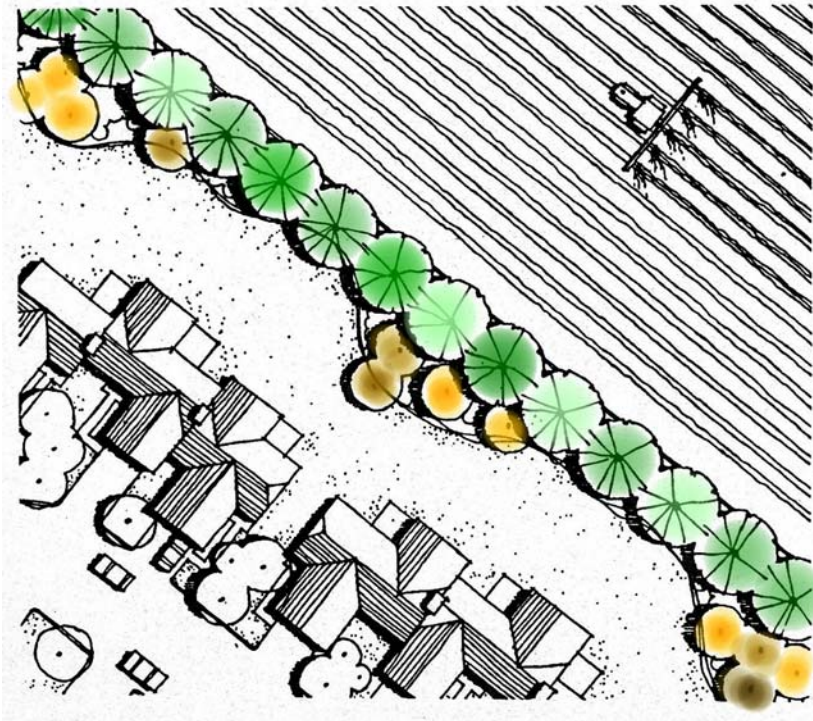


Edge Planning Areas

Promoting Compatibility Along
Urban-Agricultural Edges



Background Paper

Resource Management Branch
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1	Introduction	1
2	Planning the ALR-Urban Edge.....	1
2.1	RATIONALE	1
2.2	OBJECTIVE	1
3	Factors Influencing Compatibility	1
3.1	FARM OPERATION – TYPE & MANAGEMENT	1
3.2	ENVIRONMENT - CLIMATE & TOPOGRAPHY	4
3.3	URBAN DEVELOPMENT - TYPE & LOCATION	4
3.4	PERCEPTIONS	5
4	Developing Urban & Farm-side Management Techniques - Factors to Consider	6
4.1	URBAN-SIDE BUFFERS	6
4.1.1	<i>Type of urban development and farm operation</i>	<i>7</i>
4.1.2	<i>Land availability and topography</i>	<i>7</i>
4.1.3	<i>Cost of buffering</i>	<i>8</i>
4.1.4	<i>Buffer installation & maintenance.....</i>	<i>9</i>
4.2	FARM-SIDE MANAGEMENT	9
4.2.1	<i>Cost.....</i>	<i>9</i>
4.2.2	<i>Separation distance & farm size.....</i>	<i>10</i>
5	Edge Planning Areas Defined.....	11
6	Size and Location of Edge Planning Areas.....	11
7	Tools to Implement Edge Planning Area Techniques.....	12
7.1	DEVELOPMENT PERMITS & BUFFER TECHNIQUES FOR URBAN AREAS	12
7.2	FARM BYLAWS & FARM MANAGEMENT TECHNIQUES FOR FARMING AREAS.....	13
7.3	SHARED RESPONSIBILITY.....	13
8	Edge Planning Area Guidelines.....	13
9	Conclusion.....	14
	References	15

1 Introduction

This background paper lays the foundation for the Ministry of Agriculture and Lands' "Guide to Edge Planning – Promoting Compatibility Along Urban-Agricultural Edges". It provides the rationale and objective for undertaking edge planning and discusses the factors that influence urban-agricultural compatibility. It also notes the factors that must be considered in developing urban and farm-side management techniques to promote compatibility. The actual size and location of potential edge planning areas are then discussed. Finally the tools that can be used to implement edge planning are presented. Please refer to the Ministry's "Guide to Edge Planning" for the urban and farm-side management guidelines.

2 Planning the ALR-Urban Edge

2.1 Rationale

The concept of edge planning areas puts into practice planning along agriculture's edge. The interface between agriculture and other land uses is vulnerable and has traditionally not been the subject of focused planning efforts. This has largely been due to the historic fluidity of the urban-agricultural edge. In British Columbia, compared with many other jurisdictions, the Agricultural Land Reserve (ALR) provides a critical opportunity to reverse the long-standing assumption that it is natural and inevitable to compromise foodlands for the sake of urbanization. The ALR boundary provides a geographic point where policies, guidelines and regulation can be applied for the long term, directed at ensuring greater compatibility between land uses and greater long term security for farming along the agricultural-urban edge.

Local governments throughout BC have expressed concern about the impacts of 'intensive' or 'commercial' agriculture on surrounding land uses. Many local governments minimize the potential for conflict and complaints by controlling the types of agriculture that take place next to urban edges. Commonly, official community plans (OCPs) and zoning bylaws are used as means to promote compatibility and minimize conflict. OCPs serve as a tool to broadly designate where different types of land uses can occur and zoning bylaws more specifically affect the use of the land by restricting the establishment of certain types of farm operations. This restriction is often done by requiring agricultural buildings to be set back such large distances from property lines that it makes it impractical or impossible to establish the operation. Alternatively, minimum lot size requirements or animal density controls may be set, restricting the level of intensity. Another method used is to completely prohibit certain types of commodities or 'intensive'¹ forms of agriculture within certain areas (such as 500 metres from an urban edge) and only allow crop-based agriculture and/or non-commercial agriculture. These methods unnecessarily restrict agricultural development opportunities.

The introduction of new land use planning tools in 1996 provides an opportunity for local governments, the agriculture industry and the Province to jointly develop urban and farm-side techniques that will enable a wide range of farm operations to co-exist with neighbouring land uses.

¹ Currently, all forms of agriculture, including intensive agriculture, can exist within the ALR as per section 915 of the *Local Government Act*.

2.2 Objective

Given BC's limited habitable land base and wide array of competing needs and interests, the likelihood of being able to use planning provisions to prevent incompatible land uses locating next to agricultural operations is low. Thus, effective methods that will promote compatibility between neighbouring land uses must be sought. Developing buffer and management guidelines for both sides of the "fence" will help to minimize concerns and complaints that may arise between farmers and their neighbours and at the same time allow farming to operate in a viable manner. The overall objective of edge planning is:

to apply urban and farm-side management techniques to areas outside of and within the Agricultural Land Reserve that will enhance compatibility between different land uses and enable agriculture industry development.

3 Factors Influencing Compatibility

In order to effectively promote urban-agricultural compatibility, an understanding needs to be gained of the factors that influence it. Guidelines can then be designed to specifically address the activities / circumstances that generate the concerns expressed by *all* affected parties. There are 4 key factors that can play an instrumental role in influencing compatibility:

1. Farm Operation – Type & Management
2. Environment – Climate & Topography
3. Urban Development – Type & Location
4. Perceptions

3.1 Farm Operation – Type & Management

The type and management of farm operations can affect the degree of compatibility with their urban neighbours. Farm operations can generate a number of impacts depending on the type of commodity they are producing. Often, these farm activities, which may be considered offensive to some people, are in fact, normal / traditional farm practices². The intensity of these impacts may be influenced by the size of the operation. However, larger operations do not necessarily have the higher the degree of impact. The management of the farm has a significant role to play in affecting the intensity of impacts generated by farm activities. In particular, the management of the commodity and its associated wastes, combined with the location of the facilities on the lot, and hours of operation can all influence compatibility. Tables 1 and 2³ on the following pages outline the most common farm commodities, their associated activities, some of the nuisances that can typically be associated with these activities, and a compatibility rating.

² Further information concerning farm practices may be found in the *Farm Practices in B.C. Reference Guide* - <http://www.al.gov.bc.ca/resmgmt/fppa/refguide/intro.htm>

³ Information in these tables was drawn from work done by Diamond (1985).

Table 1 – Activities of livestock operations that can affect compatibility

Commodity	Activities	Impacts & Compatibility w/Housing
Beef Feedlot	frequent truck and service access loading/unloading confined livestock area manure storage and removal	odour, dust, flies, and noise issues traditionally requires large setbacks traditionally low compatibility
Beef - range	grazing water access herding	flies, cattle at large, watercourse impacts moderate to high compatibility
Dairy	truck and service access manure storage and removal forage crop planting, silage storage on-farm processing, direct farm marketing grazing	odour, flies, some noise issues requires large setbacks for manure storage moderate compatibility
Exotics - Emus, Ostriches, Llamas, Alpacas	manure storage and removal	safety issues with ostriches moderate compatibility for llamas
Fur	truck and service access manure storage and removal	odour and escapement issues traditionally requires large setbacks traditionally low compatibility
Game	grazing, confined livestock area manure storage	Safety issues with bison moderate compatibility
Hog	truck and service access confined livestock area manure storage and removal	odour and noise issues traditionally requires large setbacks traditionally low compatibility
Horses	manure storage and removal woodwaste delivery and storage grazing, showing & horse transport	odour, dust, and flies issues moderate to high compatibility
Poultry	truck and service access catching, loading manure storage, removal fans, ventilation, cleanout equipment on-farm processing, incinerator	odour, dust, flies, and noise issues traditionally requires large setbacks traditionally low compatibility
Sheep / goats	grazing manure storage lambing	odour, flies and noise issues moderate compatibility

Table 2 – Activities of crop operations that can affect compatibility

Commodity	Activities	Impacts & Compatibility w/Housing
Blueberry	Irrigation, woodwaste application fertilizer and pesticide application bird scare devices &/or netting harvesting, truck access on-farm processing, direct farm mktg	noise issues, possible woodwaste leachate issue low to moderate compatibility depending on bird scare device and pesticide application technique
Cranberry	fertilizer and pesticide application frost control devices irrigation, flooding and harvesting woodwaste application truck access	may be noise, woodwaste leachate, and pesticide issues moderate compatibility
Forage	manure spreading/ fertilizer application tillage harvesting	may be some odour, and noise issues moderate to high (no manure spreading) compatibility
Grain	fertilizer and pesticide application irrigation harvesting, tillage	possibly dust issue moderate compatibility
Greenhouse	heating (boiler system), water retention truck & service access, on-farm processing lighting, materials storage	lighting and aesthetics can be issues moderate compatibility
Mushroom no composting	truck and service access spent compost storage	may be some noise issues traditionally requires large setbacks moderate compatibility
Mushroom w/composting	truck and service access compost production area compost storage area spent compost storage	odour, dust, and flies issues traditionally requires large setbacks traditionally low compatibility
Nursery	fertilizer and pesticide application irrigation, wood waste use truck access, direct farm marketing	may be spray issue, possible woodwaste leachate, runoff and traffic flow issue traditionally high compatibility
Orchards	fertilizer and pesticide application bird scare devices, wind machines harvesting direct farm marketing	may be smoke, spray and noise issues could have moderate compatibility depending on bird scare device and pesticide application technique
Raspberry	fertilizer and pesticide application harvesting direct farm marketing	may be spray and noise issues moderate compatibility depending on pesticide application technique
Strawberry	fertilizer and pesticide application harvesting, direct farm marketing	may be spray issue moderate compatibility
Tree Farm Turf Farm	fertilizer and pesticide application irrigation harvesting, soil removal	may be spray issue traditionally high compatibility
Field Vegetables	fertilizer and pesticide application irrigation, harvesting, tillage direct farm marketing	may be spray issue, possibly dust issue (odour for cole crops) moderate compatibility
Vineyard – grapes	fertilizer and pesticide application bird scare devices, wind machine harvesting direct farm marketing	may be spray, noise and traffic flow issues could have moderate compatibility depending on bird scare device and pesticide application technique

3.2 Environment - Climate & Topography

Prevailing wind direction and intensity (Van Kleeck and Bulley, 1982), temperature, precipitation, and location and extent of land forms and vegetation can influence the degree to which impacts are felt and play an important role in affecting the level of compatibility.

3.3 Urban Development - Type & Location

The type of urban development [residential, recreational, industrial, etc.] as well as building and landscape design, and location of buildings in relation to the ALR boundary play a role in compatibility. In most situations, the more people situated near an edge, and the closer the buildings are situated near farmland, the greater the *potential* for complaints by both farmers and non-farmers. Table 3 outlines different types of urban development, their associated activities and impacts, and a compatibility rating.

Table 3 – Activities of urban edge development that can affect compatibility

Urban Development Type	Activities	Impacts & Compatibility with Agriculture
Residential – high density (e.g. townhouse, apartments)	high numbers of residents; frequent vehicle access; limited greenspace; often rely on farmland for greenspace; limited time recreating immediately outdoors (i.e. on resident's property)	Trespass, dogs at large, damage to crops/equipment, litter, theft, livestock harassment, flooding, traffic conflict low to moderate compatibility
Residential – medium density (e.g. single family)	medium numbers of residents; fairly frequent vehicle access; some greenspace; some reliance on farmland for greenspace; immediate outdoor recreating high	Trespass, dogs at large, damage to crops/equipment, litter, theft, livestock harassment, flooding, traffic conflict low to moderate compatibility
Residential – low density (e.g. country residential, .5-1 acre)	low number of residents; some vehicle access large properties with own greenspace; less reliance on farmland for greenspace; immediate outdoor recreating high; expectations for peaceful setting high	Trespass, dogs at large, damage to crops/equipment, litter, theft, livestock harassment low to moderate compatibility
Institutional (e.g. schools, churches)	high numbers of people over short time frame frequent vehicle access; may have significant greenspace if associated with a school; may have high immediate outdoor recreating if a school	Trespass, damage to crops/equipment, litter, theft, livestock harassment, flooding, traffic conflict moderate compatibility
Recreational (e.g. playing fields, nature trails, golf courses)	low to high numbers of people over short time frame depending on type of recreation; low to medium vehicle access (may be high for specific events); high levels of greenspace; high immediate outdoor recreating	Trespass, dogs at large, damage to crops/equipment, litter, theft, livestock harassment, fire, spread of weeds, liability moderate to high compatibility
Commercial	high numbers of people usually over short periods of time; frequent vehicle access; no greenspace; no reliance on farmland for greenspace; no outdoor recreating	Trespass, litter, theft, flooding, traffic conflict moderate to high compatibility
Industrial	high numbers of people over short periods of time; frequent vehicle access limited greenspace; no significant reliance on farmland for greenspace; limited outdoor recreating	Trespass, litter, theft, flooding, traffic conflict moderate to high compatibility

Another aspect of urban development that needs to be considered is its impacts due to increased impermeable surfaces. The loss of permeable surfaces and changes to drainage patterns can affect the land surface characteristics and the hydrological balance, which may adversely impact agricultural land if it is located lower in the landscape. Some of the potential impacts include accelerated soil erosion, siltation and sedimentation, and flooding (flood events affecting farmland can be caused by the accumulative effect of development some distance from farming areas). Techniques that can help to alleviate these impacts include erosion, sediment and stormwater control during both the construction and operational stages of urban development. Buffer areas can also be employed to help break up overland flow and divert water thereby reducing conflicts from stormwater run-off.

3.4 Perceptions

Personal values, perceptions of farm practices, expectations for living in ‘the countryside’ and level of awareness regarding farming practices can heavily influence compatibility levels. The variability amongst people provides the greatest challenge to achieving an acceptable level of compatibility for all parties. Following is a summary of perspectives on nuisance.

A Non-Farming Perspective on Farming Nuisances

A variety of complaints that arise from non-farming residents living within or near farming areas have been documented (Kelsey and Vaserstein, 2000; OMAFRA, 2000; Smith, 1998; Daniels and Bowers, 1997). Complaints can be related to odour from manure spreading and farm buildings, pesticide spraying, dust, and noise from different farm activities. A study conducted by BCMAL in 1994, ‘Agricultural Issues in the Fraser Valley’, showed that local governments in the Fraser Valley received complaints about noise from farm equipment, odours from livestock buildings, manure storage or manure spreading, air emissions, pesticides and ground or surface water pollution. Complaints revolving around noise, odour and pesticide application usually involved normal farm practices. In other words, the farmers who were the source of the nuisance were complying with established regulations and standards.

A study conducted by Ontario Ministry of Agriculture, Food and Rural Affairs (2000) noted that people’s contrasting perspectives on the function of rural areas have a significant effect on perception of a nuisance. While most farmers consider the rural area to be a ‘place of business’, many non-farm residents believe the rural area is a place that offers a lifestyle of open space, peace and quiet. People’s expectations and tolerance levels can play a significant role in determining whether complaints will arise. A study undertaken by BCMAL in 2003 found that residents of a newly built townhouse complex located next to a poultry farm were advised prior to moving in that they may be subject to noise, dust and odour from nearby farm operations. Having prior knowledge of the potential impacts of agriculture helped to alleviate complaints from arising. Actively promoting agricultural awareness can significantly influence the degree of tolerance and compatibility.

A Farming Perspective on Non-Farming Nuisances

Farmers can experience a variety of problems generated by their non-farming neighbours. For example, the 1994 BCMAL study, 'Agricultural Issues in the Fraser Valley', highlighted farmers' concerns over inadequate or non-existent buffer zones between residential areas and farms resulting in trespass, crop damage and litter. Farmers can also be subjected to property and equipment vandalism, crop theft, and livestock harassment. An American study cited by Canagir and Kraft (1983) revealed that farmers in the United States experience similar problems. Trespassers damaged farmers' crops, vandalized equipment, fences and gates and left litter in fields. Both studies documented how the lack of adequate drainage from upland urban runoff resulted in flooding of farmland. These problems often result in significant financial losses for farmers.

4 Developing Urban & Farm-side Management Techniques - Factors to Consider

By understanding the different factors that influence compatibility, the most effective techniques can be developed to mitigate urban-rural conflict. Buffers, 'farm friendly' subdivision design, urban stormwater management, enhanced agricultural awareness, and management of certain farming activities are the key techniques used in the Ministry's edge planning approach to promote compatibility along the ALR-urban edge. A large focus of the "Guide to Edge Planning" is on urban-side buffers and management of certain farm practices. In order to develop the most effective buffers and management techniques, a number of factors were considered and are outlined below.

4.1 Urban-side buffers⁴

Buffers have been widely used to reduce conflict. Research has found that complaints about farming practices are often based as much on perception as reality; seeing the source of the nuisance may heighten the perception of that nuisance (Van Kleek and Bulley, 1982; DNR, 1997; BCMAFF, 2000). Thus, establishing a visual barrier between the development and agricultural land can significantly reduce the level of complaints by minimizing both the cause and the perception of a nuisance.

The idea of incorporating buffers into the non-farm development is used in Queensland and Western Australia and in parts of the United States⁵. Locally, BCMAL undertook an informal review in 2000 of official community and neighbourhood plans; 24 of the 42 documents examined had policies promoting buffering along the ALR edge. 19 of these documents specifically mentioned establishing the buffer on the non-farm side of the edge.

⁴ A buffer can include vegetation, earth mounding, fencing and other constructed materials, elevation change, ditches, roads and separation distances; the buffer guidelines that are applied in the Edge Planning Guide incorporate most of these elements.

⁵ Queensland Department of Natural Resources, 1997; Agriculture Western Australia, 1999; Hammond, Sonya, 2000; Sokolow, Alvin, 2000 and 1999; Canagir and Kraft, 1983.

There are four key factors that need to be considered when developing urban-side buffers:

1. type of urban development and farm operation;
2. amount and type (topographical features) of land available;
3. cost of establishing a buffer; and
4. buffer installation and maintenance.

4.1.1 Type of urban development and farm operation

Some consideration should be given to developing a buffer that accounts for the type of urban development. Most communities have a blend of residential, commercial, institutional, industrial, and recreational development with different levels of intensity. The type of buffer that is developed should account for the *number* of people that may impact or be impacted by farming and the *degree* to which they will impact or be impacted by farming (i.e. the length of time of exposure). So a residential development will likely warrant a more substantial buffer than an industrial development, for example.

With regard to designing buffers to account for specific activities generated by specific farm operations, the Ministry believes that compatibility can be most effectively achieved by developing a buffer that will contribute to the mitigation of all possible impacts regardless of the current farm use along the ALR-urban boundary. The agriculture industry is a dynamic industry that is constantly adapting to market conditions. What may be a grazing pasture today, may be a poultry operation tomorrow. Therefore, developing the most robust buffer possible, acknowledges the fact that agricultural uses are often in transition, and ensures that compatibility levels are not compromised when farm land use changes.

4.1.2 Land availability and topography

The amount of land available and its topographical features can influence the extent and type of buffer that is used to separate farming from urban development. The nature of some non-farm land uses may provide good buffering opportunities.

Large Open Spaces

Examples include BC Hydro rights of way, suitably designed passive parks and golf courses. While these open space uses can provide for increased separation distances, in the case of parks and golf courses adjacent to farming, further buffering at the farm perimeter will still need consideration - for example to prevent trespass. If land between farm and non-farm uses contains landscape features like ravines, hills, established forests, or rivers, these natural barriers can be very helpful in promoting compatibility (Diamond, 1985). Active use parkland designation and other institutional uses have also been used as buffers, but they require natural or constructed devices to increase separation and avoid conflicts (Diamond, 1985).

Large Lot Transition Zones

On a smaller scale, large residential lots, country estates and non-ALR hobby farms have been used to separate more intensive urban development from farming. However, these buffer types have a number of drawbacks. They can be expensive to service, are an inefficient use of

land, and usually have only short term effectiveness as they are normally not stable buffers and are often subject to further development (Sobering and Andzans, 1990; Richmond Planning Department, 1986). If a permanent buffer was established within the larger residential lots with restrictions that prevented future development, possibly this form of land use could be effective as a buffer. Proposals for hobby farms or country estates *within* the ALR as a means of providing a land use transition between urban residential and farm uses should be avoided. Proposals of this nature can be typically ineffective at promoting compatibility and represent an inappropriate and unnecessarily destructive use of the province's limited farmland resource.

Roadways

Roads located between agriculture and urban development can provide for additional separation distances between uses. However, there are a number of drawbacks to relying on roadways for buffering. Roadside shoulders can encourage trespass onto farmland and roads fronting an urban residential area or more major arterial roadways will normally be subject to heavy traffic use. This, in turn, will make it unsafe for farm vehicles to move freely on these roadways. In addition, relying on a standard width road to separate farming from urban development does not address issues such as dust, odour or noise. Urban subdivision design that includes a roadway separating urban and farm uses may also encourage the future "double-fronting" of the roadway with urban uses developed on the farm side of the roadway. Thus, the roadway may not only be of limited value as an effective buffer, but it can also result in the further encroachment of urban uses into a farm area, creating a situation that will only serve to heighten rather than lessen the potential for land use conflict. In most cases the effectiveness of transportation facilities to adequately separate farm and non-farm land uses will be limited to major expressways or freeways.

While natural features should be sought out and incorporated into buffering plans where possible, in most instances there is limited opportunity to use large amounts of land with effective natural barriers as buffers. Thus, most buffers rely on less space and more construction and landscape design techniques. The buffer guidelines presented in the "Guide to Edge Planning" are intended to be used in fairly confined spaces.

4.1.3 Cost of buffering

Establishing buffers within a development adds to the cost of development. Besides having the outright costs of the materials, installation and maintenance, there is the cost of the land that is being set aside. It is, therefore, important that buffers with the greatest degree of effectiveness are established in the least amount of space at the least cost possible. This initial cost of development can, however, be offset by the increased value of the land upon completion of development – at least in residential developments. Home buyers have been shown to be willing to pay more for property that has an element of green space associated with it (BCWNN, 1994; Faracca, 1986; Hair, 1986). There is also an opportunity for a developer to obtain density bonusing. In addition, if buffer requirements along the ALR boundary are firmly established and consistently employed, the value of urban land along the ALR boundary may eventually reflect the fact that buffer areas can not command the same price as other urban development areas. A reduction in the cost of land to the developer would help balance out the costs associated with establishing buffers.

4.1.4 Buffer installation & maintenance

Based on BCMAL investigation undertaken in 2000, the following is a checklist of actions that will enhance the effectiveness of landscaped buffers.

- Effort should be made to install the landscaped buffer as early as possible. This will improve the acceptance of the buffer by future occupants and ensure planting materials are well established. Ideally, the buffer should be installed before building construction occurs. If the buffer cannot be installed prior to building construction, an effort should be made to install the buffer during construction and prior to occupants moving on site.
- Buffers should be designed to avoid excessive maintenance. Local governments need to clarify who is responsible for maintaining the buffer to ensure its full effect over the long term. Where the buffer remains in private ownership, maintenance will be the responsibility of the proprietor, operating within the scope of any conditions placed on the development by the local government at the time the buffer is created. This will ensure that maintenance and effectiveness of the buffer areas are binding upon successors in title. A key requirement will be to ensure the buffer is undisturbed with the exception of authorized maintenance.

4.2 Farm-Side Management

Local governments have commonly tried to reduce conflict between agriculture and non-farm uses by limiting size (e.g. number of livestock) and requiring farm buildings and structures to set back far enough from property lines so their impacts are reduced. This document and the associated “Guide to Edge Planning” offer a slightly different approach to mitigating conflict. By targeting certain farm management practices, the degree to which certain activities are perceived as nuisances can be significantly altered. The guidelines in the “Guide to Edge Planning” combine setbacks with requirements for specific types of farm management to eliminate the need for excessively large setback distances. This is a comprehensive approach that is well suited to the unique geographical limitations of BC communities. A number of factors were taken into consideration in developing effective management techniques.

4.2.1 Cost

In addition to farm operation type, topography, climate, existing vegetative buffers, and the type of urban development next to farming areas, cost is another factor that needs to be considered in the development of farm-side management guidelines. A significant effort was made to develop guidelines that are economically feasible and practical. Costs will vary depending on the management techniques employed. For example, certain odour control measures such as using a sub-canopy manure deposition method instead of manure gun irrigation will be more costly. However, these costs can be weighed against the expenses incurred in trying to find an alternative site or dealing with complaints. In addition, using different approaches like allowing for phase in periods and giving existing farms some flexibility within the EPA will help to make the costs less onerous.

4.2.2 Separation distance & farm size

In order to achieve the most effective mitigation, the “Guide to Edge Planning” promotes the use of separation distances in conjunction with the management of farming activities that are most likely to cause nuisance. Below is a brief description of two different studies that offer perspectives on the influence and importance of separation distances and farm operation size on compatibility.

A survey⁶ conducted in 1981 and 1982 (Van Kleeck and Bulley) examined separation distance as a tool for reducing farm/neighbour conflict in BC’s Lower Mainland. The most commonly perceived nuisance was odour from swine, beef, and poultry. With all three types of operations, the frequency of perceived nuisance decreased with distance. An average sized swine farm required the greatest distance (665 m) before it reached a level where only 20% of the neighbours perceived a nuisance. This distance is about twice the distance found for beef (330 m) and four times the distance for poultry (165 m). 0% of the surveyed population perceived a nuisance at 650 m for poultry, 350 m for 90-500 head of cattle, and 700 m for 800 + head. No distance was recorded for swine with regard to 0% nuisance perception. The impact of farm size on the level of perceived nuisance was also examined. Farm size was significant for beef and poultry operations. Within 300 m, size did not matter for swine (i.e. all farm sizes were perceived as a nuisance).

Marchand and McEwan (1997) conducted a slightly different study where they surveyed 177 townships within southwestern Ontario to analyze the impact zoning bylaws had on swine farms. They found there was no relationship between the degree of restrictive bylaw and complaint numbers. There was also limited evidence to suggest townships with high swine densities received more complaints. Similarly, when complaints and population density were analyzed, there was lack of evidence to suggest that there was much relationship between the two. The authors cautioned that care must be exercised when developing bylaws since stronger legislation does not necessarily mean fewer complaints. This study documents each township’s regulations: setback distances from front lot lines ranged between 3 m and 150 m.

Based on the information gathered from the studies some conclusions can be drawn:

- an increase in livestock numbers does not always result in an increase in odour intensity and the number of complaints does not necessarily increase with the livestock density; and
- stronger regulations (e.g. bigger setbacks) do not always result in fewer complaints.

Although there may be some correlation between the size of an operation and the degree of impact, the type and level of management can have a significant role to play in influencing nuisance / compatibility levels. It is assumed that the greater the level of management, the lower the level of impact. The “Guide to Edge Planning” takes these factors into consideration.

⁶ Of the 857 neighbours surveyed, 83% were judged as not perceiving the target farm as a nuisance.

5 Edge Planning Areas Defined

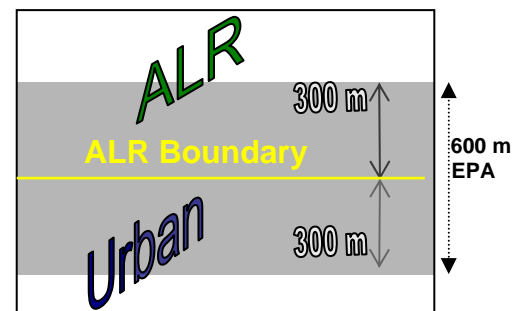
The urban-side buffers and farm management guidelines outlined in the “Guide to Edge Planning” will be applied to specific areas on either side of the ALR boundary. It is important to note that, legally, intensive agriculture can exist anywhere within the Agricultural Land Reserve (section 915 of the *Local Government Act*). The *Farm Practices Protection (Right to Farm) Act* (FPPA) protects farmers from liability in lawsuits alleging nuisance and court injunctions provided they use “normal farm practices” and do not contravene other legislation listed under the Act. i.e. the *Environmental Management Act*, the *Health Act*, and the *Pesticide Control Act*, and any land use regulation (as defined under the FPPA). However, BCMAL and the Agricultural Land Commission (ALC) recognize that certain areas within the ALR may require special management so that different interests are taken into account. These areas are considered to be part of edge planning areas (EPA) which are defined as:

urban and agricultural land situated near the ALR boundary that require special management in the spirit of shared responsibility.

6 Size and Location of Edge Planning Areas

The size of the EPA where urban-side buffers and farm-side management techniques are applied is ideally a minimum of 600 metres spanning both sides of the ALR boundary. The minimum area on *each* side of the interface should be no less than 300 metres. Depending upon specific circumstances facing different communities or areas within a community, this area may be subject to adjustment.

Various studies indicate that non-farm residents who live within 300 metres of an urban-rural edge can be significantly impacted by certain farming activities. However, if urban-side buffering and management of certain farm activities are undertaken within 300 metres on either side of the interface, conflicts can be minimized. Research conducted by BCMAL (2000) found the City of Surrey and the Regional District of Nanaimo have developed policies where non-farm properties bordering the ALR must adopt design guidelines up to 300 metres from the ALR boundary. These guidelines are intended to promote development that minimizes its impacts on farming operations. Due to the relatively recent introduction of the policies, the ministry was unable to analyze well-established sites that incorporated these guidelines. However, research conducted by the Department of Natural Resources in Queensland, Australia indicates that a 300 metre area containing specific buffer design, housing design and management requirements can effectively mitigate urban-rural conflicts (DNR, 1997).



Ultimately, each local government will need to assess their ALR edge through an edge planning process⁷ to determine the most appropriate size of the EPA. There may be instances where 300 metres on each side of the fence will not adequately promote land use compatibility and a larger EPA is needed. Alternatively, a local government may have certain types of urban uses along the ALR boundary that could allow for the edge planning area to be reduced or even eliminated.

Official community or agricultural-area planning processes will provide the opportunity to give policy direction to more focused edge planning and the application of land use inventories (in combination with geographic information systems) will provide a practical means to clearly understand the land use dynamics on both sides of agriculture's edge⁸. In addition to helping determine the size of an EPA, edge planning will enable a local government to determine where EPAs are needed. If, for example, a natural park, airport, crown land or significant topographical feature was identified along an edge and served as an effective buffer between farm operations and urban residents, the EPA may not be needed for that location. However, it is important to ensure that the non-farm land use will not be subject to change to a more intensive urban use in the future. If changes are expected it would be prudent to have the EPA in place ahead of time.

7 Tools to Implement Edge Planning Area Techniques

Changes to the *Municipal Act* (now *Local Government Act*) in 1996 provided local governments with additional planning tools to promote compatibility between urban development and farm operations: development permit areas and farm bylaws. These tools can be used to implement urban-side buffering and farm-side management techniques.

7.1 Development permits & buffer techniques for urban areas

When new urban development occurs immediately next to the ALR boundary a development permit area (DPA) can be used to ensure buffers are implemented and designed in an effective manner. The DPA can also be used to address certain elements of development that occurs within 300 metres of the boundary, but not immediately adjacent to the ALR such as stormwater management, building design, subdivision design and road layout considerations⁹.

Establishing buffers through a DPA should be considered a long-term policy initiative. Where urban development is already built to the farm edge, the immediate value of establishing buffering guidelines may not be recognized in the short term. As urban land uses change through time, however, opportunities will be realized to apply buffering upon re-development.

⁷ This process will entail analyzing land use and topography along the ALR boundary as well as analyzing community plans and bylaws to determine the current and potential land uses and the relative need for edge planning.

⁸ See BCMAFF's *AgFocus - Agricultural Land Use Inventories* and *AgFocus - An Agricultural GIS* for details on undertaking land use inventories in farm areas at <http://www.al.gov.bc.ca/resmgmt/sf>.

⁹ Another way these considerations as well as the buffer guidelines can be implemented is via the approving officer. Under section 86 of the *Land Title Act*, an approving officer can refuse a subdivision if it would unreasonably interfere with nearby farming operations due to inadequate buffering or separation or its road patterns would unreasonably or unnecessarily increase access to land in the ALR. An approving officer could request that the subdivision applicant incorporate the EPA buffer guidelines within the subdivision design prior to receiving approval.

7.2 Farm bylaws & farm management techniques for farming areas

Farm management techniques that can be applied to a farm bylaw within an edge planning area provide an opportunity to address the siting of certain farm structures *and* the conduct of a farm operation. Existing farm buildings that fall within an EPA will be exempt (grandfathered) from the setback requirements. However, activities conducted on existing and new farm operations will have to comply with the farm bylaw requirements. A phase in approach is one possible way to provide some flexibility for existing farms to adapt over a set period of time – this should minimize any unnecessary hardship.

7.3 Shared responsibility

The fact that local governments can apply the buffer guidelines at their discretion and are not legally obligated to implement them, creates the potential for only a farm bylaw to be in effect without the support of a development permit area. However, the most effective way to promote compatibility using EPA techniques is through the *combined* use of urban-side and farm-side mechanisms. As a result, it can be anticipated that when a farm bylaw is under consideration, the Minister of Agriculture and Lands will look for an appropriate urban/farm side balance of EPA techniques.

8 Edge Planning Area Guidelines

The development of the EPA guidelines outlined in the “Guide to Edge Planning – Promoting Compatibility Along Urban-Agricultural Edges” involved an extensive review of existing literature as well as consultation with a number of different individuals. Information was drawn from a number of studies undertaken throughout North America, Europe, New Zealand and Australia. This information included suggestions for landscaped buffering, structure siting, manure management, and management of specific farm activities. In addition, the Ministry conducted surveys of local farm operators and urban residents who currently live compatibly with each other (BCMAFF, 2003). BCMAL drew on their existing farm management and buffer techniques in order to develop EPA guidelines that are both practical and effective. Finally, input was gathered from Ministry commodity and resource management specialists to ensure the farm management guidelines will be achievable. This process for guideline development took place over a four year period from 2000-2004.

These guidelines will provide an important starting point and body of information for local governments and farm community representatives to jointly explore their appropriate application. These guidelines are intended to be flexible and should be adapted to the unique circumstances of each community. It is important to note that, because section 916 of the *Local Government Act* refers to ‘Provincial standards for farm bylaws’, the Edge Planning guidelines that fall within the context of farm bylaws could be referred to as standards if they receive the approval of the Minister of Agriculture and Lands.

9 Conclusion

As British Columbia's population continues to grow and its agriculture industry continues to meet the demands of this expanding population, the potential for conflict along the urban-agricultural interface will also grow. However, BC is one of the few provinces in Canada fortunate enough to have urban-agricultural boundaries that are stable enough to be planned for so that this potential conflict can be mitigated. In addition, the diverse planning tools now available to local governments allow for our limited habitable areas to be effectively planned so that agriculture can successfully co-exist with its urban neighbour.

This background paper outlines the research conducted by the BC Ministry of Agriculture and Lands to understand the factors that influence compatibility and affect the development of urban and farm-side management techniques that promote compatibility. This research has ultimately led to the development of the concept of Edge Planning and various techniques that can be used to promote compatibility between farmers and their neighbours. This paper lays the foundation for the Ministry's 'Guide to Edge Planning – Promoting Compatibility Along Urban-Agricultural Edges' which provides a diverse set of techniques for achieving urban-agricultural compatibility through shared responsibility.

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