

Industrial Edges:  
Compatibility and Interface Issues in Metro Vancouver

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## **1.0 Executive Summary**

This paper provides a summary review of compatibility and interface issues between industrial and residential land uses in Metro Vancouver. It samples six local jurisdictions as well as a jurisdiction outside of Metro Vancouver to provide an inventory of current practices related to buffering between land uses. The paper primarily reports on approaches found in Official Community Plans, Development Permit Area Guidelines, and zoning bylaws. Additional commentary has been provided based on conversations from staff in the sample jurisdictions.

This paper includes a summary of the work's context as a component of the *Regional Industrial Land Strategy*, a summary of findings, an overview of various approaches found in each jurisdiction relative to physical buffering, a summary of additional topics relevant to industrial and residential interfaces, highlights of a recent and relevant area plan for an Innovation Area (mixed-industrial and manufacturing) in Milwaukie, Oregon, and a summary of comments / observations provided by practitioners from the referenced jurisdictions.

## **2.0 Background and Key Findings**

### **2.1 Background**

The topic of industrial lands continues to be a key element in the discussion of a healthy, economically resilient, and livable Metro Vancouver region. To this end, the Industrial Lands Strategy Task Force is engaged in providing advice and recommendations to the MVRD Board on issues related to the development of the *Regional Industrial Lands Strategy*.

In order to inform this process, a series of research projects are underway to provide baseline information which the Task Force may utilize when considering next steps. The baseline information has included a series of white papers to inform this work. This particular white paper, "Industrial Edges: Compatibility and Interface Issues in Metro Vancouver" is one contribution to this larger body of work.

The consideration and management of compatible land uses is a common exercise in urban and regional planning. A component of this effort is to utilize planning tools that may contribute to the mitigation of potential, existing, or perceived nuisances. A broad range of tools exist with varying degrees of flexibility or, conversely, prescriptiveness. This paper focuses on tools within a community's Official Community Plan (OCP), Development Permit Area Guidelines (typically a component of the OCP), and zoning bylaws. In some instances, neighbourhood plans or development agreements have been reviewed.

The paper consists of three parts. First, an overview of regulatory tools currently in use in the Metro Vancouver region and in one jurisdiction beyond is provided. The overview is not exhaustive, but is based on research and analysis of the practices of six Metro Vancouver municipalities and one municipality outside of the region. The six member municipalities included are the cities of Coquitlam, Maple Ridge, New Westminister, Pitt Meadows, Port Coquitlam, and the Township of Langley. The other municipality is Milwaukie, Oregon. Milwaukie was chosen for its recently adopted (August 2018) plan for the North Milwaukie Innovation Area that directly considered the interface – and integration – of residential land uses in an industrial area.

Secondly, planners or staff from the researched jurisdictions were interviewed to provide additional insights and observations than those found in the respective regulations. The interviews sought to better understand emerging trends in terms of challenges or opportunities related to managing the interface between industrial and residential land uses.

Lastly, an Appendix has been included which provides summary tables of the collected information.

It is important to note that this paper largely considers industrial land uses in terms of the broadest spectrum of use and does not distinguish between traditional and non-traditional industrial uses. In all cases and examples, the paper references industrial or business park forms of industrial uses and does not research emerging trends in industrial mixed-use projects which are increasingly emerging in dense urban environments. Additionally, this paper does not take a position on the topic of buffering nor seeks to identify a “best practice.” Instead, it provides an overview of current practice in the Metro Vancouver region and beyond.

## **2.2 Commonalities and Differences amongst Mitigation Measures**

Though varying in scope and degree of specificity, industrial land buffers exist in all of the researched jurisdictions and are a common tool to mitigate against potential, perceived, or existing conflicts between industrial uses and adjacent residential land uses. OCPs and zoning bylaws generally include minimum separation distances or setback requirements alongside policy statements, which, consistent with Metro Vancouver’s regional growth strategy, encourage the protection of industrial lands.

While mitigation measures are present in all researched jurisdictions, there is no common or singular approach to defining and shaping a buffer.

Wide variations occur in terms of level of specificity and legislative mechanisms. For example, one jurisdiction may make simple reference to mitigating against potential noise disturbances between industrial and residential uses without prescribing an approach or providing a defined outcome beyond “mitigation.” Another jurisdiction may provide a similar high-level recommendation but also provides performance-based targets such as a defined maximum decibel levels which may not be exceeded. This is an example of something that isn’t “buffering” per se, though buffering is one means through which you might achieve a performance-based noise standard. Similarly, some jurisdictions may most directly address the topic of noise in a zoning bylaw whereas others match high-level policy in an OCP with site-specific criteria applied by means of a development agreement.

Commonalities exist in terms of a relatively consistent list of topics which inform the buffer. Noise, odour / vapour / dust, light, visual screening / design, and safety are all topics which consistently reappear as points of consideration in terms of the interface between residential and industrial uses. The impacts on vehicle traffic – in particular, truck movements – are also commonly present as a topic which may require mitigation.

In addition to the above noted topics which are commonly mitigated against, most jurisdictions included terms such as “encourage” or “support” to create an amenity or positive relationship

between the two land uses. In this regard, a “buffer” may be thought of as more layered than simply a means to separate land uses.

### **3.0 The Industrial Interface**

Multiple topics are typically addressed when considering potential, existing, or perceived conflicts between industrial and residential lands. While not exhaustive, the following are generally present in most jurisdictions when describing, encouraging, or mandating mitigation measures:

- *Noise* – measures to protect against acoustic disturbances;
- *Odour, Vapours, and Dust* – measures to protect against the conveyance of odour, potentially noxious vapours, or dust;
- *Light* – particularly as it pertains to ambient light that extends across property boundaries;
- *Visual / Design elements* – generally including building design or screening devices to enhance the appearance of industrial development or to prevent unsightly areas of a site from being in view from adjacent properties or roadways; and,
- *CPTED* – measures to promote consideration of personal safety in design for both on-site users and users of adjacent properties.

The above noted topics are consistently identified as potential, existing, or perceived issues from the point of view of adjacent residential development or from the vantage point of the public realm. Thus, they are typically described as action items to be undertaken by the industrial property owner rather than the residential owner or tenant. However, this is not to suggest that the jurisdictions under review in this paper have not also included “support” or “encourage” language within their respective OCPs, zoning bylaws, policies, and development guidelines. This support language may serve to reinforce the importance of industrial land uses in general or, more specifically, identify potential opportunities to create a shared amenity or item of mutual benefit to users of each land use. For this reason, a section on “support / encourage” has been documented below.

#### **Noise**

The topic of noise is dealt with in broad terms in most of the surveyed jurisdictions. In some cases, general strategies to mitigate against noise are provided. However, specific targets such as acceptable acoustical levels are uncommonly offered at the policy or guideline level. Instead, the topic of noise is generally handled through:

- Enclosures;
- Site planning and design (locating noisier activities intentionally away from abutting residential uses); or,
- Increased setbacks.

Requirements for industrial activities to be fully within an enclosed building are generally common elements within industrial zones across jurisdictions. While not explicitly a strategy to reduce noise (it also contributes to visual screening and, potentially, management of odours and vapours), it is understood that this will greatly reduce the likelihood of noise creating a nuisance.

An additional measure seen in some instances is to locate activities anticipated to be noisier away from adjacent developments. Given that the scale of industrial sites may be large in size, this measure

may result in significantly greater distance between industrial and residential uses. This approach also pertains to the location of rooftop mechanical equipment.

Jurisdictions may require additional interior side yard setbacks than those typically required when the property is adjacent to residential uses. Increased setbacks range from an additional 3 metres to 14 metres. Typically, an increased setback enables a range of mitigation measures to occur rather than just noise related topics. Also, while some jurisdictions include reference to noise mitigation as an intent of the increased setback, it is not clear how an additional 3 metres of separation distance would substantially reduce noise. In this regard, it is assumed that the additional distance allows for the introduction of landscape berms or other acoustical screening devices.

Occasionally, noise may also be dealt with through additional acoustical measurements using targeted decibel levels in accordance with a noise bylaw or landscape berms or sound barriers.

### ***Odour, Vapours, and Dust***

While odour, vapour, and dust are commonly noted topics to be addressed when managing the interface between industrial and residential land uses, few jurisdictions provide direct or targeted measures to mitigate against potential nuisances. Presently, Metro Vancouver is the primary regulator for such disturbances in the region.

Though regulated at the regional level, local jurisdictions often may indirectly contribute to mitigating against these potential concerns by frequently requiring new development and, especially, recycling or garbage areas associated with new development, to be fully enclosed. This may be achieved either through development permit area guidelines or zoning bylaw regulations.

### ***Light***

The management of exterior lighting relative to its impacts on adjacent residential neighbourhoods is commonly pursued across most jurisdictions. In fact, this topic has the most consistency across jurisdictions in terms of proposed strategies and level of clarity. Either through zoning regulations or design guidelines, jurisdictions identify limiting or eliminating direct light spillage onto adjacent properties. Basic recommendations on installing fixtures to manage this are common. In some cases, third party evaluation metrics are referenced. In one instance, a requirement to not exceed light levels that are present on residential street light standards was included.

### ***Visual / Design***

Some jurisdictions deploy additional guidelines related to the look and character of a new industrial building. These guidelines are typically assigned to broad industrial development permit areas and are applicable to industrial areas irrespective of whether or not there is an interface with residential uses. Notwithstanding, the considered approach suggested by these guidelines to building siting, massing, entry location, and public realm elements has the potential to contribute to a positive relationship between industrial and surrounding land uses.

### ***Crime Prevention through Environmental Design (CPTED)***

Many of the guidelines that support buffering between industrial and residential land uses encourage setbacks on interior side yards and landscape or vegetation. It is common for industrial buildings to include long building faces without windows or overlook into the buffered areas. In this regard, the

same measures that may contribute to enhancing livability for residential land uses may also contribute to a safety challenge – particularly when those same buffer areas are encouraged to include public access such as trails. As a response to this, many jurisdictions include policies or guidelines that advocate for CPTED measures to be deployed at a detailed design level of the site and buffer areas.

### ***“Support / Encourage”***

Consistent with *Metro 2040*, the regional growth strategy, all Metro Vancouver member jurisdictions examined have incorporated statements that describe the value and importance of retaining Industrial uses and activities within the region. In order to balance this objective with residential livability, a suite of policies, bylaws, guidelines, and agreements seek to mitigate potential conflicts. This mitigation predominately takes the role of excluding, limiting, or preventing against any interaction (physical, visual, ambient light, etc.) between industrial and residential land uses. However, many jurisdictions also have crafted language or initiatives that actively encourage the positive overlap of these two land uses and the users of each. In this regard, industrial lands may further support the community as a place of value beyond employment activities.

## **4.0 An Overview of Regulatory Tools**

For the sake of clarity, this paper pays particular attention to those instances in OCPs, zoning bylaws, design guidelines, and neighbourhood plans that explicitly reference the interface between industrial and residential uses as a key element. Furthermore, it has a particular focus on physical forms of buffering including:

- Mitigation through distribution of land uses at the city or precinct scale; and
- Physical on-site or site-specific buffering.

While not a focus of this paper, the management of potential conflicts between industrial and residential land uses extends beyond on-site physical buffering strategies. These include:

- Indirect mitigation through associated policies;
- General consideration to adjacencies without explicit reference to residential; and
- Pre-existing bylaws to manage nuisance disturbances, such as noise bylaws.

### ***Mitigation through distribution of land uses at the city or precinct scale***

In many cases specific land use designations are utilized in an OCP to create a de facto transition or buffer zone between industrial and residential uses. Often, these transitional areas focus on employment uses that are more office-oriented and less industrial-oriented – or at least have greater restrictions on the range of permitted industrial uses. By geographically locating a transitional land use designation, buffering occurs at the city or neighbourhood scale.

### ***Physical on-site or site-specific buffering***

A direct way of managing the interface between industrial and residential land uses is to deploy physical buffering on-site. This may include increased setbacks, landscape screens, considered site planning measures which locate potential nuisances away from residential areas, or landscape screens.

### ***Mitigation through Associated Policies***

This paper – including the summary matrix in the Appendix – identifies those regulations, policies, and guidelines which are directly assigned to the intent of managing the interface between industrial and residential uses. Nevertheless, the absence of an explicit statement on mitigation or buffering may not indicate the absence of a particular strategy. Instead, that strategy may be nested in an associated policy. For example, some jurisdictions identify a landscape buffer (including specific criteria) to create a visual break between residential and industrial uses. In other instances, a landscape edge (including specific criteria) is referenced under an “Ecological” policy. In both cases, the outcome is that the jurisdiction is encouraging a landscape edge condition that may in fact serve as a buffer against potential nuisances such as light spillage. This means an industrial / residential buffer may be achieved whether or not the language identifies land use buffering as the intent.

### ***General Consideration of Adjacencies***

In other instances, bylaws, policies, and guidelines indicate a general consideration towards managing the interface between industrial lands and the surrounding context irrespective of adjacent land uses. This may take the form of a guideline that encourages a positive street relationship or engaging interface with the public realm. Similar to the point made above in 3.1.2, these strategies may comprise a component of a buffering strategy on a de facto basis, even if not explicitly devoted to residential adjacencies outright.

### ***Pre-existing Bylaws***

Lastly, the absence of an explicit bylaw, policy, or guideline to manage a particular element of the industrial / residential interface may not mean that it remains unaddressed. While some jurisdictions make special note of noise mitigation strategies at industrial edges, for example, others may rely on existing noise bylaws to manage potential nuisances that may occur. Indeed, even in instances where noise mitigation strategies are proposed, they may in turn refer to an existing noise bylaw to set limitations on levels of acceptability.

## **5.0 Approaches to Buffering and Managing the Industrial Interface**

The physical separation of buildings, activities, or equipment is a direct means by which jurisdictions choose to manage the interface between industrial and residential uses. This section primarily addresses buffering through setbacks.

### **5.1 Metro Vancouver**

A common approach to buffering is to consider increased setback requirements for industrial development when adjacent to residential or other types of non-industrial development. Increased setbacks are sometimes incorporated through policies or guidelines, but are most commonly applied through a zoning bylaw.

There is limited consistency across jurisdictions in the actual distance recommended within the setbacks. In part, this relates to various contextual differences including:

- The physical location of industrial lands in some jurisdictions provide a form of buffering. Streets and highways along the perimeter of the site create separation distance between land uses that are located on either side.

- All researched jurisdictions have a range of industrial zones to delineate between heavier and lighter industrial uses. For light-, ultralight-, or business park type industrial zones, compatibility with adjacent land uses may be inherent to the permitted uses on site or indirectly addressed through building design guidelines. In some scenarios, lighter industrial uses are located between heavier industrial uses and residential uses as the buffering mechanism.

Variations in setback distances required in zoning bylaws should be considered in the context of the variations noted above. Different approaches are likely an outcome of site-specific or jurisdiction-specific opportunities and constraints.

### ***Coquitlam***

Coquitlam's OCP acknowledges potential interface concerns between heavy industrial and residential areas and discourages any new heavy industrial uses from locating near residential areas. The City's OCP uses the phrase "buffer and protect adjacent buildings and neighbourhoods" in relation to the potential for noise, visual, and traffic impacts.

Coquitlam's citywide development permit guidelines do not directly address the industrial / residential interface or buffering. The Guidelines do contain a number of broad urban design parameters which may contribute to a contextual response for new industrial buildings but do not note a specific response in terms of increased setbacks. It is important to add that the majority of Coquitlam's industrial land is located between the Fraser River and Highway 1 – direct proximity between new industrial development and existing residential land uses is therefore limited.

Neighbourhood specific plans such as the "Waterfront Village" plan introduce residential uses in close proximity to industrial uses. In this instance, buffering as a strategy is not explicitly documented in the text but is noted in the masterplan. Significant ecological corridors of widths approximately equal to or greater than a street right-of-way are located along the perimeter of residential land uses. This means that, in most instances, residential land uses are buffered from industrial land uses by +/- 20 metres of separation distance and include the potential for visual screening through landscape elements. The exception is on the western portion of the neighbourhood where multi-family residential is adjacent to light industrial / business park. In this instance, there is no reference to additional buffering required but it is noted that the light industrial uses are, themselves, a buffer between heavier industrial uses that lay immediately beyond the neighbourhood boundary to the west.

Coquitlam's zoning bylaw includes two industrial zones. In both cases, interior side yard setbacks are not required when adjacent to other industrial zones or business zones, but are required to be a minimum of 3 metres when adjacent to all other zones including residential.

### ***Maple Ridge***

The OCP in Maple Ridge does not make an explicit reference to creating a buffer between residential and industrial lands. However, it does include policy which indirectly addresses the potential for the industrial / residential land use interface to occur elsewhere in the municipal toolkit. While a principle of the OCP indicates that "there is value in identifying new lands for commercial and industrial uses

to secure locations for future employment that will help to create a balanced community”, the principle also notes that “citizens prefer locations where commercial and industrial activities ‘fit’ within the community context”.

The City’s Development Permit Area guidelines also do not provide specific direction on creating greater separation space as a buffer between industrial and residential land uses. However, “landscaping of substantial proportions” is to be provided around property lines. It is not clear whether or not this may occur within existing setback requirements along this interface. Additionally, there are multiple guidelines that further address the potential to mitigate against nuisance from industrial land uses on residential neighbours. These guidelines relate to the considered location of noise generating elements such as mechanical vents and car wash bays. They also advise to consider lighting glare on adjacent uses.

The City’s zoning bylaw incorporates additional setbacks that contribute to a buffer. The M-3 Zone, which generally applies to business park uses, requires an additional 3 metres of setback for buildings on the interior lot line when adjacent to residential properties: the typical 3 metre setback requirement is extended to 6 metres. The M-5 Zone, by contrast, requires an additional 10 metre setback to manage residential adjacencies: the typical 15 metre setback is extended to 25 metres. It should be noted that the M-5 Zone allows for “High Impact Industrial Uses”.

### ***New Westminster***

New Westminster’s OCP is clear that the protection of the industrial land base is a priority as is encouraging new employment-intensive industrial land uses. No specific policy to require buffering is articulated in the OCP.

The Development Permit Area Guidelines for Industrial Land Uses introduce a wide range of topics that may contribute to a neighbourly interface between industrial and residential lands. However, no specific mention of buffering is included. Guidelines related to scale note that “buildings should be designed with context in mind and create sensitive transitions to neighbouring developments, whether it be commercial spaces, public spaces, single family residential or multi-unit residential buildings”, but do not suggest additional separation distance. Similarly, guidelines that address lighting, noise, safety, access, and the environment may support a considered interface between industrial and residential land uses, but do not suggest additional separation space is required.

While the M-1 Light Industrial and M-2 Heavy Industrial Zone do not require setbacks, these are not located in immediate adjacency to residential uses. The M-4 Light Industrial District and M-5 Light Industrial Mixed-Use District state an intent to accommodate industrial uses that are compatible with adjoining or adjacent residential uses. In the case of the M-4 District, a setback of 1.52 metres is required to address residential adjacencies (otherwise it is 0 metres). The M-5 Zone, by contrast, does not require additional setbacks but does include additional limitations on permitted land uses.

### ***Pitt Meadows***

Pitt Meadows’ OCP makes a direct reference to creating a buffer between industrial and residential land use areas. This point is nested in the recognition that there is an intrinsic proximity between industrial land and other uses given the compact nature of Pitt Meadows’ urban area. Within this context, it recommends that “it is important that industry make a positive contribution to the

community's quality of life in how it is developed and operated -this includes consideration of building design, landscaping and buffering".

The City's Development Permit Area Guidelines for Industrial Land address multiple interface topics between industrial and residential lands. In some cases, the guidelines provide direct reference to a buffer stating that:

"For industrial sites [that] abut residential areas, the setbacks shall be increased to reduce impacts such as noise, odour, or shadow from industrial buildings. The area between industrial development and residential sites shall contain a landscape buffer".

Additional guidelines manage potential nuisances by encouraging loading areas to be oriented away from residential areas and to incorporate fence screening. Further to this, it is noted that fences "should be constructed with materials in keeping with the fences generally used in residential areas."

A variation in setback requirements exists within the industrial zones in Pitt Meadows. The I-3 Zone "Light Industrial Park" is intended as a transition between industry and residential – and other – uses. Its requirements for interior side yard setbacks increases from 3 metres to 6 metres when residential uses are adjacent. The I-1 Zone, by comparison, increases the setback requirements from 3 metres to 9 metres when the site is adjacent to residential uses. The I-1 Zone includes a greater range of general industrial uses versus the I-3 Zone.

### ***Port Coquitlam***

Port Coquitlam's OCP makes multiple remarks in regard to managing the interface between both industrial and residential uses. This occurs both in terms of mitigating against heavier industrial uses through buffering and in undertaking comprehensive land use planning in areas where proximity between land uses is anticipated given the urban context of the area.

To address heavier industrial uses in Port Coquitlam, the City's OCP advises to "ensure that heavy industrial areas, which involve the use of heavy machinery and require more outdoor space, are located in central areas of industrial parks so they are buffered by lighter industrial uses to residential areas". In terms of managing compatibility of employment uses in urban areas, the OCP advises to "examine innovative approaches for lands within the Dominion Triangle Industrial Area to promote high employment generation compatible with adjacent commercial and residential areas". This examination is proposed to occur through an area planning process.

The Development Permit Area for Industrial Land Uses in Port Coquitlam clearly identifies buffering as an objective. It instructs to "control the interface between industrial and other uses in the area, by implementing adequate buffering between land uses and regulating the proportion of industrial structures". Multiple guidelines within the Development Permit Area Guidelines may contribute to a buffering quality. These include guidelines pertaining to landscape, fencing style, and CPTED elements. The City's External Lighting guideline is a distinct example in that it sets a measurable target equivalent to adjacent residential norms. While other guidelines that pertain to lighting may broadly seek to mitigate against light spillage or specifically require that no light extends beyond the boundary of the property line, this guideline provides a specific target related to equivalency: "no industrial yard or building shall be illuminated, or contain light sources that illuminate adjacent or

nearby residential designated properties to an intensity similar to or higher than the levels of illumination that are created by existing street lights on the said residential designated properties”.

All three of the industrial zones in Port Coquitlam require additional interior – and sometimes rear yard – setbacks for industrial development when adjacent to residential uses. These setbacks range from 6 metres to 9 metres as compared to 0 metres or 3 metres. The zoning bylaw also requires a landscape strip of a minimum width of 3 metres and a landscape screen of at least 2 metres height to be located along lot lines abutting residential uses.

### ***Township of Langley***

The Township of Langley’s OCP considers industrial land uses in various contexts including agro-industrial land and its rural interface. This paper focuses on industrial land within the urban area where the OCP acknowledges the incorporation of a range of land uses, including industrial, in development areas such as designated “Regional Centres”. Furthermore, the OCP identifies that industrial lands may be supported through “appropriate buffering, landscape, and building design”. On multiple other instances, the OCP encourages industrial land use integration.

The Township’s zoning bylaw – similar to other jurisdictions – requires additional setbacks to be used for industrial buildings adjacent to residential uses. In the case of the M-1A and M1-B Zone, the increase in setback is 10 metres from an otherwise 0 metre setback requirement.

## **5.2 Outside Jurisdictions**

### ***North Milwaukie Innovation Area (Oregon)***

This paper also considers approaches from the North Milwaukie Innovation Area in Milwaukie, Oregon (just outside of Portland). Milwaukie identifies employment, manufacturing, and industrial land as having substantial value within the community. At the moment, Milwaukie is a “net importer of jobs” (i.e. more people are working in Milwaukie than living in the city). Consequently, the subject of employment and manufacturing jobs is a central topic for planning in Milwaukie.

Recently, a new LRT (Metro) line connected Milwaukie to the Metro Portland area. The introduction of a rapid transit station prompted additional consideration of the type, nature, and intensity of industrial uses and the City’s integration or interface with residential areas. In one particular industrial area – now known as the North Milwaukie Innovation Area (NMIA) – new multi-family residential uses are incorporated into mixed-industrial areas. The area is also adjacent to existing lower-density residential areas.

In reviewing the NMIA ordinance relative to the subject of this paper, a number of items are noteworthy:

- The NMIA, similar to those jurisdictions within Metro Vancouver studied in this paper, identifies that mechanical equipment on rooftops should be screened from view and contained within an enclosed structure. However, an exception is made for equipment used to generate clean energy. The ordinance notes that “this screening requirement does not apply to roof-mounted solar energy systems or wind energy systems”.

- Landscape screening, fences, additional setbacks and walls are all noted as potential tools in buffering between residential and industrial uses. Unique to the NMIA, however, is that the obligation to develop these screening devices is on new residential development adjacent to industrial (when industrial already exists). This is distinct from the sampling of jurisdictions in Metro Vancouver where timing of development did not factor into mitigation tools and, instead, industrial lands accommodate buffering.

### ***Toronto (Ontario)***

An example of buffering between industrial and residential land uses in the Toronto context is the Murray Road. This site is a city-owned parcel that is situated between industrial uses (a concrete batching plant) and residential uses. The City's objectives included retention of the concrete batching plant (these facilities are needed within proximity to new construction and cannot be further displaced from the city centre) and retention of employment uses in the area. Through a city-initiated rezoning, the City identified light industrial uses as a preferred use.

The City's rezoning process involved multiple interactions with the surrounding community and the City voluntarily identified mitigation measures that would address community concerns. These included an air quality and a noise mitigation strategy. To provide clarity to the community, air and noise quality studies utilized existing Provincial Ministry of the Environment adopted standards for reasonable limits.

The rezoning also recognized some de facto buffering occurring due to the adjacency to the railway (which typically requires a 15-30 metre setback) and a reduction in the variety of industrial uses permitted on site such as a greater focus on high tech.

Lastly, the rezoning triggered the delivery of neighbourhood amenities that also contributed to a buffering between land uses. Through a public realm exercise a pedestrian and cycling network was introduced along the periphery of the site.

### ***San Francisco (California)***

In the San Francisco context, a significant portion of industrial land is owned and regulated by the Port of San Francisco meaning that the City is not directly managing development decisions on those lands. Nevertheless, there have been scenarios where the City, through a neighbourhood planning process, has been directly involved in managing the interface between existing industrial and residential uses.

The Bayview area of San Francisco contains a large amount of industrial land. In order to contribute to the long-term viability of the industrial land and to mitigate against potential conflicts near residential uses, the City introduced a land use "buffer" of Production Distribution Repair (PDR) zoned land. In other words, the City rezoned an area approximately one parcel deep along the edge of industrial land to a new PDR Zone.

## 6.0 Additional Observations from Interviews

In support of the readings completed in the preparation of this paper, interviews were conducted with planners from each of the jurisdictions identified in this report. These conversations generated additional questions and observations which are noted below:

- Community Interaction – While much of the management of industrial / residential uses is directed towards eliminating conflicts between the two land uses, is there a compelling case to – in some situations – bridge the two land uses by finding mutual benefit between the two? For example, landscape buffers may contain publicly accessible trails that enhance neighbourhood connectivity, industrial lands may host special events or programmed activities such as festivals or enable community attractors such as commissary kitchen cafes or brewpubs to be present. While this will not change the potential for noise, visual, odour, or other disturbances, it will offer something to the broader community that *may* shift perceptions about the relative value of living in proximity to industrial uses.
- Timing – There is anecdotal evidence that limited complaints or concerns arise from residential neighbours to long-established industrial sites. While this is not a given, some examples indicate that proximity to light industrial uses when expected may be tolerable. On the other hand, the potential for new or unknown nuisances to arise from proposed industrial development typically raise alarm from existing residential developments.
- Roads – Comments related to the role of roads as a component of industrial lands were recurrent. While on-site or localized buffering is often top of mind when discussing residential and industrial interfaces, some may experience conflict off-site by virtue of road improvements designed to facilitate increased truck traffic.

## 7.0 Conclusions

Metro Vancouver member jurisdictions – based on those sampled in this paper – incorporate a range of approaches to managing the interface between industrial and residential uses. These approaches are deployed as a response to the unique context of each community. Though there is no single approach, there are a number of common elements. These elements include a relatively consistent range of topics which are addressed in interface strategies (e.g. noise, light, visual impact). They also include relatively consistent mitigation techniques such as increased setbacks when interface occurs, utilizing development permit (i.e. design) review to address potential concerns, and working consistently within a broader land use plan framework to locate the heavier industrial uses physically apart from residential uses (often with a transitional land use or zone such as office or business park in between).

Outside jurisdictions similarly rejected a “one-size-fits-all” approach. Nevertheless, the issues and associated tools used to address potential issues remains generally consistent.

Based on the inventory conducted as part of this report there are, in broad terms, five main types of industrial / residential land use buffering. These are:

**Macro-level buffering:**

This buffering is an outcome of a natural terrain or built infrastructure that creates a substantial physical separation between industrial and residential land uses. When this type of buffering is in place, it is less likely to identify associated policies or design guidelines that may further address buffering. An example of this can be found in the City of Coquitlam where Highway 1 creates a separation between residential and industrial land uses.

*Strengths:* A strength to this approach is that the extent to which the two uses are separated generally eliminates the need for mitigation measures.

*Weaknesses:* It may be suggested that in these instances there is no interface between the land uses occurring and, therefore, this should not be seen as a type of buffering. Also, this approach is not easy to implement as major regional infrastructure is already in place and unlikely to shift or relocate.

**Land Use buffering:**

This buffering occurs at the city or neighbourhood scale and relies on high-level land use policy and zoning to create a transition area between existing industrial and residential uses. It requires a portion of land to be designated specifically for lighter industrial or employment uses and is often associated with additional requirements or guidelines such as the location of loading or vehicular access points.

*Strengths:* This approach maintains industrial land for industrial uses but applies more nuance to industrial designations to better manage potential interface concerns.

*Weaknesses:* This buffering requires a substantial area of industrial land to be placed under greater limitations of use or flexibility. While the total area of industrial land is not being diminished, there is less opportunity for heavier industrial land uses to occur.

**On-Site Physical Separation:**

This buffering occurs at the city or neighbourhood scale and relies on high-level land use policy and zoning to create a transition zone between existing industrial and residential uses. It requires a portion of land to be designated specifically for lighter industrial or employment uses and is often associated with additional requirements or guidelines such as the location of loading or vehicular access points.

*Strengths:* This approach provides a clear, measurable action which is easily implemented through zoning requirements. In some instances, the increased separation may provide an opportunity for additional city or neighbourhood objectives to be met. For example, a greenway network or landscape area may be introduced into the setback area. Some jurisdictions noted success in meeting mutually beneficial objectives through this approach. The Township of Langley, for example, was able to realign a stream corridor with an industrial setback meaning that the ecological network was maintained and a greater separation occurred between industrial and residential uses.

*Weaknesses:* This buffering requires relatively substantial amounts of land be left undeveloped which may represent a burden to the land-owner or developer. Also, in the absence of clear performance targets or objectives, it is not evident that the on-site buffering is resulting in direct elimination of a

potential issue. For example, does an additional 3-6 metre of separation eliminate or even substantially reduce noise or odour from crossing across property lines to residential areas?

### ***On-Site Mitigation Measures***

This “buffering” occurs through on-site design and site planning measures. This includes visual screening of mechanical equipment, requirements to place industrial uses and other associated activities entirely within enclosed structures, special fixtures for lighting, and landscape or screens to provide a visual buffer.

*Strengths:* These measures are notionally tailored to address specific potential concerns such as light spillage or noise. They typically are identified in a design guidelines and generally do not prescribe a particular technique. This means the industrial land developer has flexibility and may be creative in their approach.

*Weaknesses:* These measures may provide flexibility but, on the other hand, there is a degree of ambiguity present in many of the guidelines that are intended to mitigate against nuisances. While “reducing noise impact” is an understandable action item, targets are often absent leaving no clear point at which an industrial land developer or tenant has satisfied the objective of the guidelines. In one example, a guideline states that no light from the industrial use is to cross the property line to residential uses. While it may be assumed that this pertains to direct light rather than ambient light the guideline is unclear. Moreover, it is not clear that a neighbouring residential development would be subject to the same criteria. In other words, new residential development is permitted to create a greater perceived nuisance on an adjacent residential property than an industrial use would be. While the presence of an actionable guideline may provide initial direction, the absence of a clear performance objective – or an unusually onerous objective – risks creating actions for industrial developers or tenants that do not result in intended outcomes.

### ***On-Site Amenities / Positive Interface***

While not technically a “buffer”, there are examples – primarily through design guidelines – of creating a positive interface between land uses or from industrial land to the public realm. These guidelines advocate for the placement and design of building entries to respond to the surrounding context and for the scale and materiality of buildings to consider that of adjacent development.

*Strengths:* The incorporation of these elements contribute to a less dramatic contrast in built form and reduce potential for visual conflict.

*Weaknesses:* While these measures encourage higher quality development and general alignment with commonly accepted public realm objectives, it is unclear how effective they are at managing the interface between residential and industrial land uses.

**Appendix 1: Summary Table of Interface Management by Jurisdiction**

	<b>OCP- Reference to Buffer</b>	<b>Development Guidelines – Increased Separation</b>	<b>Development Guidelines – Landscape or Fence</b>	<b>Development Guidelines – Noise, Odour, Light</b>	<b>Zoning Bylaw – Required Setback (Standard / Abutting Residential)</b>	<b>Zoning Bylaw – Noise, Odour, Light</b>
<b>Coquitlam</b>	Yes	No	No	Yes	0m / 3m	No
<b>Maple Ridge</b>	Yes	No	Yes	Yes	3m / 6m 15m / 25m	Yes
<b>New Westminster</b>	Yes	No	Yes	Yes	0m / 1.52m	No
<b>Pitt Meadows</b>	Yes	Yes	Yes	Yes	3m / 6m 3m / 9m	Yes
<b>Port Coquitlam</b>	Yes	Yes	No	Yes	0m / 6m 3m / 9m	No
<b>Township of Langley</b>	Yes	Yes	No	Yes	0m / 10m	No

## Appendix 2: Summary Table of Interface Management by Tool

	COQUITLAM				MAPLE RIDGE				NEW WESTMINSTER				PITT MEADOWS				PORT COQUITLAM				TOWNSHIP OF LANGLEY			
	OCP	ZONING BY-LAW	DESIGN GUIDELINE	NEIGH. PLAN OR DEV. AG.	OCP	ZONING BY-LAW	DESIGN GUIDELINE	NEIGH. PLAN OR DEV. AG.	OCP	ZONING BY-LAW	DESIGN GUIDELINE	NEIGH. PLAN OR DEV. AG.	OCP	ZONING BY-LAW	DESIGN GUIDELINE	NEIGH. PLAN OR DEV. AG.	OCP	ZONING BY-LAW	DESIGN GUIDELINE	NEIGH. PLAN OR DEV. AG.	OCP	ZONING BY-LAW	DESIGN GUIDELINE	NEIGH. PLAN OR DEV. AG.
NOISE	○	○	○	○	●	●	●	○	●	●	○	○	●	●	●	○	○	○	○	○	○	○	○	○
ODOR / VAPOUR / DUST	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
LIGHT	○	○	○	○	○	●	●	○	○	○	○	○	○	●	●	○	○	○	○	○	○	○	○	○
VISUAL / DESIGN OR SCREENING	○	○	○	○	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CPTED	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
AMENITY	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

- Directly addresses topic, with target
- Directly addresses topic, with some guidance
- Directly addresses topic, no target or guidance
- Indirectly addresses topic, no target or guidance

*Note: This table reflects the initial inventory undertaken during the preparation of this report. The absence of an indicator in this table does not necessarily indicate the absence of the topic in a particular jurisdiction. The table is for illustrative purposes and serves to highlight two key aspects of the findings: 1) each jurisdiction manages the interface between residential and industrial land through a unique approach to available tools and 2) though the topic of residential / industrial land use buffering, interface, or nuisance mitigation is frequently raised, specific targeted actions are rarely provided.*