential floor areas to 2,000, 12,000 or 300 square metres for properties in certain non-residential zones located next to residential zones. These limits seem to respond to particular circumstances, but there may also be instances in Markham where this type of restriction makes sense. Whether this is the case and where it may make sense will need to be assessed based on geography and local circumstances.

References

City of Burlington, Zoning By-law 2020.

City of Hamilton, Zoning By-law 05-200.

City of Markham, Official Plan, June, 2014.

City of Mississauga, Zoning By-law 0225-2007.

City of Ottawa, Zoning By-law 2008-250.

City of Toronto, Zoning By-law 569-2013.

Town of Oakville, Zoning By-law 2014-014; By-law 1984-63

Town of Markham, By-laws 177-96, 1229, 47-85, 193-81

-----Draft Staff Reports on Infilling, May, 2010

Town of Richmond Hill, By-law 85-02

APPENDIX 1:

Markham Official Plan Policies Regarding Infill Development

Section 8.2.3.5 – Applicable for <i>development approvals</i> (zoning by-law amendments, site plan approvals, plans of subdivision and severances) on lands designated ‘Residential Low Rise’.	
Criteria	Policy
Lots	f. the lot frontage(s) and lot area(s) of the proposed new lot(s) shall be consistent with the sizes of existing lots on both sides of the street on which the property is located;
Heights, Massing and Scale	g. the proposed new building(s) shall have heights, massing and scale appropriate for the site and generally consistent with that permitted by the zoning for adjacent properties and properties on the same street;
Setbacks	h. front and rear yard setbacks for the new building(s) shall be consistent with the front and rear yards that exist on the same side of the street i. the setback between new building(s) and the interior side lot line shall increase as the lot frontage increases;
Character	j. the new building(s) shall have a complementary relationship with existing buildings, while accommodating a diversity of building styles, materials and colours;
Trees and Vegetation	k. existing trees and vegetation shall be retained and enhanced through new street tree planting and additional on-site landscaping;
Garages and Driveways	l. the width of the garage(s) and driveway(s) at the front of new building(s) shall be limited to ensure that the streetscape is not dominated by garages and driveways; m. new driveways and service connections shall be sited to minimize tree loss;
Drainage, access, privacy, shadowing	n. impacts on adjacent properties shall be minimized in relation to grading, drainage, access and circulation, privacy and microclimatic conditions such as shadowing;
Views and Vistas	o. the orientation and sizing of new lots shall not have a negative impact on significant public views and vistas that help define a residential neighbourhood;
Connectivity	p. proposals to extend the public street network should be designed to improve neighbourhood connectivity, improve local traffic circulation and enhance conditions for pedestrians and cyclists;
Infrastructure	q. road and/or municipal infrastructure shall be adequate to provide water and wastewater service, waste management services and fire protection;
Other	r. other criteria as identified in plans approved by Council.
Section 9 – Area and Site Specific Policies	
Policies 9.3.3, 9.13.2, 9.14.2, and 9.18.5 all contain the same wording in the preamble as follows: “In addition to the development criteria contained in Section 8.2.3.5, the intent of this Official Plan is to provide for a set of development standards in the zoning by-law to limit the size and massing of new dwellings or additions to existing dwellings on...” And conclude with: “Such standards may address lot coverage, building depth, <i>floor area ratios</i> , height, number of storeys, garage projections and garage widths.”	

Task 12: Infill Zoning Standards and Interface Between Uses

Section	Area	Policy
9.3.3	Berczy Village/ Wismer Commons/ Greensborough/ Swan Lake	... “the ‘Residential Low Rise’ shown in Figure 9.3.3 to ensure infill development respects and reflects the existing pattern and character of adjacent development.”
9.13.2	Markham Village	... “the ‘Residential Low Rise’ and ‘Mixed Use Heritage Main Street’ lands shown in Figure 9.13.2 to ensure infill development respects and reflects the existing pattern and character of adjacent development.”
9.14.2	Markville	... “the ‘Residential Low Rise’ shown in Figure 9.14.2 to ensure infill development respects and reflects the existing pattern and character of adjacent development.”
9.18.5	Thornhill	... “the ‘Residential Low Rise’ and ‘Mixed Use Heritage Main Street’ lands shown in Figure 9.18.5 to ensure infill development respects and reflects the existing pattern and character of adjacent development.”
9.19.2	Unionville	<p>For the ‘Residential Low Rise’ lands shown in Figure 9.19.2, Council may consider a zoning by-law amendment to permit a consent (severance) to create one additional lot generally equal to one half of the area and frontage of lots from the original plans of subdivision for the lands. Where such consents (severances) are permitted, the lot frontage(s) and lot area(s) of the proposed new lot(s) shall be deemed consistent with the emerging lot sizes on the street where the property is located.</p> <p>The intent of this Official Plan is to support infill development within this area, but ensure the massing of new dwellings or additions to existing dwellings respects and reflects the pattern and character of adjacent development, where appropriate. Site specific development standards established through individual zoning by-law amendments may address lot coverage, building depth, <i>floor area ratios</i>, height, number of storeys, garage projections and garage widths.</p>

Section 6.1.8 – Built Form and Site Development	
Section	Policy
6.1.8.2	To design and place buildings on sites based on their relationship to their location and context, their character and use, and their ability to enhance existing site conditions and positively contribute to adjacent development and the public realm.
6.1.8.4	<p>To design and place buildings on a site to be compatible with, or enhance, adjacent or abutting development, <i>cultural heritage resources</i>, streetscapes and parks and open spaces by addressing:</p> <ul style="list-style-type: none"> a. appropriate transitions in height and massing, including the relationship to the width of the public right-of-way, and adequate setbacks between buildings, the public realm and adjacent or abutting development; b. safe connections to pedestrian and cycling routes and convenient access to public transit; c. continuity in building placement; d. enhanced views and vistas of identified landmarks; e. comfortable microclimatic conditions including sunlight access, sky views and wind conditions, public safety, and adequate privacy conditions for residential buildings and their outdoor amenity areas; f. open spaces and on-site landscaping that contribute to the enhancement of the <i>urban forest</i>; g. opportunities for expansion of buildings and the introduction of new buildings in the future; h. building design that: <ul style="list-style-type: none"> i) incorporates architectural detailing and features to increase comfort, add interest and achieve a good relationship with neighbouring development; ii) orients primary facades and locates pedestrian entrances on public street frontages; iii) encourages human interaction and activity at the street level and avoids blank facades along public streets and spaces; iv) allows space for activities such as vending and outdoor seating along commercial frontages; v) provides security and privacy for residential units at street level while creating opportunities for informal interaction between residents and neighbourhoods; vi) minimizes the appearance of garage entrances and provide screening of parking along public streets; vii) provides screening of service areas, service building elements and utilities; viii) provides design elements and treatments to minimize bird strikes; and ix) minimizes the appearance of rooftop mechanical equipment.

APPENDIX 2: Markham Infill Zoning By-law Provisions

Task 12: Infill Zoning Standards and Interface Between Uses

	By-law Number			
	1229 (99-90)	122-72 (16-93)	2237 (101-90)	1767 (100-90)
Maximum Height	<p>Pitched roof dwellings – 9.8 metres</p> <p>Flat roof dwellings – 8 metres</p>	Same	<p>Pitched roof dwellings</p> <ul style="list-style-type: none"> – 9.8 metres for the R2, R3, RM1, RM2 and RM3 zones. – 8.6 metres for the R4 and R4S zones. <p>Flat roof dwellings (all zones)– 8 metres</p>	<p>Pitched roof dwellings</p> <ul style="list-style-type: none"> – 9.8 metres for the R1, R2, R3, R4, SR2 and SR3 zones. – 11.3 metres for the SR1 and GR zones. <p>Flat roof dwellings (all zones)– 8 metres</p>
Maximum Storeys	2	Same	Same	Same
Maximum Depth	<p>16.8 metres except that the depth may be increased to 18.9 metres by an extension to the rear of the dwelling if such extension complies with the following:</p> <ul style="list-style-type: none"> - the extension does not exceed 1 storey and 4.6 metres in height. - the extension is set back from all lot lines a minimum distance of the greater of 3.0 metres, or the minimum required setback; and - the extension is not wider than one-half the width of the dwelling at its widest point. 	<p>16.8 metres except that the depth may be increased to 18.9 metres by an extension to the rear of the dwelling if such extension complies with the following:</p> <ul style="list-style-type: none"> - the extension does not exceed 1 storey and 4.6 metres in height. - the extension is not wider than one-half the width of the dwelling at its widest point. 	Same	Same
Maximum Garage Projection	No closer to the front lot line than 2.1 metres beyond the point of the main building closest to the front lot line.	Same	Same	Same

Task 12: Infill Zoning Standards and Interface Between Uses

Maximum Garage Width	7.7 metres for any lot having a frontage of less than 18.3 metres	N/A	7.7 metres for any lot having a frontage of less than 18.3 metres	Same
Maximum Floor Area Ratio	R1, R2, R3 and R4 Zones: 45%	47%	R2, R3, R4, R4S, RM1, RM2, RM3 zones: 50%	R1 R2,R3 R4 zones: 50% SR1 SR2 SR3 zones:47% GR zone: 42%
	By-law Number			
	1229 (99-90)	122-72 (16-93)	2237 (101-90)	1767 (100-90)
Other provisions— From parent by-laws	R1, R2, R3 & R4 zones: <u>Lot Frontage:</u> 60 ft <u>Minimum Lot Area:</u> 6,600 sq. ft <u>Coverage:</u> 35 %	<u>Minimum front yard:</u> 10.7 metres. <u>Lot Frontage:</u> R3 – 60 ft <u>Minimum Lot Area:</u> R3 – 7500 sq. ft <u>Coverage</u> R3 zone: 33 ^{1/3} %	<u>Lot Frontage:</u> R2 – 75 ft; R3 – 60 ft; R4 – 50 ft <u>Minimum Lot Area:</u> R2– 9750 sq. ft; R3 – 7500 sq. ft; R4 – 6250 sq. ft <u>Coverage</u> R2, R3 & R4 zones: 33 ^{1/3} %	<u>Lot Frontage:</u> R1 – 100 ft; R2 – 75 ft; R3 – 60 ft; R4 – 50 ft <u>Minimum Lot Area:</u> R1 – 10,000 sq. ft R2 – 9750 sq. ft R3 – 7500 sq. ft R4 – 6250 sq. ft <u>Coverage</u> R1, R2, R3 & R4 zones: 25 %

2237 (223-94) Thornhill Heritage By-law

Maximum Garage Projection: No closer to the front lot line than 1.0 metres beyond the point of the main building closest to the front lot line

Maximum Floor Area Ratio: 33%

Maximum Floor Area: 278.7 m2 for single detached dwellings (exclusive of garage); 41.8 m2 for garages

APPENDIX 3: Infill Zoning By-law Provisions from other Ontario Municipalities

Oakville Zoning By-law 2014-014 - Regulations for Residential Low Rise						
	Zones					
Criteria	RL1	RL2	RL3	RL4	RL5	RL6
Minimum lot area	1,395.5m ² (2)	836.0m ² (2)	557.5m ² (2)	511.0m ² (2)	464.5m ² (2)	250m ² (3)
Minimum lot frontage	30.5m (2)	22.5m (2)	18.0m (2)	16.5m (2)	15.0m (2)	11.0m (2)
Minimum front yard	10.5m (-0)	9.0m (-0)	7.5m (-0)	7.5m (-0)	7.5m (-0)	3.0m
Minimum flankage yard	4.2m	3.5m	3.5m	3.5m	3.5m	3.0m
Minimum interior side yard	4.2m	2.4m (4)	2.4m and 1.2m (5)	2.4m and 1.2m (5)	2.4m and 1.2m (5)	1.2m and 0.6m
Minimum rear yard	10.5m	7.5m (6)	7.5m (6)	7.5m (6)	7.5m (6)	7.0m (6)
Minimum number of storeys	n/a (-0)	n/a (-0)	n/a (-0)	n/a (-0)	n/a (-0)	2
Maximum height	10.5m (-0)	12.0m (-0)	12.0m (-0)	12.0m (-0)	12.0m (-0)	10.5m
Maximum dwelling depth (m)	20.0m (1)	n/a	n/a	n/a	n/a	n/a
Maximum lot coverage for the dwelling (%)	30% (-0)	30% (-0)	35% (-0)	35% (-0)	35% (-0)	(7)

Additional Regulations for Zone Regulations

-0. Where lands are shown on the Part 19 Maps of this By-law to be in the -0 Suffix Zone, the regulations of Section 6.4 shall apply.

1. A single storey extension that is less than or equal to 7.5 metres in height is permitted to extend an additional 3.0 metres into a rear yard provided that minimum interior side yards and minimum flankage yards of 9.0 metres are established on both sides of the single storey extension.

2. Within Plans of Subdivision registered after November 1, 1965, the minimum lot frontage may be reduced by 4.5 metres and minimum lot area proportionately reduced on a lot provided the average lot frontage and lot area throughout the entire Plan of Subdivision are not less than the minimum shown in the regulations tables for these zones.

3. For a corner lot, the minimum lot area shall be 285.0 square metres and the minimum lot frontage shall be 12.5 metres.

4. The minimum interior side yard shall be reduced to 1.2 metres on one side only where an attached private garage meeting the minimum dimension requirements of Section 5.2.3(b) of this By-law is provided.
5. The minimum interior side yard shall be reduced to 1.2 metres on both sides where an attached private garage meeting the minimum dimension requirements of Section 5.2.3(b) of this By-law is provided.
6. The minimum rear yard shall be reduced to 3.5 metres on a corner lot where an interior side yard of 3.0 metres is provided.
7. The maximum residential floor area shall be the lesser of 315.0 square metres or the potential maximum residential floor area available at 75% residential floor area ratio.

Burlington – Zoning By-law 2020							
	Zones						
Criteria	R1.2	R2.1	R2.2	R2.3	R2.4	R3.1	R3.2
Lot Width	24m	18m	18m	18m	16m	15m	15m
Minimum lot area	925m ²	700m ²	700m ²	680m ²	600m ²	500m ²	425m ²
Minimum front yard	9m	11m	11m	7.5m	6m	6m	6m
Rear Yard	9m (on a corner lot the rear may be 4.5m)	10m (on a corner lot the rear yard may be 4.5m)	10m (on a corner lot rear yard may be 4.5m)	9m (on a corner lot the rear may be 4.5m)	9m (on a corner lot the rear yard may be 4.5m)	9m (on a corner lot the rear yard may be 4.5m)	9m (on a corner lot the rear yard may be 4.5m)
Side yard	9m	4.5m	4.5m	4.5m	4.5m	4.5m	4.5m
Street side yard	9m	4.5m	4.5m	4.5m	4.5m	4.5m	4.5m
Maximum lot coverage	<p><u>With attached garage/carport (including accessory buildings and structures)</u> 1 storey: 40%; 1.5 storey: 37.5%; 2+ storey: 35%; (40% in R3.3 and R3.4 zones)</p> <p><u>Without attached garage/carport (principle structure/accessory building and structures):</u> 1 storey: 32% / 8%; 1.5 storey 29% / 8%; 2+ storey: 27% / 8% (32% / 8% in R3.3 and R3.4 zones)</p> <p>All dwellings in Designated Areas shaded on Schedule A Maps – 25% including all accessory buildings and structures</p>						

Task 12: Infill Zoning Standards and Interface Between Uses

Richmond Hill – 85-02					
	By-laws				
Criteria	66-71 (371-90)	66-71 (372-90)	66-71 (373-90)	66-71 (374-90)	66-71 (212-92)
Maximum Height (m/ storeys)	6.0 metres (19.7 ft), not exceeding one (1) storey	8.5 metres (27.9 ft), not exceeding 2 storeys.	6.0 metres (19.7 ft), not exceeding one (1) storey	8.5 metres (27.9 ft), not exceeding 2 storeys.	8.5 metres (28 ft).
Maximum Gross Floor Area	12.2 m ² (131.3 sq. ft) per linear metre (1.1 yard) of the Net Lot Frontage	15.2 m ² (163.6 sq. ft) per linear metre (1.1 yard) of Net Lot Frontage.	12.2 m ² (131.3 sq. ft) per linear metre (1.1 yard) of the Net Lot Frontage	15.2 m ² (163.6 sq. ft) per linear metre (1.1 yard) of Net Lot Frontage.	15.24 m ² (164 sq. ft) per linear metre (3.28 ft) of Net Lot Frontage, to a maximum gross floor area of 265 m ² (2852 sq. ft). In addition to the above, the maximum gross floor area shall be increased by 14 m ² (150.7 sq. ft) for each additional 3.0 metres (9.84 ft) of depth of lot in excess of 46 metres (150.9 ft), to a maximum of 70 m ² (753.5 sq. ft) of additional gross floor area, to a maximum total gross floor area of 265 m ² (2852 sq. ft).

Richmond Hill – 85-02					
	By-laws				
Criteria	66-71 (371-90)	66-71 (372-90)	66-71 (373-90)	66-71 (374-90)	66-71 (212-92)
Side Yard	1.5 metres (5 ft) No private garage shall extend beyond the main wall into an exterior side yard.	12.2 m ² (131.3 sq. ft) per linear metre (1.1 yard) of the Net Lot Frontage	Minimum interior side yard – 3.0 metres (9.8 ft). No garage shall extend beyond the main wall into an exterior side yard.	Minimum interior side yard – 6.0 metres (19.7 ft) at the top of the second storey.	The minimum side yard for a 1 storey dwelling shall be 1.5 metres (4.92 ft). No private garage shall extend beyond the main wall into an exterior side yard.
Maximum Garage Projection	No private garage shall project toward the front yard more than 2.1 metres (6.9 ft) beyond the main wall.	.	No garage shall project toward the front yard more than 2.1 metres (6.9 ft) beyond the main wall.		No private garage shall project toward the front yard more than 2.1 metres (6.9 ft) beyond the main wall.
Maximum Garage Width	6.5 metres (21.3 ft) for any lot having lot frontage less than 18.3 metres (60 ft). 9.7 metres (31.8 ft) for any lot having a lot frontage of 18.3 metres (60 ft) or greater.		6.5 metres (21.3 ft) for any lot having a lot frontage of less than 18.3 metres (60 ft). 9.7 metres (31.8 ft) for any lot having a lot frontage of 18.3 metres (60 ft) or greater.		6.5 metres (21.3 ft) for any lot having a lot frontage of less than 18.3 metres (60 ft). 9.7 metres (31.8 ft) for any lot having a lot frontage of 18.3 metres (60 ft) or greater.

Richmond Hill – 85-02					
	By-laws				
Criteria	66-71 (371-90)	66-71 (372-90)	66-71 (373-90)	66-71 (374-90)	66-71 (212-92)
Front Yard	A private garage shall have a minimum front yard of 6 metres (19.7 ft).	All buildings - 9.1 metres (29.9 ft) at the top of the second storey, or that which existed at the time of passage of this By-law if such building or structure has had a front yard greater than 9.1 metres (29.9 ft).	For any building or structure – the greater of 9.1 metres (29.9 ft) or the setback of the main wall of an existing dwelling. A garage, whether or not attached to a main building, shall have a minimum front yard of 6 metres (19.7 ft).	All buildings - 12 metres (39.4 ft) at the top of the second storey, or that which existed at the time of passage of this By-law if such building or structure has had a front yard greater than 12 metres (39.4 ft).	A private garage shall have a minimum front yard of 6 metres (19.7 ft).

Mississauga Zoning By-law 0557-2007. Table 4.2.1 Residential Regulations					
	Zones				
Criteria	R1	R2	R3	R4	R5
Minimum lot area – <i>Interior</i>	750m ²	695m ²	550m ²	365m ²	295m ²
Minimum lot area – <i>Corner</i>	835m ²	810m ²	720m ²	500m ²	415m ²
Minimum lot area – <i>Interior</i>	22.5m	18m	15m	12m	9.75m
Minimum lot area – <i>Corner</i>	22.5m	21m	19.5m	16.5m	13.5m
Maximum Lot Coverage	25%	30%	35%	40%	40%
Minimum front yard – <i>Interior</i>	9m (2)(7)	9m (2)	7.5m (2)	6m (2)	4.5m (2)
Minimum front yard – <i>Corner</i> (m)	7.5m (2)	7.5m (2)	6m (2)	6m (2)	6m (2)
Front garage face – <i>Interior</i>	(8)	(8)	(8)	(8)	6m
Front garage face – <i>Corner</i>	(8)	(8)	(8)	(8)	6m

Mississauga Zoning By-law 0557-2007. Table 4.2.1 Residential Regulations					
	Zones				
Criteria	R1	R2	R3	R4	R5
Minimum exterior side yard	7.5m	7.5m	6m	4.5m (2)	4.5m (2)
Front garage face	(9)	(9)	(9)	6m (2)	6m (2)
Minimum interior side yard – Interior	1.8m on one side of the and 4.2m on the other side (2)	1.8m + 0.61m for each additional storey or portion thereof above one storey (2)	1.2m + 0.61m for each additional storey or portion thereof above one storey (2)	1.2m (2)	1.2m on one side of the lot and 0.61m on the other side (2)
Minimum interior side yard – Corner	3m (2)	3m (2)	1.2m + 0.61m for each additional storey above one storey	1.2m (2)	1.2m (2)
Minimum rear yard – Interior	7.5m (2)	7.5m (2)	7.5m (2)	7.5m (2)	7.5m (2)
Minimum rear yard – Corner	3m (2)	3m (2)	3m (2)	7.5m (2)	7.5m (2)
Maximum Height	10.7m	10.7m	10.7m	10.7m	10.7m

NOTES:

- (1) See also Subsections 4.1.1, 4.1.16 and 4.1.17 of this By-law.
- (2) See also Subsections 4.1.7 and 4.1.8 of this By-law.
- (3) See Subsection 4.1.12 of this By-law.
- (4) See Subsection 4.1.9 of this By-law.
- (5) See Part 3 of this By-law.
- (6) See Subsection 4.1.2 of this By-law.
- (7) Where a lot abuts a lot with an existing front yard of 12.0 m or more, the minimum front yard shall be 12.0 m.
- (8) The setback to the front garage face shall be the same as the front yard. (0379-2009)
- (9) The setback to the front garage face shall be the same as the exterior side yard. (0379-2009)

Mississauga Zoning By-law 0557-2007. Table 4.2.2 Infill Exceptions for R1 Zones	
MINIMUM INTERIOR SIDE YARD	
Interior Lots	1.8m + 0.61m for each additional storey or portion thereof above one storey
MINIMUM COMBINE WIDTH OF SIDE YARDS: interior lots having a lot frontage equal to or greater than 18m	
One storey detached dwelling	20% of the lot frontage
Dwelling having more than one storey	27% of the lot frontage
MAXIMUM HEIGHT	
Highest ridge: lots having a lot frontage equal to or greater than 22.5m	9.5m
Highest ridge: lots having a lot frontage less than 22.5m	9.0m
Flat roof	7.5m
Maximum height of eaves from average grade to lower edge of the eaves	6.4m
MAXIMUM GROSS FLOOR AREA – INFILL RESIDENTIAL	
190m ² plus 0.20 times the lots area	
GARAGE PROJECTION: maximum project of the garage beyond the front wall or exterior side wall of the first storey	
0.0m	
MAXIMUM DWELLING UNIT DEPTH	
20.0 m	

APPENDIX 4: Ministry of the Environment D1 and D6 Guidelines—Land use Compatibility

Task 12: Infill Zoning Standards and Interface Between Uses

The table below and the suggested separation distances for each category of use may provide guidance for Markham's new comprehensive zoning by-law to determine the range of appropriate uses in employment zones that are adjacent to, or within 1000 metres of, residential zones.

	Class 1	Class 2	Class 3
Suggested Separation Distance	70 metres (may be reduced to 20 metres)	300 metres (may be reduced to 70 metres)	1000 metres (may be reduced to 300 metres)
Noise	Sound not audible off property	Sound occasionally audible off property	Sound frequently audible off property
Dust and /or Odour	Infrequent and not intense	Frequent and occasionally intense	Persistent and/or intense
Vibration	No ground borne vibration on plant property	Possible ground-borne vibration, but cannot be perceived off property	Ground-borne vibration can frequently be perceived off property
Air Quality	Low probability of fugitive emissions	Occasional outputs of either point source or fugitive emissions	High probability of fugitive emissions
Scale of Production	Small scale plant or scale is irrelevant in relation to all other criteria for this Class	Medium level of production allowed	Large production levels
Outside Storage	Minimal storage	Outside storage permitted	Outside storage of raw and finished products
Process	Self-contained plant or building	Open process – outdoor storage of wastes or materials	Open process – outdoor storage of wastes or materials
Process Outputs	Produces/stores a packaged product	Periodic outputs of minor annoyance	Frequent outputs of major annoyances
Possibility of Fugitive Emissions	Low probability of fugitive emissions	Low probability of fugitive emissions	High probability of fugitive emission
Hours of Operation	Daytime operations only	Shift operations permitted	Daily shift operations permitted
On-site Movement	Infrequent movement of products and/or heavy trucks	Frequent movement of products and/or heavy trucks with the majority of movements during daytime hours	Continuous movement of products and employees
Examples (not comprehensive)	Electronics manuf. and repair Furniture repair and refinishing Beverages bottling Auto parts supply Packaging and crafting services Distribution of dairy products Laundry and linen supply	Magazine printing Paint spray booths Metal command Electrical production manufacturing Manufacturing of dairy products Dry cleaning services Feed packing plant	Manufacturing of paint and varnish Organic chemicals manuf. Breweries Solvent recovery plants Soaps and detergent manuf. Manufacturing of resins and costing Metal manufacturing

APPENDIX 5:

Markham Official Plan Policies Relating to Interface between Residential and Non-Residential Uses

Applicable OP Development Criteria for Interface Uses - Mixed Use		
Criteria	Section	Policy
Section 8.3.1.4		
Heights, Massing and Scale	8.3.1.4	d) height and density shall be directed away from low rise designations to frontages along arterial and major collector roads; e) buildings that are adjacent to areas designated for low rise development shall be designed to respect an angular plane measured from the boundary of the designation in which the low-rise building in accordance with Sections 6.1.8.9 and 6.1.8.10;
Setbacks	8.3.1.4	b) buildings should generally be placed on a site to respect a consistent setback and provide for continuity in built form along public streets;
Parking and Loading	8.3.1.4	g) parking should generally be located at the side or rear of buildings, or below grade and will be designed to provide convenient access to retail and service uses; h) loading and parking facilities shall be screened from public view and buffered so as to reduce impacts on lands designated 'Residential';
Landscaping	8.3.1.4	i) landscaped buffers shall be provided adjacent to residential uses;
Other	8.3.1.4	j) Other criteria as identified in plans approved by Council
Section 8.3.5.1		
Heights and Massing	8.3.5.1	g) require that buildings be designed to provide a transition in height and massing to adjacent existing and planned 'Residential Low Rise' and 'Residential Mid Rise' areas.

Applicable OP Development Criteria for Interface Uses – Commercial		
Criteria	Section	Policy
Heights, Massing and Scale	8.4.1.7	<p>d) height and density shall be directed away from low rise designations to frontages along arterial and major collector roads;</p> <p>e) buildings that are adjacent to areas designated for low rise development shall be designed to respect an angular plane measured from the boundary of the designation in which the low-rise building in accordance with Sections 6.1.8.9 and 6.1.8.10;</p> <p>j) height and density shall be directed away from low rise designations to frontages along arterial and major collector roads;</p> <p>k) buildings that are adjacent to areas designated for low rise development shall be designed to respect an angular plane measured from the boundary of the designation in which the low-rise building is located in accordance with Sections 6.1.8.9 and 6.1.8.10;</p>
Parking and Loading	8.4.1.7	i) loading and parking facilities should be buffered so as to reduce the impacts on lands designated 'Residential';
Landscaping	8.4.1.7	l) landscaped buffers shall be provided adjacent to residential uses;
Connectivity		e) the design of the site and the building shall contribute to a safe, comfortable and attractive pedestrian environment that is linked to a system of pedestrian routes providing direct connections to existing or planned transit services;
Other	8.4.1.7	m) Other criteria as identified in plans approved by Council

Other Applicable OP Policies Regarding Land Use Compatibility		
Separation from 400 Series Highways	3.4.2.4	That certain sensitive land uses such as day care centres, private schools and public schools not be located near significant known air emission sources including the provincial 400 series highways.
Railway Corridors	7.1.7.2	To protect rail corridors from the encroachment of incompatible land uses that are sensitive to the noise, vibration and possible safety hazards associated with rail operations by imposing separation distances and/or forms of screening or buffering.

Other Applicable OP Policies Regarding Land Use Compatibility		
<p>TransCanada Pipelines</p>	<p>7.2.3.7</p>	<p>To require the proponents of any development, redevelopment and site alteration adjacent to the TransCanada pipeline shown in Appendix E – Transportation, Services and Utilities, or a natural gas compressor station to:</p> <p>obtain approval by TransCanada Pipelines where development, redevelopment or site alteration is located within the mandatory setback distance;</p> <p>locate buildings and structures a minimum setback from the pipeline right-of-way, as determined by TransCanada Pipelines and the National Energy Board;</p> <p>locate any accessory and temporary structures, landscaping and parking within the setback boundaries, subject to the approval of TransCanada Pipelines; and</p> <p>consult with TransCanada Pipelines where development, redevelopment and site alteration is located within 200 metres of the Transportation, Services and Utilities pipeline right-of-way or natural gas compressor station.</p>
<p>Provincial Minimum Separation Distance Formulae</p>	<p>8.1.6</p>	<p>To require new land uses, consents, and new and expanding livestock operations on lands adjacent to ‘Greenway’, ‘Hamlets’ and ‘Countryside’ designations to comply with provincial minimum distance separation formulae.</p>

APPENDIX 6:

Existing Markham Zoning By-law Provisions Relating to Interface Between Residential and Non-Residential Uses

Existing Markham Zoning By-laws Constraints and Conditions				
	Zoning By-law			
	177-96			
Use Restriction	Section 6.15 – Obnoxious Uses are not permitted in any zone. “Obnoxious Use” means a use which, from its nature or operation, creates a nuisance or is liable to become a nuisance or offensive by the creation of noise or vibration, or by reason of the emission` of gas, fumes, dust or objectionable odour, or by reason of the matter, waste or other material generated by the use, and without limiting the generality of the foregoing, shall include any uses which may be declared to be a noxious or offensive trade or business.			
	177-96		1229	
Setbacks	Table B7 (November 1, 2014 consolidation) - a minimum three metre setback is required for the interior side yard in NC1, NC2, and NC3 zones where the yard abuts a residential zone; a minimum 20 metre setback is required in AC1 and AC2 zones for a car wash from a residential zone boundary; and a six metre setback is required for an interior side yard and rear yard in an MJC zone if it abuts the boundary of a residential zone.		Section 11.1 (as amended by By-law 266-1999) - a minimum of 50 feet (approximately 17 metres) rear yard is required in a Commercial Corridor Area if it is adjoining a residential use or zone.	
	193-81	177-96	1229	47-85
Landscaping	Section 6.2 (d) requires that a three metre wide strip of land be provided as landscaped open space in a Local Commercial (LC) zone which is adjacent to a residential zone.	A three metre width of landscaping is required adjacent to the interior and rear lot lines in NC 1, NC2 and CA4 zones if these abut a residential zone (see Table B7 in November 1, 2014 consolidation). There are other landscaping requirements in By-law 177-96 from interior and rear lot lines in CA4, AC1, AC2, BP, BC and G1 zones, but these requirements apply to all lots in the zones and do not specifically reference residential zones.	Section 11.2 (f) (amended by By-law 1306) requires that a ten foot (approximately three metre) wide strip of land be provided as landscaped open space on any side or rear yard in any commercial or industrial zone which abuts a residential zone.	Section 4.7.2 of requires that any commercial lot adjoining a residential zone provide a six metre deep strip of land for landscaped open space.

Existing Markham Zoning By-laws Constraints and Conditions	
	<i>Zoning By-law</i>
	177-96
Waste Storage Area	<p>All waste generated by the occupants of 3 or more dwelling units on a lot or from any commercial, industrial or institutional use shall be stored inside a building or structure on the same lot provided the building or structure is:</p> <p>located within the interior side or rear yard;</p> <p>located no closer to any lot line than required for an accessory building or structure by the By-law; and,</p> <p>not occupying any required parking spaces, loading spaces and the access to these parking and loading spaces.</p>

APPENDIX 7: Other Ontario Municipal Zoning By-law Provisions Regarding Interface issues Between Residential and Non-Residential Uses

Oakville Zoning By-law 2014 - 014			
By-law Section	Type of Regulation	Applies to	Regulation
General Provision (4.8)	Separation distance	Distance from highway	Buildings, parking spaces, loading spaces and stormwater ponds must be at least 14 metres from a highway
General Provision (4.19)	Setback	Pipelines	Requires 3, 7 or 20 metre setbacks from pipelines depending on type
General Provision (4.21)	Setback	Railway corridor	30 metre setback required for dwellings, places of worship, daycares and schools
General Provision (4.11.2)	Landscape widths	CBD, Main Street (MU), Office Employment (E1), Business Employment (E2), Business Commercial (E4), Surface Parking Lot	Establishes minimum landscape widths: 3 metres for CBD, MU1, and MU2 from abutting residential zone. 7.5 metres for MU3, MU4, E1, E2 E4, and other Commercial zones) from abutting residential zone. 4.5 metres for any surface parking lot from an abutting residential zone.
Parking, Loading and Stacking Provisions (5.5)	Setback	Drive through facilities	15 metre required setback from residential zone
Parking, Loading and Stacking Provisions (5.6c)	Setback	Surface loading facility	7.5 metre required setback from residential zone not located within a residential zone.
Midtown Oakville Zones (7.2) and Commercial Zones (9.2)	Abutting zone restriction	Propane sales or transfer	Not allowed to locate propane facility on any lot abutting a residential zone
Mixed Use Zones (8.3)	Setback	Mixed Use Zones CBD, MU1, MU2, MU3, MU4	Establishes interior and rear yard setbacks: 3 metres setbacks for CBD, MU1 and MU2 zone from abutting a residential zone 7.5 metres setbacks for MU3 or MU3 from abutting residential zones
Employment Zones (9.3)	Setback	Commercial Zones C1, C2, C3 and C4	Establishes 7.5 setback along the interior and year yards for Commercial zones abutting residential zones.

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Employment Zones (10.2)	Separation distances and restriction on abutting zones	Waste facilities, automotive uses, and sports facilities	Prohibits a waste processing station, a waste transfer station and an adult entertainment establishment within 800 metres of a residential zone; Does not permit a drive through facility, a motor vehicle body shop, a motor vehicle dealership or a motor vehicle washing facility on a lot abutting any residential zone; and Limits the net floor area of a sports facility to 1000 square metres on any lot within 100 metres of a residential zone.
Employment Zones (10.3)	Setbacks	Employment Zones (E1, E2, E3 or E4)	Requires a 15 metre interior and rear yard setback from residential zones.
Employment Zones (10.6)	Abutting zone restriction	Employment Zones	Does not permit outside procession, outside storage and heavy vehicle parking areas within any yard abutting a residential zone boundary
Environmental Zones (13.4)	Separation distance	Livestock facility	Be in compliance with the Minimum Distance separation II formula (Publication 707) issues by the Ministry of Agriculture, Food and Rural Affairs in 2006.
HAMILTON ZONING BY-LAW EXCERPTS			
By-law Section	Type of Regulation	Applies to	Regulation
General Provision (4.23)	Setback	railway lines, highways and pipelines	Requires: All buildings be set back 14 metres from a provincial highway right-of way All buildings or structures within a residential zone be set back 30 metres from a railway right-of-way All buildings or structures be set back 10 metres form a Trans Canada pipeline right-of-way
Industrial Zones (8.3.2.2)	Setback	Industrial zones	Requires a 6 metre setback where a property line abuts a residential property line
General Business Park Zone (9.2.3f)	Separation distance	Waste facility	Requires that land used for a waste processing facility or a waste transfer station be located a minimum of 300 metres from a residentially zoned lot line

<p>Prestige Business Park (9.3.3)</p>	<p>Landscape widths</p>	<p>Prestige Business Parks</p>	<p>Requires:</p> <p>A 6 metre yard be provided from any portion of a property lot line abutting a property lot line within a residential zone; and</p> <p>A minimum 20 metre setback for any building or structure used for manufacturing from a property lot line abutting a property lot line within a residential zone</p>
<p>Prestige Business Park (9.3.4)</p>	<p>Landscaping</p>	<p>Prestige Business Parks</p>	<p>Requires:</p> <p>A 3 metre wide planting strip for any property lot line abutting a property lot line within a residential zone</p> <p>A visual barrier for any portion of a property lot line abutting a property lot line within a residential zone</p>
<p>Prestige Business Park (9.3.5)</p>	<p>Restriction on outdoor storage and assembly</p>	<p>Prestige Business Parks</p>	<p>Requires that outdoor storage and outdoor assembly be set back a minimum of 20 metres from any portion of a property lot line abutting a property lot line within a residential zone.</p>
<p>Business Park Support Zone (9.4.3)</p>	<p>Minimum yard, building heights and Setbacks</p>	<p>Business Park Support Zone</p>	<p>Requires:</p> <p>A 6 metre minimum yard be provided from any portion of a property lot line abutting a property lot line within a residential zone</p> <p>A maximum building height of 11 metres abutting a residential zone</p> <p>A minimum 20 metre setback for any building or structure used for manufacturing from a property lot line abutting a property lot line within a residential zone</p>

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<p>Business Park Support Zone (9.4.5)</p>	<p>Landscaping</p>	<p>Business Park Support Zone</p>	<p>Requires</p> <p>A 3 metre wide planting strip for any property lot line abutting a property lot line within a residential zone</p> <p>A visual barrier for any portion of a property lot line abutting a property lot line within a residential zone</p>
<p>Business Park Support Zone (9.4.6)</p>	<p>Outdoor storage and assembly</p>	<p>Business Park Support Zone</p>	<p>Requires that outdoor storage and outdoor assembly be set back a minimum of 20 metres from any portion of a property lot line abutting a property lot line within a residential zone.</p>
<p>Light Industrial Zone (9.6.3)</p>	<p>Minimum yard, building heights and Setbacks</p>	<p>Light Industrial</p>	<p>Requires:</p> <p>A 6 metre minimum yard be provided from any portion of a property lot line abutting a property lot line within a residential zone;</p> <p>A maximum 11 metre building height abutting a residential zone; and</p> <p>A minimum 20 metre setback for any building or structure used for manufacturing from a property lot line abutting a property lot line within a residential zone.</p>

Light Industrial Zone (9.6.4)	Landscaping and restriction on outdoor storage and assembly	Light Industrial	<p>Requires:</p> <p>A 3 metre wide planting strip for any property lot line abutting a property lot line within a residential zone;</p> <p>A visual barrier for any portion of a property lot line abutting a property lot line within a residential zone; and</p> <p>That outdoor storage and outdoor assembly be set back a minimum of 20 metres from any portion of a property lot line abutting a property lot line within a residential zone.</p>
MISSISSAUGA ZONING BY-LAW EXCERPTS			
By-law Section	Type of Regulation	Applies to	Regulation
General Provisions (2.1.2.1.1)	Separation Distances	See uses in next column	<p>15 metres - motor vehicle body repair facility (accessory)—</p> <p>60 metres - restaurant, convenience restaurant, take-out restaurants</p> <p>120 metres - animal boarding establishment</p> <p>800 metres - adult entertainment establishment, body rub establishment, adult video store, night club, amusement arcade, composting facility, waste processing station and waste transfer station</p> <p>120 metres - propane storage tank (with an aggregate capacity in excess of 7 571 litres).</p>
General Provisions (2.1.19)	Setback	Outdoor garbage disposals	Requires that outdoor garbage enclosures in non-residential zones be set back a minimum of 6 metres from a residential zone.
General Provisions (2.1.20)	Setback	Provincial highways	Requires that all buildings and structures be setback a minimum of 14 metres from a provincial highway right of way

Task 12: Infill Zoning Standards and Interface Between Uses

<p>Commercial Zones (6.2.1)</p>	<p>Restrictions on height, side and rear yard setbacks, and GFA.</p>	<p>restricts the heights of buildings in C3 (general Commercial zones with sloped roofs to 20 metres and 4 storeys and flat roofs to 16.5 metres and 4 storeys where the lot abuts a residential zone;</p> <p>requires a minimum 4.5-6 metre interior side yard and rear yard setback for any lot abutting a residential zone; and</p> <p>restricts the non-residential gross floor area where a lot abuts a residential zone to 2,000 square metres in a C1 (Convenience Commercial) zone, 12,000 square metres in a C2 (Neighbourhood Commercial) zone and 300 square metres in a C5 (Motor Vehicle Commercial) zone.</p>
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