Appendix B – Topic Papers

GUIDEBOOK FOR PREPARING A MUNICIPAL DEVELOPMENT PLAN

APPENDIX B: TOPIC PAPERS

March 2018
Appendix B – Topic Papers

Guidebook For Preparing A Municipal Development Plan

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Introduction – How to Use the Topic Section

The creation of a Municipal Development Plan (MDP) requires a basic knowledge of your municipality and the items, which may have an impact on how and where you develop. The economic, environmental, social and cultural components, as well as the manner in which your municipality is governed, will differ greatly across the province, region, and even between neighbouring municipalities. The following topics are not intended to address every potential influencing factor or variable, but they may serve to help you move forward in a more informed manner during the preparation of your MDP.

The first few topic papers focus on assessing your physical environment and what is on top of the ground, as well as what is underneath it. They identify items which are crucial in evaluating your current situation prior to identifying the long term development goals for your community. It is important to remember that both positive and negative factors will influence how and where your community will be able to grow in the future. The first few topic papers identify all-encompassing items which every municipality should consider in the early stages of creating their MDP. Some examples include the identification of flood prone areas, oil and gas facilities and their related setbacks, or the location of water and wastewater lines and facilities and their respective capacities.

The second group of topic papers are more specific in nature and they may or may not be relevant to your current situation. These are not items that are addressed only by larger municipalities – they are scalable and suitable for municipalities of all sizes. It is recommended that you review them because even if they are not a primary focus now, they may prove to be a resource for you in the future as your community evolves over the years. For example, if a proposal for an alternative energy initiatives came before you how would your community respond.

Finally, the topic papers which address intermunicipal cooperation and urban expansion or annexation should be consulted in the event that you have determined that your municipality’s physical land base will need to expand in order to support the continued growth and development of your community.

It is important to note that all topics or variables that you identify as being relevant to your community should contain corresponding MDP policies indicating how you will address them. The policy statements that you include in your document may have an impact on your budget program. For example, policy statements requiring things like technical studies, physical upgrades to infrastructure, or remediation of a site to meet your long term development goals. Therefore, it is important to understand the potential budget and resource implications of these items and ensure they are considered in your operating and capital plans and budgets.
Projecting Future Growth and Land Needs

An integral part of planning for a community and future land requirements is projecting the anticipated population and the lands needed to support it. Projecting population and land needs is an ongoing process that can be refined as new data becomes available. It is important to present accurate projections using accepted data, such as census data from either a municipal or federal program, so the information is understood, and can be replicated.

Population Projections

The first step in preparing this information is to find the most up to date data set available. For most municipalities the federal census data is the most complete and accurate set. This information is easily and widely accessible from Statistics Canada. If municipal census data is available, that may offer an alternative if the municipal census years fill in the 5 year space between the federal census years.

Once you have chosen a data source you must set a time frame for how far into the future the municipality is planning to project (i.e. 30 years or 50 years) and build on data from a similar time frame from the past. By breaking down the past data set into time intervals, you can determine the projected growth rates. The following is a sample data set for a small Alberta municipality. The past population data set was built from the Census of Canada and from the provincial population data.

<table>
<thead>
<tr>
<th>Census Year</th>
<th>Population</th>
<th>Census Year</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1951</td>
<td>280</td>
<td>1986</td>
<td>295</td>
</tr>
<tr>
<td>1956</td>
<td>524</td>
<td>1991</td>
<td>303</td>
</tr>
<tr>
<td>1961</td>
<td>419</td>
<td>1996</td>
<td>308</td>
</tr>
<tr>
<td>1966</td>
<td>450</td>
<td>2001</td>
<td>340</td>
</tr>
<tr>
<td>1971</td>
<td>378</td>
<td>2006</td>
<td>351</td>
</tr>
<tr>
<td>1976</td>
<td>344</td>
<td>2011</td>
<td>364</td>
</tr>
<tr>
<td>1981</td>
<td>360</td>
<td>2016</td>
<td>346</td>
</tr>
</tbody>
</table>

Once a data set has been built, you can then move to determining growth rates. The simplest way to do this is to break the data into intervals, such as 5, 10, 15 years. The following example outlines this method using the sample data set. The equations provided are exponential calculations that utilize the formula function of an excel spreadsheet. The equation that will be used to determine the growth rates over 40 years (1976 to 2016) is as follows:

\[(\text{Present Population}/\text{Past Population})^{(1/\text{Time Period})}-1\]

For the first example, the equation will appear as: \[(346/344)^{(1/40)}-1 = 0.01\%\]
Once you have determined some future growth rates, you can select those that represent a low, medium and high growth rate. It may also be necessary to add a controlled growth rate for a very low scenario, such as 0.01% to build a more varied scenario. The growth rates that will be used for this example will be as follows:

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Very Low</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Growth Rate</td>
<td>0.01%</td>
<td>0.12%</td>
<td>0.53%</td>
<td>0.58%</td>
</tr>
</tbody>
</table>

When the growth rates have been selected you can then apply them to your population data set. The equation used for this is as follows:

\[ \text{Present Population} = (1+\text{Growth Rate})^{\text{Time Interval}} \]

For the first example of 0.01% below the equation will look like: \[346((1+0.01\%)^5)\]

For each time interval the \textit{Present Population} value will be the population from the previous interval. So calculations for the year 2021 will be based on the 2016 population, the year 2026 will be based on the 2021 population and the year 2031 will be based on the year 2026, and so on.

The time interval in this example is 5 years, to match the existing data set. This equation will apply the growth rate over the selected intervals of your time frame, and account for population added. The following table shows how the equation is applied to the sample data set to give us the projected populations.

<table>
<thead>
<tr>
<th>Growth Rate</th>
<th>Population Projections</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2016</td>
</tr>
<tr>
<td>0.01%</td>
<td>346</td>
</tr>
<tr>
<td>0.12%</td>
<td>346</td>
</tr>
<tr>
<td>0.53%</td>
<td>346</td>
</tr>
<tr>
<td>0.58%</td>
<td>346</td>
</tr>
</tbody>
</table>

Once you have projected the population for each growth scenario, you can then select one scenario to use for determining future land requirements. One way to do this is to determine the actual growth rate over a past period of time that may be expected to continue. For this example the Medium growth rate of 0.53% per year was chosen for the future land needs assessment because it most closely resembled the recent 30 year growth rate, and can be reasonably be expected in the coming 30 years.
Residential Land Requirements

With the growth rate selected, the expected additional population over the next 30 years can be calculated. This is done by subtracting the present population from the projected population value. Once the additional persons have been calculated, the additional dwelling units required for the population can be determined.

The Census of Canada data contains dwelling information, including the average household size (the average number of people per housing unit). For this example the census data indicates the average household size is 2.1 people. Using this value you can divide the projected number of additional persons by the average household size to determine the number of required housing units.

Additional Persons: 2046 population (405) – 2016 population (346) = 59 additional persons
Dwelling Unit Requirement: 59 persons / 2.1 people per housing unit = 28.1 housing units

With these values now available, it is possible to calculate the amount of land required for residential development. The additional value required for this is the density target for the community. For this example a value of 10 dwelling units/hectare is being used, as it is a relatively low density community. Setting a density target is something that is typically included in a Municipal Development Plan. The calculation below is a method that can be used for determining the land requirement.

Residential Land Requirement: 28.1 projected units / 10 units per ha = 2.81 ha required

Based on the projected population, average household size and the target density for the community, it is anticipated that 2.81 ha of additional residential land will be required for this community for the 30 year planning period.

Industrial and Commercial Land Requirements

Projecting future land requirements for commercial and industrial uses is also important for community planning. The method described below is based on a ratio of existing area of developed commercial and industrial lands to the current population. You will need to know the amount of land currently developed for commercial and industrial uses for this calculation. For this example the following applies:

Commercial Lands – 1.63 hectares
Industrial Lands – 11.89 hectares

For larger municipalities a ratio of hectares of land per 1,000 people would be used. Since this example is for a much smaller municipality we will be using a ratio of hectares of land per 100 people. For our example community the population size is 346 people, or 3.46 hundreds. The following is an example for industrial land:

Industrial Land Ratio – 11.89 ha of industrial land
346 people/100 = 3.46
11.89 ha / 3.46 = 3.44 ha for every 100 people
Therefore the ratio of industrial land per 100 people is 3.44 ha
The next step is to apply the ratio to the expected population growth. There is an additional 59 persons expected by 2046 based on the growth rate.

*Industrial Land Requirement – 59 additional people, or 0.59:100 people * 3.44 ha = 2.03 ha*

The total Industrial land requirement for the expected additional population will be 2.03 ha.

The same method can be applied to the Commercial land expectations, as follows:

*Commercial Land Ratio – 1.63 ha of commercial land

\[
\frac{346 \text{ people}}{100} = 3.46 \\
1.63 \text{ ha} / 3.46 = 0.47 \text{ ha : 100 people}
\]

*Therefore the ratio of industrial land per 100 people is 0.47 ha.*

*Commercial Land Requirement – 59 additional people, or 0.59:100 people * 0.47 ha = 0.28 ha*

The total Commercial land requirement for the expected additional population will be 0.28 ha.
Flood Hazard Areas

Flooding is a natural process, which every stream and river has the potential to experience. Flooding can be the result of a variety of factors, so understanding what the hazards are, and where they might occur, are vitally important when considering future land uses and development.

A Flood Hazard Area as defined by Alberta Environment and Parks is, "the area of land that will be flooded during the design flood event under encroached conditions". The flood standard used for a design flood event is the 1:100 year flood event. The 1:100 year flood event has a 1% chance of occurring in any given year, and is considered a major flood that risks causing serious damage to people and property. Typically this flood hazard area, also referred to as the flood plain, is marked by the 1:100 year flood water elevation, is separated into two zones being the flood fringe and floodway.

The intent of this two zone approach is to identify the expected severity of flooding across the floodplain. The flood fringe is the area of land at the outer edge of the flood hazard area that experiences shallower flood waters (less than 1m deep) with lower water velocities (less than 1m/sec.).

The floodway is the portion of the flood hazard area that experiences flows that are deepest, fastest and most destructive. This area includes the active stream channel and part of the adjacent floodplain. The Provincial Flood Hazard Identification Program identifies the floodway to be located where flood water are 1 m deep or greater; are flowing at 1 m/s velocity or higher; and are no more than 0.3 m higher under encroachment conditions. The image below depicts the 1:100 year floodplain of a river (shown as the flood hazard area), and the areas considered to be the floodway and the flood fringe.

![Flood Hazard Areas Diagram](image-url)
Identifying the flood hazard areas is crucial in the long term control of development in and around floodplains. Flooding is an inevitable event on any stream or river channel, though frequency and magnitude of a flood event can vary. The potential for floods to cause damage to life and property is the primary objective of controlling or limiting development within the floodway of a water course.

Flood recovery efforts are expensive and often rely upon Provincial and Federal aid, which places the burden of recovery across the shoulders of the larger population. By limiting development within floodplains and requiring existing development to be properly flood proofed, municipalities can ensure adequate steps are taken to prevent personal loss whether it is lives or possessions; ensure the safety of the population; prevent potential environmental contamination; and reduce our overall insurance costs.

One of the first steps to reducing potential impacts from flooding is to identify the areas of the municipality that are susceptible to flood hazards. The drawing below is an example of a Flood Hazard map that can be used within an MDP to identify the hazard areas.

Accompanying a drawing of this nature should be a variety of stated objectives and policies aimed at addressing the municipality’s expectations regarding development in and around flood hazard areas. For example, a policy identifying areas subject to flooding which are unsuitable for development and requiring the dedication of Environmental Reserve may be implemented. Another policy method may be to identify all lands adjacent to water bodies and watercourses to be dedicated as Environmental Reserve based upon
a geotechnical report identifying the top of slope, with a minimum required width for Environment Reserve, such as 6 metres.

A Creek Undercutting the Yards and Foundations of Homes in the Floodway

The Government of Alberta has introduced Bill 27, the Flood Recovery and Reconstruction Act, to provide regulations to control development within floodways. Until such time as a regulation is ratified and released, decisions regarding development in these hazard areas will be guided by each municipality's individual land use bylaw and flood plain policies. However, as a cautionary note, municipalities may be jeopardizing their access to disaster relief funding from the Province in the future, if they currently permit development within flood hazard areas, even though the legislation has not been enacted.
Steep and Unstable Slopes

Steep and Unstable slopes often provide a municipality with both a challenge and an opportunity in terms of its planning and overall development. For a municipality, steep slopes can represent a potential liability if, over the passage of time, they become unstable and unable to support development that has occurred on or around them. Likewise, steep slopes are often environmentally sensitive, and may be a feature that a municipality would choose to highlight and protect in its planning documents, including a Municipal Development Plan. On the other hand, Developers may view steep slopes as an opportunity, particularly for residential development, as these slopes are often associated with higher value lots due to improved viewscape, and close access to natural features such as rivers, lakes, or streams. Given these conflicting pressures, it is important that a municipality have a clear strategy for how it will manage its steep and unstable slopes; this information should form a part of a Municipal Development Plan.

Legislative Context

The Municipal Government Act provides tools for municipalities to control development on steep slopes through section 664. More specifically, the Act provides two channels through which the municipality may seek to protect environmentally sensitive features, including steep and unstable slopes:

1. Environmental Reserve can be taken by the municipality as a condition of subdivision without compensation to the land owner in accordance with section 664(1) of the act. By doing so, the municipality takes ownership of land and commits to preserving the natural features of the land. Lands that are eligible to be taken as environmental reserve are specifically listed in the act; if lands are environmentally sensitive but not listed, they are not eligible. Steep and unstable slopes are eligible to be taken as Environmental Reserve.

2. Environmental Reserve easements can be applied as an alternative to Environmental Reserve, and are eligible to be applied against lands only if they meet the requirements for environmental reserve. While there are a number of important considerations for the application of an environmental reserve easement detailed in section 664 of the Act, the fundamental difference in the case of the easement is that ownership of the lands is not transferred to the municipality; rather, ownership of the lands stays with the landowner and the easement, registered on title, is retained on the land and remains in place if and when ownership of the land transfers from one person to another.

Potential Issues to Address

- Protecting the Integrity of Slopes - a Municipal Development Plan provides a municipality with the opportunity to identify areas where slopes have degraded or have the potential to degrade, and to set out policies which will minimize the impact of slope degradation. This might include specific mapping of steep slopes within the municipality, or may include policies promoting land management practices which serve to protect the integrity of slopes, such as promoting the maintenance or renewal of tree coverage and other vegetation which serve to reinforce slope integrity.
should also be noted that undercutting by a river or a stream, particularly on a curve or bend in the watercourse, may have a substantial impact on the stability of a slope. Degradation of a slope can occur with one weather event, so frequent updating of base information may be required.

- Provide an Inventory of Steep Slope Areas - the MDP process provides the municipality with an opportunity to quantify the lands within its boundaries which may be too steep or unstable to accommodate development. In doing so, the municipality will provide its citizens, and prospective developers, with a clear sense of a major constraint to future growth or a challenge to overcome.

A Home at the Top of an Escarpment Collapsing Due to Slope Degradation
Wastewater Treatment Plants & Waste Management Facilities

Wastewater treatment facilities and waste management facilities, (including landfills) are part of municipal infrastructure that helps to ensure high standards of public health and safety for your residents, while caring for the environment. Whether you operate your own waste water treatment facility/landfill, or contract out the services, your Municipal Development Plan should take into consideration mandatory provincial regulations.

The Subdivision and Development Regulation specifies mandatory minimum setback distances for wastewater treatment plants and waste disposal facilities from schools, hospitals, food establishments or residences. These standards must be adhered to, and should be incorporated into the development of your MDP in determining the location for a variety of land uses:

<table>
<thead>
<tr>
<th>Facility</th>
<th>Mandatory Setback Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wastewater Treatment Facility</td>
<td>300 m</td>
</tr>
<tr>
<td>Operating Landfill</td>
<td>450 m</td>
</tr>
<tr>
<td>Disposal Area of an Operating or Non-Operating Landfill</td>
<td>300 m</td>
</tr>
<tr>
<td>Disposal Area of Disposal Area of a Non-Operating Hazardous Waste Management Facility</td>
<td>450 m</td>
</tr>
<tr>
<td>Operating Waste Storage Site</td>
<td>300 m</td>
</tr>
</tbody>
</table>

Site Selection for Wastewater Treatment Plants and Waste Management Facilities

As with all components associated with preparation of a MDP, it is important to consult your community regarding new or expanding wastewater treatment plants or waste management facilities early in the process. The mandatory technical siting requirements (setbacks) may have an impact on the economic value of lands within the community relative to their development potential.

In the following diagram, 300 m has been measured from the property boundaries of the wastewater treatment facility. Despite the legal requirement to measure setbacks from the working areas of the facility (e.g. the water settling pond), it is highly recommended that you consider measuring from the boundary of the site, rather than the working area. This additional land may allow for future expansion and upgrades to the facility or may prevent the creation of a non-conforming situation if setback requirements increase in the future. However, if a new cell is added to address capacity issues, the buffer distance will increase and may render some existing land uses both within and outside of the urban area, non-conforming.
Note the Impact on the Adjacent Rural Municipality Relative to Development Potential

Although residential development, food establishments or schools may be prohibited from locating within the hatched area, this would be an ideal location for light industrial development or certain commercial uses. It should be noted that the setback distance extends into the adjacent municipality, which is why consultation with your neighbours early in the MDP preparation process is important.

Relative to the most appropriate physical siting requirements for landfills or waste transfer stations, the following, although not an exhaustive list should be considered:

- Gently sloping topography that is compatible for building necessary ramps;
- Topography - consider on-site and off-site drainage controls and surface water management;
- Geotechnical considerations for supporting building and retaining wall structures, and may include geotechnical investigations to confirm soil conditions for settling ponds;
- Allowance for site buffers and landscaping including fencing, berms, open spaces, and trees;
- Potential capacity and/or upgrading of utilities and roads; and
- Potential design or orientation considerations relative to the mitigation of nuisances including litter, noise, dust and odours (e.g. prevailing winds).
Industrial Uses

Industry is a valuable economic component of any municipality’s tax base and usually offers employment opportunities. However, the community, through its Municipal Development Plan, must also acknowledge the need to ensure that any industrial development minimizes negative factors on the remainder of the community and your municipal neighbours. Industry may vary from “light” uses such as a business park, which may take the form of mixed-use light industrial to commercial/wholesale, all the way up to “heavy” industrial uses or facilities, such as processing plants.

Appearance, air quality, safety, emission of contaminants, noise, odour, fire, explosive hazards/dangerous goods and/or traffic are examples of variables that should be considered when planning to identify appropriate locations for the development of industrial or employment activities. How can you plan to avoid or mitigate potential negative factors that may affect the use or enjoyment of nearby sites, both within and outside of the community boundaries? The most effective way to avoid potential off-site impacts is through the separation of uses and a transitioning of zones.

What Should the Community Consider in the MDP Relative to Industrial Uses?

- Ensure there is adequate separation distances between industrial development and homes, schools and medical facilities to minimize the risks to the public and to facilitate effective emergency response in the event of an industrial incident. The “buffer” should be reciprocal, in the event that the industrial use expands in the future.

- Although having industries within your municipal boundaries for taxation purposes and to provide employment opportunities is highly prized, remember that industrial developments can make poor neighbours. Identify locations for a range of industrial opportunities and adhere to the strict separation of uses.

- Choose locations for future industrial development which are adequately setback from lakes, drainage courses and environmentally sensitive areas. The goal is to minimize potential impacts on the environment relative to wildlife and water contamination.

- Identify industrial transportation routes/access which may include wider roads and turning radii.

- Acknowledge that there may be potentially higher voltage power requirements for larger facilities or industries and prepare accordingly.

- Industrial facilities often require large volumes of water, both for their processing requirements, but also to meet minimum Safety Code standards for fire flow pressures. Water line capacity may need to be upgraded for industrial development.
• Consider the visual impacts of outdoor storage and the future location of industry within your community. Although industrial development may often occur at the entrance to a municipality due to transportation requirements, is this the first impression of your community that you want the travelling public to have? Buffering and screening may be warranted and your MDP can certainly identify this requirement.

Agribusiness

Consider site line impacts and emissions
Energy Sector - Oil and Gas

Oil and Gas activity or the "Energy Sector" is generally provincially regulated. The Alberta Energy Regulator (AER) succeeded the Energy Resources Conservation Board (ERCB) and administers Alberta’s energy resources, such as oil, natural gas, coal and pipelines. The AER mandate also includes managing public lands and the environment.

While your community may not have any decision-making authority relative to the location of wells or pipelines, you are required to acknowledge them in your land use planning exercises in the MDP. Remember that setback requirements do not take into consideration municipal boundaries; a gas well located outside the legal boundary of a village may affect the development potential of lands within the village’s boundary.

A setback is the minimum distance that must be maintained between any energy facility such as a well, pipeline or plant relative to a dwelling, restaurant, school or public facility. The setback requirements will vary depending on the nature of the urban development and whether the gas facility or structure contains sour gas.

What Should the Community Consider in the MDP Relative to Oil and Gas Developments?

A good practice when preparing your MDP is to identify the locations of existing oil and gas wells, as well as pipelines at the outset of the plan preparation exercise. This includes identifying oil and gas wells or facilities outside of your municipal boundary. By today’s standards, a level 2, sour gas facility requires a 500 m setback from any urban development and this may nullify any proposed development, municipal expansion or annexation. However, the same level 2, sour gas facility would only have to be separated from an individual rural household or farmstead by 100 m.

It is imperative that you consult with the AER or check their website if you have any questions pertaining to existing or oil and gas activities. These sites may have a significant impact on acceptable future land uses and the creation of your Municipal Development Plan.
Agricultural Land Uses and Confined Feeding Operations

In any rural MDP, there should be sections referring to policies on agricultural lands, general uses and confined feeding operations. In an urban MDP, there should be a focus on protecting farmland and the uses it supports, until such time as the land is needed for conversion to more intensive, urbanized uses.

Small urban centres need to care about agriculture, both within their boundaries and outside of their borders. Farmland is not only a benefit for food production; it can also help to support clean air and water initiatives; provide wildlife habitat and riparian areas; and can add substantially to the perceived quality of life for urban inhabitants.

Most rural MDPs contain policies on protecting existing agricultural lands. These policies outline how a municipality will prevent fragmentation of farmland in their jurisdiction, e.g. prohibit the subdivision of previously unsubdivided quarter sections for non-agricultural purposes. Most MDPs limit the number of subdivisions per quarter section on productive, agricultural lands.

The Canada Land Inventory rating system (CLI) is useful for regional-scale planning but does not provide a great deal of detail. Many municipalities supplement the CLI information with their own farmland assessment ratings (FARs), which are much more detailed.

In order to protect the agricultural industry, it is not enough to protect good farm land from subdivision. Residential subdivisions and other non-farm uses should be separated from some types of farming practices for several reasons:

- Non-farm development may interfere with existing agricultural operations and the potential for the agricultural use to expand in the future.

- Non-farm developments may be impacted by potential negative influences of farming practices i.e. manure spreading, hours of operation during seeding/harvesting seasons; dust; chemical usage; farm machinery on roadways, etc.

Confined Feeding Operations

Municipalities have the power to regulate small livestock operations, but large scale Confined Feeding Operations (CFOs) are regulated by the Natural Resources Conservation Board (NRCB), under the authority of Agricultural Operation Practices Act (AOPA). The NRCB must consider your policy direction identified in MDP relative to agricultural pursuits and CFOs prior to rendering a decision on a new or expanding CFO.

Regulations under AOPA set out a minimum distance setback (MDS) between CFOs and residences. This is determined by using the type and number of animals, the type of manure handling system, and number of people affected. Most municipalities apply the MDS reciprocally; they do not allow residences close to a CFO. From a rural perspective, it should be noted that potential growth of an existing CFO may be negatively impacted by progressive encroachment by residential development in an urban area.
Potential Problems with the Urban/Rural Interface
Transportation and Land Use Patterns

As dependency upon automobile transportation has increased over the last century, land use planning principles and practices to address various forms of moving vehicles safely and efficiently in our communities has evolved. From compact urban centres to sprawling developments on the periphery of our communities, transportation planning decisions directly impact land use and vice versa. Our MDPs have the ability to influence the amount of land being used for transportation infrastructure which can also affect the location, design, and efficiency of development that occurs in our communities.

The MDP is required to incorporate information on the major transportation network and highway system(s). Roads do not stop at municipal boundaries and land use decisions you make may impact the road network in an adjacent municipality.

How does Transportation Affect Land Use?

Automobile-oriented mobility focuses on expanding transit ways, such as wider streets and increased hard surfacing. Transportation infrastructure of this nature leads to an increase in urban sprawl, in order to accommodate the space required for the infrastructure, as well as dispersing other land uses due to lack of developable land. It is important to note that this phenomenon is not only a “large city” issue. Municipalities of all sizes should try to minimize the amount of land devoted solely to serving the automobile. Remember, those roads will need to be plowed and resurfaced affecting your operating and asset management budgets.

A transportation system planned ONLY for high mobility affects how and where people will choose to locate their homes and businesses. Land use patterns that are spread out will further increase the demand for transportation because of the greater travel distances. The impact these choices in transportation planning and development have on our societies go beyond the just the land uses, and also impact the environment, the public realm, accessibility for the non-driving population and community health. Transportation that is heavily reliant in automobiles requires a large street network, with ever increasing street widths to accommodate larger vehicles.

In addition to transportation affecting land uses by limiting development area and where uses are located, land uses can also affect transportation. Certain types of land uses can have greater traffic impacts than others, and require more care in placement so as to not negatively impact adjacent uses or impede the efficiency of the entire transportation network.
Street Classifications

An important aspect of transportation planning is the hierarchy and classification of streets used in the transportation network. Some streets are designed to accommodate high volumes of traffic and ease of movement across a community, and others are intended to only serve a small area and population. Arterial roads are designed to accommodate large volumes of traffic and generally have a minimum number of access points. Collector roads are the “connectors” in the system, linking major thoroughfares to the local road network. Local roads generally have the largest number of access points and serve limited populations within a specific area.
Traffic Impacts

Traffic patterns and volumes are also affected by land uses. Certain types of uses will generate larger volumes of traffic than others. Locating these types of uses in areas that are close to arterial or collector roads that are designed for increased traffic volume will reduce impacts on adjacent, potentially more sensitive uses, such as residential developments.

Industrial uses can also generate increased traffic volumes, as well as generating larger vehicles such as transport trucks. The impacts of industrial traffic and transportation on non-industrial adjacent uses can be detrimental, with high numbers of daily trips and large vehicles creating dust and noise. These types of uses benefit from being located close to arterial roads for easy access in and out of the community and on specific streets that can accommodate the traffic volume, similar to commercial uses.

Residential land uses in general generate lower traffic volumes than commercial or industrial uses; however, the density of the residential neighbourhood can have an impact on the efficacy of the road network. Uses such as apartment buildings, row houses and other multi-family dwellings will generate more daily trips and have an increased parking area requirement than low density detached dwellings. As such, these high density residential uses should be located closer to collector and arterial roads, typically at the periphery of residential communities. Locating low density, single family development on smaller local roads in the interior of a neighbourhood will concentrate the majority of traffic in a community, to the streets designed to accommodate higher traffic volumes.
Sustainability

Sustainable development is often defined as, “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. Sustainability has become a typical “lens” or filter that is applied to strategic planning processes. While the Municipal Government Act (MGA) does not specifically mandate municipalities to address sustainability within their MDPs, the range of issues that may be addressed and their complex interactions are a good rationale for municipalities to include sustainability as a component of all aspects related to future development identified in the MDP.

What is Sustainability?

Sustainability is typically described as having five pillars or components that provide a framework for understanding the interactions between various aspects of community life and how they can be managed to bring about change.

Environmental Sustainability focuses on the relationship between human systems and the natural environment. It is premised on the understanding that many of the natural resources that we depend on today, such as, fossil fuels, land, air and water, are limited either in quantity, quality or both, and that unhealthy consumption of these resources can adversely affect their capacity to renew themselves.

Social Sustainability concerns itself with how the benefits of development are distributed. It addresses issues relating to the distribution of services, such as education, health care and housing, and looks at how vulnerable persons are impacted by the distribution of resources and services, and develops polices to protect them from marginalization.

Cultural Sustainability, closely linked to social sustainability, concerns itself with how cultural resources can be shared, developed and preserved over time. These resources include both tangible assets, such as sites of special value and heritage, museums and recreational facilities; and non-material elements, such as sports, arts, architecture, traditions, community history, language, media and entertainment.

Economic Sustainability

Sustainable Governance
**Economic Sustainability** is about making the local economy resilient, so that citizens are able to earn a decent living and essential services needed to improve their quality of life are provided. Without sufficient income, employment opportunities and a stable financial base, many communities would not be viable. Economic sustainability is also about ensuring prudent fiscal management to ensure value for money in the use of government resources.

**Sustainable Governance** is the organizational connection within the sustainable development framework. It is about making the machinery of government more effective, transparent, accountable and inclusive. It recognizes the critical role that governance plays in achieving the goals of sustainable development. Sustainable municipal governance means ensuring that governments cultivate and embrace sustainability in their decision-making and actions.

**Why do Municipalities Need Sustainability Planning?**

There are a number of benefits from including a focus on sustainability in a MDP. It:

- provides a holistic framework through which to view development and change, which can help judge the adequacy of the various policies and actions.
- can assist in identifying areas of commonalities or conflicts that might arise in pursuing the different policies contained in the MDP. This can help better coordinate policies and resources to minimize conflicts and optimize beneficial impacts.
- can help to stabilize environmental impacts, protect the economic base and enhance community well-being.
- recognizes the potential financial implications of various policy directions contemplated in the long term vision for the community.
- encourages decision makers to think long-term about the future of their community, often beyond the time frame provided for in the MDP.

**How to Incorporate Sustainable Development Goals in the MDP**

As an overarching concept or way of “doing business” in the community, sustainability can be incorporated throughout a MDP, from conceptual principles, to specific goals/policies, and practical implementation actions. Examples of sustainability related policy directions within existing MDPs include:

**Principles**

- Smart growth principles will be applied in maintaining the integrity of the land base and to promote sustainable development such that the needs of the present generation are met without compromising the ability of future generations to meet their own needs.
- Our community will be managed with a long-term perspective. We will conserve and strengthen our environmental, economic, fiscal, and social resources through wise stewardship and smart growth to support our Town into the future.
**Policy**

- Wherever possible, the Town should facilitate the adaptive reuse of historic buildings in order to preserve the identity and history of the built environment, and demonstrate a commitment to sustainable building techniques.

**Action Plans**

Beyond guiding policies and goals, some municipalities may prefer to list actions that provide an additional layer that bridges the gap between their sustainability goals and the actions needed to help them achieve an identified end result. Such actions may be useful in the sense that they offer a means of linking knowledge to action as well as provide an avenue for tracking progress towards stated sustainability policies or goals. Below are examples of sustainability actions:

- **Environmental Sustainability**: Provide education to inform decision makers of the current expense of some technologies, the intrinsic value of being more “green” and those technologies and approaches which could be a total cost reduction into the future.
- **Social Sustainability**: Maintain and improve services for at-risk populations.
- **Cultural Sustainability**: Create an Arts Board to oversee the arts in the community.
- **Economic Sustainability**: Increase support for local business by encouraging the public to shop local.
- **Sustainable Governance**: Hold candidate forums and create training opportunities for those interested in leadership roles in the community.

It is important to note that “action plans” or action-based initiatives usually have a financial obligation associated with their implementation. A sustainable perspective may help to reflect the interrelationship between goals or desires in a community, relative to the economic reality of being able to not only achieve a desired end product, but the financial ability to maintain it over the long term.
Appendix B – Topic Papers

Development Density

Development density refers to the ratio of buildings, population, and infrastructure compared to the land area of a given region. Density can take different forms and have a variety of applications in terms of land-use and context. It can be expressed in different ways using numerous definitions and methods of measurement, such as: persons per square mile, units per acre, or floor area ratio etc. Density can also be discussed at different scales or levels, including but not limited to: regional, municipal, neighbourhood, census tract, city block or individual campuses and buildings. The focus of this guide will be primarily on development density at the municipal level.

Why is Development Density Important to MDPs?

A Municipal Development Plan (MDP) sets goals and objectives, and establishes policies that will guide future land-use and development. These components of the MDP may set a direction for the municipality with respect to density. Generally, the intent of density related policies is to ensure that:

- development is efficient and makes good use of municipal infrastructure;
- the municipality can financially sustain its infrastructure over the long term; and
- the natural environment is not unnecessarily or prematurely fragmented or developed.

Municipalities have a variety of practices to utilize land more efficiently and manage the footprint of the built environment. Three of the most important principles that should be conveyed through MDPs via vision statements, objectives, goals or policies for promoting the efficient use of land are:

a) Utilize the minimum amount of land needed;
b) Utilize already developed or disturbed lands; and
c) Maximize the use of existing infrastructure.
Zoning Incentives:

This allows a developer to develop a higher density development in a place where it typically is not allowed can lead to what is known as “density bonusing” or “incentive zoning”, which can provide some exceptions in regulations for the developer in exchange for some public benefit needed by the community. Density “bonusing” can reduce the development footprint by accommodating additional residential or commercial uses on a given area of land. This is typically enforced on a municipal level, at the development authority’s discretion. One example is a policy allowing for two additional parcels on a quarter section if there is an over-dedication of municipal reserve and/or dedication of a conservation easement.

Minimum Density Requirements:

This refers to the minimum amount of development that is allowed on a given area of land. Controlling/reducing the amount of low-density development and encouraging higher density development reduces fragmentation and the strain on municipal resources and infrastructure required to service the lands such as roads, water, sewer lines, or private utilities. An example is a policy requiring the residential density for new neighbourhoods shall be a minimum of 17 dwelling units per net developable hectare.

Minimum Intensification Requirements:

Infill intensification occurs when an existing building, site or area is developed or re-developed at a density higher than what currently exists”. For example, a policy that seeks to accommodate approximately 40% of growth over the next 50 years through infill and intensification.

Reducing Developmental Footprint and Encouraging Land-Efficient Living:

MDPs may prioritise high-density mixed-use development over low-density single-use development as it is more land-efficient. An example of this type of incentive would be an MDP that encourages more commercial spaces at ground level with residential suites above them and less single-detached houses with separated mini-malls and commercial plazas.
Lot sizes:

Optimizing and implementing maximum lot size policies can affect the overall development potential within the area to which it is being applied. Many rural municipalities in Alberta establish a minimum or maximum lot size in agricultural areas through their MDPs and Land Use Bylaws. For instance, discouraging the premature subdivision and development of good agricultural land by limiting the number of parcels permitted as well as restricting the size of the parcels allowed.

Transfer of Development Credits (TDC):

TDCs work by directing development away from areas of environmental, aesthetic, or agricultural value and re-directing them into higher density clusters. A TDC Program can “sell” or “transfer” an owner’s development credits to landowners in a “sending” or “receiving” area as an incentive to be used in the development of additional density. The additional density may take the form of increased building height and/or reduced parking. A TDC program is enabled under the Alberta Land Stewardship Act (ALSA), which can only be established if approved by the Lieutenant Governor in Council who can enforce the requirements on a regional or local level.

Form-based Development Codes:

MDPs may identify the need for new approaches to development regulations. Form-based development codes regulate the physical aspects of buildings by making them more pedestrian friendly and compact rather than spread-out. An example is a set of regulations that mandates certain styles of buildings, such as walk-ups and high-rise residential buildings, for specific areas of the site. This is a departure from planning only based on use – the focus is now on the structure or building, not solely on the uses it contains.
Community Design

Great neighbourhoods are created with careful planning and thoughtful design to create sustainable, healthy and vibrant communities. These neighbourhoods can increase the quality of life for all ages and may aid in attracting new people and businesses to the community. A well planned neighbourhood has the ability to:

- Set the urban character and design of an area;
- Provide opportunities for public spaces for social interactions;
- Define the access and transportation/movement networks; and
- Allocate land for a variety of uses, such as commercial, residential and open space.

A great community will contain a mix of land uses, which includes a commercial corridor or centre, and a range of housing densities. The public realm is pedestrian oriented and easily accessible to most residents by short walking distance. Well connected sidewalks and trails throughout the community help encourage healthy lifestyle choices by making active, alternative transportation methods more convenient and appealing. These active methods also reduce the number of vehicles on the roads and traffic volumes.

An important aspect of a great community is also the ability to support and encourage a healthy lifestyle for residents. The presence of the natural environment through features such as parks and natural spaces for trails, not only encourages people to explore the outdoors, but can also improve the environmental living conditions in urban settings. Well connected multi-modal transportation options; encourage active forms of movement such as walking and biking, instead of relying solely on automobiles.

The following are some principles and objectives to consider when evaluating or conceptualizing neighbourhood design:

- **Multi-Modal Transportation** – offers mobility choices to residents to travel to, from and within the community. Streets, trails and sidewalks are well connected to encourage alternative movement options, instead of relying solely on vehicular transport.

- **Mixed Land Uses** – each community should contain a mix of uses and densities that offer options to live, learn, work and play. Residents are able to access daily shopping and recreational opportunities in their community regardless of transportation choice.

- **Natural Areas** – every community should retain some natural open space and be aware of existing land conditions and the local ecology. Neighbourhoods should be designed to include existing or enhanced natural areas. Parks and open spaces play an integral part in our overall well-being, offering the capacity to cool and filter air in dense neighbourhoods; promote alternative transportation options; and access to the natural environment.

- **Compact Urban Form and Density** – communities should be designed to use land efficiently and effectively. Concentrating higher density residential units close to commercial and/or institutional uses may reduce vehicular reliance. The wise use of land will support a mix of densities and limit the effect of urban sprawl.
• Parks and Community Spaces – every community should offer high quality public spaces with a variety of leisure and recreational opportunities. The spaces should be well connected and integrated into the community where they are easily accessible by people of all ages and abilities. These spaces support the community in making healthy choices by making physical activity accessible and affordable.

• Safety and security – communities that are designed for health and well-being will also promote community safety. Sidewalks and trails are designed to keep pedestrians and cyclists safe. Public spaces are designed to be seen from adjacent properties, streets and buildings. Sight lines, lighting, active frontages all help to create a sense of security by increasing visibility.

• Unique communities—newly evolving neighbourhoods should have a distinct identity that inspires community pride and a sense of belonging. The use of entrance features, public art installations, parks and open spaces can help to create an identifiable sense of place.
Commercial Areas

Commercial land uses refer to lands where the primary activity is the exchange of goods and services that allow people to meet their needs. Commercial uses are one of the primary land use categories present in most communities and as such, direction with respect to commercial land development is incorporated into most Municipal Development Plans. The presence, scale, quantity and form of commercial lands within a community will have a significant impact on its character and on the opportunities the community may provide to its residents.

Typical Downtown Commercial Area

The form commercial development takes varies greatly across municipalities and can even vary across specific locations within the same municipality, i.e. highway commercial vs. downtown commercial. A varied array of commercial uses supports a diverse tax base and can act as an employment generator for your community. Typical commercial development forms include:

- **Downtown** – characterized by a concentration of businesses, often in multi-storey buildings, with a variety of commercial uses, located on smaller lots, with access provided by both the road and sidewalk network and served by both onsite and on-street parking.

- **Strip Commercial** – characterized by single storey development with parking located on-site between the building frontage and the street. This commercial development style is typically developed on collector or arterial roads.

- **Highway Commercial** – characterized by large, single storey “big box” stores, service stations, drive-thru and hotels, developed on large lots with significant areas devoted to on-site parking, adjacent to highways and major thoroughfares.

- **Shopping Centre** – characterized by a large building with multiple internal store fronts, centralized around a common indoor, protected pedestrian space, with significant areas devoted to on-site parking.
• **Office Park** – characterized by a group of office buildings situated together in landscaped setting with shared parking lots.

• **Neighbourhood Commercial** – characterized by small scale retail development, typically on a corner parcel and adjacent to a residential area with businesses aimed at meeting the needs of the neighbouring population.

• **Mixed Use Development** – characterized by a combination of commercial development with residential, community or light industrial uses together in the same area or building. Often, mixed use buildings are developed with commercial uses on the ground floor and residential above.

The effects or influence of commercial lands on the community varies across the forms listed above and the types of economic activity they support likewise vary. When considering commercial development within the process of preparing your MDP, it is important to identify existing commercial development patterns; the opportunities and constraints those existing patterns offer; and the desired and realistic future direction for commercial lands, whether it is infill or new construction/expansion.

These factors will affect the type of commercial uses the community seeks to develop as well as identify the opportunities/challenges faced by developers. The size and location of commercial development must take into consideration, at a minimum, servicing capacity for water/wastewater; water flow rates to ensure adequate fire protection; and the carrying capacity of your road system. Expanding commercial development may impact your municipal maintenance costs for upgrades or expansions to your utilities and your transportation network.
Housing Mix

Introduction

One of the key pillars for developing a sustainable community is the availability of a diverse range of housing stock. A community that has a variety of housing options will be able to support families of various sizes, ages, abilities and income levels. Differences in unit size, parcel size and density will create variations in housing prices and increase market options. Affordable housing and its availability within communities, has become an important topic for many municipalities, which can be addressed with appropriate housing policies and strategies. Planning for the housing needs of a municipality for the future will require understanding the needs of each segment of the community.

What Does Housing Mix Look Like?

Diverse housing mix will be a composition of differing housing forms, parcel sizes and densities. When municipalities consider housing form it is usually discussed in terms of single family units and multi-family units, or detached and attached housing. Single family units are those that are typically referred to as Single Detached Dwellings. Manufactured homes or modular homes also fall into this category, as providing a single dwelling unit unattached to other dwellings. Multi-family dwellings or attached units can take the form of row houses or town houses, two or more unit structures such as duplexes and fourplexes, or multi-unit apartment complexes. The image below describes the various dwelling types for detached and attached housing forms.

![Dwelling Types Diagram]

When planning for new neighbourhoods or redeveloping existing ones, the creation of a homogeneous community should be avoided. This can be accomplished by incorporating a variety of housing types described above, as well as by planning for a range of parcel sizes.
Individual parcel size can have an effect on overall market value of a property, as well as the density of development within a community. Including varying parcel sizes for similar housing can also create variety; narrow lot single detached housing may be a more affordable option than individual large lot, single detached housing. The same principle can be applied to row houses; some may be located on titled parcels and others may be within condominium developments. Depending on individual lifestyles, some individuals may prefer private outdoor amenity space, while others may prefer a low maintenance property. An additional method to increase housing variety and density within an established neighbourhood is the inclusion of secondary suites, in the form of basement suites, garage suites or carriage houses. These types of dwelling units add smaller housing options to the market that may be more affordable for some individuals.

Creating a community with a variety of housing options opens the area up to a more diverse population. The example below depicts a neighbourhood with a range of housing types, including single detached dwellings, multi-family in the form of row houses and apartment units, as well as smaller units such as garage suites or carriage houses in the lanes.

**How is Housing Mix Beneficial?**

Having a variety of dwelling unit sizes and types, means the community can support a diverse range of family sizes, from individuals that may only require a single bedroom, to large families that may require several bedrooms and larger shared spaces. Different lifestyles will dictate the type of housing a person may require. Also, not every person can afford to own a single detached dwelling. By having smaller rental units available, the community is able to support a more diverse population.

Affordable Housing – diverse housing options means more choice for rental properties and for rental value. Having more choice affords people and families with fixed incomes, housing options that won’t limit their ability to obtain other necessities. Offering smaller dwelling units which may not have yards such as apartments may be more desirable to some people who are not able to maintain outdoor spaces. Increasing density with multi-family units closer to areas where public facilities and commercial uses are located offers more choice to people who utilize transit or alternative modes of transportation.
Appendix B – Topic Papers

Community Sustainability – A community with a broad range of housing options can support a diverse population. Diversity in age and family composition in a community can aid in maintaining a healthy population to support the commercial and employment sector. Being able to support community members at various stages of life makes the community more desirable for young people to remain and for attracting new residents.

Aging in Place – Housing options available that are low maintenance such as apartment or condo units without yards; easily accessible ground floor access units; locations near public transit or a “handi-van” for easy community access; or within walking distance of commercial centres, allows people to remain in a community as they age. Offering housing options or encouraging the development of a mix of housing types, can mean, that as residents age, they will be able to remain in their community and close to family for a longer period of time.
Planning for School Sites

The provision of schools is a joint responsibility shared between municipalities, school boards, and the Province of Alberta. Municipalities and school boards are responsible for working together to identify future school needs and to plan accordingly. In smaller communities, a school site is often at the heart of the community, providing significant community and recreation space that would not otherwise exist. When municipalities and school boards take a proactive approach to planning for schools they can ensure that the needs of both the community and school board are met.

Legislative Framework
Municipalities are responsible for providing land for schools and school boards are responsible for building schools. Municipalities collect land, and/or money for school land, through the dedication of reserves or alternatively, cash in lieu at the time of subdivision.

The requirement for municipalities and school boards to work together collaboratively to address community needs is reinforced in the MGA requirement for mandatory Joint Use and Planning Agreements (JUPA) between municipalities and school boards. The JUPA should serve as the base from which subsequent discussions about school site planning can occur. It outlines how reserve lands will be allocated between the municipality and each school board within its boundary and the process to be followed. Some of the components of the agreement may include:

- the planning, development, and use of school sites on municipal reserves, school reserves, and municipal and school reserves in the municipality;
- the transfer of reserves between municipalities and the school boards;
- the servicing of school sites;
- the use of school facilities, municipal facilities, and playing fields on reserves and related maintenance and fees;
- the methods the municipality and the school board will use to work together; how they will resolve disputes; and the timeframe within which the agreement will be reviewed; and
- the disposition of lands if the school site is no longer required.

Municipalities can begin to address school site planning through their Municipal Development Plan (MDP). If there is a Joint Use Planning Agreement in place, then the MDP can begin to build upon the direction established in the agreement. If there is no JUPA in place, the MDP should address the intent to create one. The following section outlines some planning considerations that should be taken into account when identifying a school site.

Planning Considerations
A MDP should outline the general size, shape, and location of the school site and its relation to major roads providing access. Other considerations that should be taken into account when selecting a school site are:

- Site constraints - It is important to consider the overall development potential of a site and to identify possible limitations to school development such as:
  - The proximity of oil and gas facilities, wastewater treatment facilities and landfills; and the required setback from these types of uses for schools.
• The presence of high tension powerlines and high pressure pipelines; and required setbacks.
• The geotechnical and topographic conditions of the site i.e. can the site accommodate the construction of a large building and associated parking and play areas? Are there steep slopes that might hinder development or cause safety concerns? Is there a flood risk to the site?
• Does the site have the reasonable ability to be serviced with water, sewer, storm water, and power services?

• Size and configuration of site – The municipality should work with the school board(s) to ensure the school site chosen will be suitable for the type and size of school that is being proposed. Some considerations to be taken into account when accessing a potential site are:
  • The amount of land required for a school is usually 10-12 acres (4.04 – 4.85 ha).
  • Generally, a rectangular site with an approximate width to length ratio of 3:5 is preferred to an irregularly shaped site, as it is better suited to accommodate school buildings, playgrounds, and parking/drop off areas.
  • Access and servicing capabilities. Due to the large amount of traffic from private vehicles and buses, the site should have access to a collector road or its equivalent to accommodate private vehicles and buses. The site should also have good connections to pedestrian networks.
  • Opportunities to coordinate the use of reserves to serve both school purposes and community recreation needs should be investigated to make the best use of limited reserve lands.

Typical School Layout on 10+ acres
• Balancing reserve needs – Because the amount of reserve land and/or money that a municipality can collect is limited under the MGA, the municipality must try to balance the allocation of reserve resources among a number of community interests. Some considerations that should be noted are:
  - Reserves are used for providing public parks and trails as well as school sites; therefore, it is necessary to balance the needs of the school boards with the needs of the rest of the community.
  - Reserves are shared between public school boards, catholic school boards, and francophone school boards.
  - School boards often have jurisdiction in more than one municipality and a school that is built in one municipality may benefit surrounding municipalities. The manner in which reserve allocations are balanced between these groups must be established.

• Determining timing of need – The municipality and the school boards should work together to determine short and long term needs and the timing of the anticipated need for future schools. Some considerations in this regard are:
  - Population and enrollment data should be used to forecast the expected need for future schools.
  - Timing of school construction relative to the population growth rate in the region e.g. will reserve lands/money will be available when they are needed for school development? Can the site be serviced in keeping with the logical pattern of development?

• Use and maintenance of facilities – Municipalities and school boards may work together to provide joint use facilities such as libraries and recreation facilities to make better use of limited reserves. The responsibilities of each party related to the use and maintenance of the facilities needs to be outlined. This can be addressed through the Joint Use Planning Agreement.
Open Space, Parks and Trails

Why is Planning for Open Spaces, Parks and Trails Important?

Access to high quality open spaces, parks and trails can make an important contribution to the health and well-being of communities. Not only do these spaces provide for excellent and low cost recreational opportunities, they also provide a community with spaces for public and social engagement, by connecting various nodes and land uses within the community.

A well-developed system may include planned parks, trails, schools, natural areas, ball diamonds, splash parks and recreation facilities within the community. The system can improve connectivity and accessibility through the development of outdoor spaces, for users of all ages and physical abilities, both within your municipality and potentially, throughout the region.

Why Include a Plan for Open Spaces, Parks and Trails in the MDP?

The Municipal Development Plan provides a community with an opportunity to clearly articulate its vision for its open spaces, parks and trails. During the MDP development process, all stakeholders will have the opportunity to participate in developing this vision. Once the vision is established and desired outcomes are clearly articulated in the MDP, it will be much easier for successive municipal councils to make decisions which support achieving these long term goals.

Extensive trail systems and parks typically don’t emerge over the short term. Communities must actively plan and budget for their development. Giving thorough consideration to open spaces, parks, trails and facilities as part of the MDP development process, will in turn guide future decision makers. The MDP should provide direction relative to the allocation of municipal reserves, land acquisitions and budgets for land purchases, site development and ongoing maintenance of recreation areas/facilities.

What Can an Open Space Plan Address?

Developing a plan for open spaces, parks and trails in a MDP can take a number of forms. Often, a MDP will include policies outlining everything from general park planning principals to accessibility. A more specific example is a goal for accessibility of park space in the community and a policy requiring park space within 400 meters of every existing and proposed residence.
Conservation of Natural Areas:

The natural environment can strongly influence development and the patterns of the larger open space system. Conversely, development decisions and human activity can have a significant impact on the natural environment. Therefore, it is reasonable for the municipality to address environmental matters within their MDP; to establish direction regarding how the natural environment will be considered; and what components have value and should be preserved for future generations. The natural environment can serve many functions within your community. It can:

- act as a buffer between incompatible uses;
- minimize damage relative to flooding;
- provide space for a variety of recreational activities; and
- retain iconic natural spaces for the community, i.e. a tree stand or a coulee.

In addition to general strategic direction, the MDP may also provide specific direction with respect to how municipalities use the reserve land established by the MGA and the Alberta Land Stewardship Act (ALSA). The MDP can provide direction with respect to when and where the municipality will require reserve lands, or provide principles that the municipality may use to determine when reserve lands will be taken on a case by case basis.

- **Environmental Reserve (ER)** – consists of a swamp, gully, ravine, coulee or natural drainage course; it may be land that is subject to flooding or is unstable; or a strip of land, not less than 6 metres in width, abutting the bed and shore of any body of water. ER lands must be left in their natural state and are generally considered “hazardous” lands. Environmental Reserves may be taken at the time of subdivision without compensation to the landowner.

- **Environmental Reserve Easement (ERE)** – is used in place of environmental reserve, and can only be taken if the municipality and landowner agree. The easement restricts activity on the land, similar to the creation of environmental reserve; however, the land remains under privately ownership. The easement must be registered on the land title. The environmental reserve easement must be agreed to at the time of subdivision, without compensation to the landowner.

- **Municipal Reserve (MR)** – may only be used for public parks, public recreation areas, school board purposes, or to separate areas of land that are used for different purposes. Up to ten percent of the developable land or cash in lieu may be taken as Municipal Reserves at the time of subdivision, without compensation to the landowner.

- **Conservation Reserve (CR)** – may be used to protect environmentally significant natural features, including stands of trees and wildlife corridors. The land could be developed, but it serves a social purpose and the community, through its MDP determining that the feature should be retained in its natural state. This reserve may be taken if the municipality includes policies addressing conservation reserve in its MDP. CR lands may be designated where the land has environmentally significant features but does not meet the definition of environmental reserve and will be taken at the time of subdivision with compensation to the landowner in an amount equal to market value.
Urban Design and Architectural Appearances

Urban design is the attempt to influence and control how community members experience the outdoor spaces within the community, whereas architectural appearance is the design and impact of specific buildings within the community. Both of these factors can work together to impact the aesthetics, comfort, safety and navigability of our communities. The design of communities can greatly affect the quality of life of residents. Given its importance, a community may choose to provide direction within their Municipal Development Plan regarding the desired future direction for urban design and architectural appearance. The MDP process provides the opportunity to re-imagine the public realm in the municipality and establish or reaffirm direction with respect to architectural appearances of private structures. Objectives and policies in a Municipal Development Plan and subsequent implementation actions can help to bring this vision to life.

Urban design operates at many scales. Establishing the importance of and direction for urban design and architectural appearance in the MDP sets the stage for the municipality to integrate this priority into specific planning projects and decision-making on particular developments.

At the municipal scale, key urban design elements include:
- Block sizes and patterns
- Street grids
- Street and sidewalk width
- Viewscapes
- Parcel size and width
- Scale and setback of buildings
- Provision of green space and landscaping elements
- Provision of street/site furniture
- Provision of lighting
- Provision of public art
- Accessibility

Alternatively, architectural considerations include:
- Building location and orientation
- Building massing, height and resulting shadow impacts
- The visual connection between the interior and exterior of the building
- Location and prominence of entrances/exits
- Location and prominence of windows
- Provision of outdoor space (such as balconies)
- Building structural and design elements
- Building materials, texture and colour

An example of a uniform streetscape with scaled changes between building heights
Complete Streets and Accessibility

A complete street is designed to accommodate all ages, physical abilities and modes of transportation; complete streets are streets for the entire community. These streets consider the needs of all users in the planning of the right-of-way through to construction, operation and maintenance of the right of way. The fundamental aspect of these streets is they are safe for all users, including walkers, cyclists, transit and the mobility impaired.

Adopting complete street policies ensures that future plans will consistently incorporate these design principles, regardless of the planners and engineers developing the plans or designs. Creating a community that is accessible to all citizens is important for developing a sustainable community.

What Is A Complete Street?

The following definition is an inclusive way of depicting a complete street:

“A complete street is a public right-of-way where the transportation facilities and adjacent land uses are planned, designed and constructed to accommodate users of all ages and abilities including pedestrians, bicyclists, transit vehicles, automobiles and freight traffic.”

Three important elements of a complete street are improved accessibility for all, safety and security, and enhancing the experience. The needs of all users are considered when designing the street, so the final product is inclusive for all potential users.

Following is a design example of a complete street. The street incorporates important elements for safety, including dedicated lanes for all modes of transportation; a raised median; safe crossing spaces for pedestrians; and a dedicated bicycle lane.
Why Are Complete Streets Important?

- **Livable Communities** - Alternative modes of transportation can increase walkability within a community, which can lend to revitalization of neighbourhoods or downtowns. More public accessibility and availability can increase private investment in communities, which can lead to increased property values and tourism opportunities. In addition, creating communities that are accessible without a vehicle means a community can support a wide range of ages and ability levels. Children, seniors and people with disabilities can access the community easily, making it a more desirable place to live.

- **Public Health** – Complete streets improve two aspects of public health; reducing injuries and fatalities; and increasing activity level. By creating safe spaces for pedestrians on sidewalks and trails; and incorporating safe crossing corridors, conflicts with vehicles are reduced. The same can be said for bicycle lanes, which provide a dedicated space for cyclists that are visible to vehicular traffic and away from pedestrian traffic. Providing these spaces also increases the likelihood people will use these alternatives to driving. Encouraging people to walk and cycle increases physical activity levels of the community which reduces risk factors and incidence of chronic disease and illness.

- **Improved Road Safety** - designing streets to accommodate all modes of transportation increases safety for all users. Streets that are designed with safe spaces to walk, cycle, and access transit will reduce conflict with vehicular traffic. Adding elements such as raised medians, traffic calming measures, sidewalks, ideal bus stop placement and treatments for those with limited mobility, increase visibility to vehicular traffic and can prevent collisions. These measures allow pedestrians to cross streets more safely and are visual warnings for drivers of pedestrian crossing areas. Including dedicated bicycle lanes also increases cyclist safety, by concentrating cyclists in a dedicated lane, instead of on sidewalks or travelling against traffic flow.

- **Economic Vitality** – complete street networks can have a positive economic impact. In addition, encouraging more multi-modal or active transportation types they can reduce the amount of vehicular traffic and the financial impact of providing road infrastructure. Employment levels can also rise as a result, by offering alternative transportation methods for people without vehicles to live and work in the vicinity, and increasing demand for commercial space adjacent to street networks with more pedestrian traffic.

- **Saves Money** - Implementing complete street policies at the beginning of a new development can save the municipality money in the long term. Construction of a complete street design from the start means the road network will not have to be retrofitted later to incorporate the design and safety elements.

- **Greener Environment** – Making alternative modes of transportation available and accessible to the community will reduce the number of car trips for close proximity destinations. Public transit that is more available and safely accessible will also decrease the number of car trips residents make. A reduction in vehicular traffic will reduce the overall Green House Gas emissions within the community, and contribute
to better air quality. Note that the “public transit” element may include special bussing options often available in facilities designed for seniors.
Natural Resource Extraction – Mining and Aggregate

Mining and Aggregate may be a vital part of municipal operations and are important components of many local economies. Aggregate can include sand, silicate, silt, gravel, clay, topsoil, and marl, though it is primarily the production and stockpiling of sand and gravel that is the focus of municipal planning in Alberta. The economic and operational importance of these industries is juxtaposed by their tendency to produce negative externalities or offsite impacts. Balancing these important considerations is an integral part of municipal planning and should be a component of a well-crafted Municipal Development Plan.

Why Include a Plan for Mining and Aggregate?

Mining and aggregate can have significant positive and negative impacts on municipalities and those living near the operations. On the one hand, operations such as gravel pits can produce noise, dust, heavy truck traffic, and other off-site impacts that can potentially have a real and significant impact on the quality of life of nearby residents. On the other hand, these industries can provide a positive economic benefit for the area and perhaps more importantly, produce products like gravel, which are fundamental to the maintenance and operation of municipal and/or regional assets.

Given these competing pressures, and understanding that the Municipal Development Plan process is an opportunity for all the members of a community to come together to establish a cohesive vision for the long term growth and development of their municipality. This includes a discussion revolving around mining and aggregate extraction. By including all stakeholders (including industry, residents, and the consumers of these products), in the development of policies governing mining and aggregate operations, the municipality has the opportunity to develop clear, consistent policies and reduce (though likely not eliminate completely) conflict before it occurs. These policies can work in conjunction with the more specific detailed subdivision and development requirements outlined in the Land Use Bylaw, and can make the municipality’s decision making authorities better able to make good, consistent decisions regarding mining and aggregate development.

How Can This Fit in the MDP?

While the specific regulation of mining and aggregate operations should be detailed in other documents like the Land Use Bylaw, the MDP provides an opportunity for the municipality to present its direction for accommodating mining and aggregate operations. While the majority of these operations will exist in rural municipalities, it is possible that even urban municipalities find themselves in a position to see resource extraction within their boundaries; this is especially true for urban municipalities with a larger land base or where there are substantial undeveloped lands near rivers or in valleys.

It is typically in rural municipalities where a more robust discussion of mining and aggregate operations is required, and may result in the development of policies or guidelines within the MDP covering natural resource extraction. Policies in an MDP for a municipality that includes mining and aggregate operations might include:
Appendix B – Topic Papers

- A statement requiring potential developers of mining and aggregate operations to develop strategies to minimize impacts on infrastructure, particularly roads in the case of gravel extraction operations.

- A requirement for consideration of potential mining and aggregate operations during the development of new Area Structure Plans, including the identification of potential sites and a plan for their eventual subdivision and development. This can protect future residential expansion sites.

- A requirement that new applications demonstrate a commitment to minimizing negative impacts on surrounding land owners and homes in particular relative to potential impacts from dust, noise, pollution, etc.

- A statement indicating that the municipality will work with other agencies or provincial departments where required or appropriate.

- An identification of lands where mining and aggregate operations will be discouraged, such as adjacent to Hamlets or sensitive environmental areas.

- A requirement to post reclamation bonding for smaller sites, as large sites over 5 hectares will require reclamation plans and bonding to be submitted to the Province.
Alternative Energy

Alternative energy represents both an opportunity and a challenge for communities in Alberta. Solar, wind, and biogas all have the potential to contribute positively to a community goal of environmental sustainability, and can likewise be an economic boom. Conversely, there can be negative impacts from renewable energy development of which a municipality should be cognizant.

A Question of Scope

When considering renewable energy development, one of the first things that a community will need to understand is not only the differences between types of renewables (wind vs. solar for example) but also the differences of scope within each category. Consider, for example, solar power. Communities in Alberta are witnessing the development of large scale solar farms, which might include panels covering hundreds of acres of land. These types of developments are known as “utility or commercial scale solar farms” and will typically need to connect directly into a transmission grid, much like a coal or gas based power plant would. These facilities will require long term access to land and will need to be located not only to capture sunlight but also near infrastructure that can handle the loads they will produce. For a municipality, they will typically want to ensure that these projects are located in such a way as to be compatible with adjacent land uses, including long term development plans as the facilities will typically stay in place for 30 or more years. Additionally, a municipality will want to balance this type of development with its policies concerning the protection of agricultural land; is converting productive land into a solar facility in the best interest of the community? This will be an important point for discussion in drafting an MDP.

Not all solar projects will tie into the transmission grid. Smaller scale projects might produce power for general consumption but tie into the local distribution grid instead. These “medium-scale solar gardens” might be a community led initiative, and could potentially be placed on municipally owned land in smaller communities that is not slated for development in the near future (or perhaps within the undeveloped setback buffer of a municipal lagoon). These types of facilities will not need access to the transmission system, but will need to access the local distribution system to be effective.

Lastly, strictly in terms of solar development, a municipality may wish to promote the use of rooftop style solar projects. These are “behind the meter” systems which supply power directly to homes or businesses, and as such are a substantially different issue than medium or large scale solar farms or gardens. Municipalities may wish to promote these types of initiatives and might include policies to this effect in a community development section of the MDP.
Important Considerations for an MDP

Much of a municipality’s focus with respect to renewable energy will be with respect to its land use bylaw; ensuring that regulations are in place to govern the specific development. While it is true that the Land Use Bylaw will be necessary to outline the specific regulations associated with renewable energy development, the MDP should provide the municipality and its decision makers with a broader sense of the municipality’s vision for renewable energy development and how it should be incorporated into the community.

While the examples provided above are specific to solar power, the same issues of scope exist for other forms of renewable energy like wind or biogas generation. During the MDP development process, the municipality will want to engage its citizens in a discussion of how they would like to accommodate large and small scale renewable energy projects in their community, including how and where they would like to promote this development and the issues they would like to address in order to minimize any negative impacts on adjacent land owners. This could be as simple as a policy statement indicating that the municipality will encourage land owners to install micro generation systems or an indication that council will endeavor to install renewable energy systems in new or renovated publicly owned buildings.
Community Services and Safety

Community services encompass a broad range of protective and support services provided in a municipality. These services help make a municipality a safe community in which to live and work and create an environment where all residents have the opportunity to enjoy a high quality of life. A key focus is to ensure that individuals and families in need are able to access a range of support services and that all community members are able to participate in, and feel part of, the larger community. Related to this is the physical environment’s ability to encourage interaction through formal and informal contact with neighbours and other community members.

The MDP should identify the goals, objectives and specific policies so a municipality can achieve a safe community for their residents. An MDP deals mainly with land use, so there is not a lot of overlap with social services, but specific policy areas might include the following:

1. Emergency and protective service responsibilities and goals;
2. Crime prevention programs (defensible space concept, natural surveillance);
3. Key location of social service facilities; and
4. Inclusive community (such as mixing types of housing and spaces to interact).

Work with provincial and local agencies to provide the best community services and highest level of safety for your community. An example is the four community outcomes framework shown below.

Four community outcomes:

- **Affordability**: “Citizens have increased capacity to meet their basic needs.”
- **Access to Programs and Services**: “Citizens have straightforward access to programs and services that are easy to find.”
- **Safety**: “Citizens feel physically, emotionally, spiritually, and mentally safe.”
- **Connectedness and Inclusion**: “Citizens are connected to one another and their individual differences are valued and respected.”
The Role of Detailed or Secondary Plans

What are Secondary Plans?

Secondary plans are more detailed than an MDP and provide additional or more refined direction and goals relative to the Municipal Development Plan. Examples of secondary plans include:

- statutory plans, which are either Area Structure Plans (ASPs) or Area Redevelopment Plans (ARPs);
- non-statutory plans, which include outline plans or concept plans, as well as topic specific master plans, such as transportation master plans or utility studies;
- tentative plans or descriptive plans, which may form part of a subdivision application; and
- site plans which are required as part of a development permit application.

The MGA identifies the hierarchy and relationship of statutory plans (Figure 1), and requires that each plan be consistent with the plans above it and, in the event of an inconsistency, which provisions in what plan will prevail.

Area Structure Plans and Area Redevelopment Plans

Area Structure Plans (ASPs) and Area Redevelopment Plans (ARPs) are statutory plans that form a part of the legislative planning framework and are adopted by bylaw. The hierarchy of plans established by the provincial government requires that an ASP or ARP must be consistent with the direction set out by the MDP, and that it in turn must be consistent with an Intermunicipal Development Plan (IDP). Where an ASP or an ARP proposes development that is inconsistent with the direction set in the MDP or IDP, those higher level plans should be amended concurrent with the ASP/ARP adoption process.

The primary difference between an ASP and an ARP is that an ASP typically provides development direction for undeveloped lands, whereas an ARP is typically focused on providing direction for the redevelopment of previously developed lands. Given this difference, the development of an ASP may be undertaken by a municipality but is often developer-driven. ARPs are typically initiated by the municipality and cover previously subdivided areas with a greater number of landowners.

As a statutory plan, the process to prepare an ASP/ARP is similar to that of the Municipal Development Plan, albeit with more focused stakeholders. Once the draft plan has been prepared and a public consultation process has been completed, the plan is adopted by bylaw subsequent to a public hearing. Depending on the circumstances of the ASP/ARP, other agencies may also be required to give their approval prior to council being able to adopt the plan.
Master Plans

Master plans are topic specific, non-statutory plans. The Municipal Development Plan often provides high level policy direction with respect to the master plan subject matter. The development of a master plan is often the result of information, strategic direction and/or a service deficiency identified during the MDP process. The subject matter addressed in these plans can include, but not be limited to, transportation, agriculture, recreation, storm water, environmentally significant areas, waterfront, waste management, etc. Master plans are common in larger municipalities; however, each municipality is unique with respect to the number of master plans developed and the topics addressed in those plans. The value of having a master plan is that it lays the groundwork for future development; it may decrease timelines for processing new development proposals; and it may identify costs associated with development i.e. proportional financial contribution requirements for road upgrades or water/wastewater systems.

![Installation of a water line](image)

Tentative Plan or Descriptive Plan of Survey

Both a Tentative Plan and Descriptive Plan of Survey show a proposed subdivision and form part of a subdivision application. This plan provides the subdivision authority with essential information to make a decision. A typical tentative plan is prepared by an Alberta Land Surveyor and shows the:

- Location of the proposed subdivision in the municipality;
- Legal description of the land;
- All lot locations and measurements;
- All easements, rights of way, roads, railways, etc.;
- Location or surveyed boundaries of any environmental features such as a water course;
- Building locations and setbacks; and
- Other information (external to diagram, i.e. potable water)
A descriptive plan shows the proposed subdivision graphically on a plan; however, no legal survey posts are placed to show the location of the property boundaries. A descriptive plan is only acceptable to the Land Titles Office under certain circumstances.

**Site Plans**

Site plans are diagrams that show existing and proposed development/improvements on a specific parcel. They are essential information for development authorities making development permit decisions, as they show whether or not the proposed development meets many of the requirements established by the land use bylaw, including setbacks, site coverage, parking and landscaping.
Intermunicipal Cooperation and Future Annexation

For practical and political reasons, the majority of land use planning in the Province of Alberta takes place at the municipal level. Informed and effective planning for your community and the region will transcend municipal boundaries. Positive relationships with your neighbours can be achieved through proactive communication, consultation and cooperation. Under provincial legislation, municipalities must document existing intermunicipal initiatives and explore opportunities for sharing resources with the goal of reducing costs through the creation of Intermunicipal Collaboration Frameworks or ICFs.

The benefits for having a good working relationship with your regional neighbours may be the starting point for your community to improve or enhance the services that you provide. Remember that you may receive your drinking water from the same source, share the same emergency response personnel, travel on the same roads and utilize the same recreation facilities as your neighbour. Identifying your similarities and then potentially exploring the “gaps” or areas for improvement/cost savings may lead to a stronger regional position and enable you to increase the range of services you can offer to your community (economies of scale).

Often, one of the most stressful discussions you will have with your neighbours is if you have determined through evaluation that your land supply will not be sufficient over the lifetime of the MDP, (20-25 years) and you would like to initiate discussions on annexation. Having a good working relationship with your neighbour(s) is beneficial from both a political standpoint, as well as a practical perspective for the residents who will be impacted. Growth invariably necessitates expansion of boundaries.

Your MDP is a valuable tool for promoting certainty of land use within the urban boundaries, but also identifying acceptable rural land use and development locations by designating and safeguarding areas for continued rural development. If annexation is successful, lands will be removed from one municipal jurisdiction and placed in another. It is wise to acknowledge that although you may gain “assets” in the form of land for future growth, you will also gain potential obligations to landowners and there may be liabilities running with the land. As a starting point for discussions between municipalities, consider the following:

- Is annexation justifiable based on projected growth rates reflecting historic trends or anticipated land demands?
- What are potential mechanisms to address differing taxation rates between urban and rural municipalities and the potential effects on landowners?
- What is the current service level for those residents and will you be able to continue to meet landowner expectations?
- What is the realistic potential for providing municipal services including financing of municipal service extensions for utilities? Is there an opportunity for cost sharing?
- Is the existing transportation system able to accommodate higher usage or is it able to expand? How will you finance transportation upgrades?
• What is the financial impact on both municipalities and have you identified any means of mitigating impacts e.g. phasing taxation rates for rural landowners who may become part of an urban area with (usually) higher taxation levels?

Whether you are considering a future annexation of land or are preparing your MDP in a “business as usual” manner, you should strive toward having a good working relationship with your regional neighbours. A little competition is healthy, but by respecting differing urban and rural needs and being open to exploring new ideas on a regional basis, your individual communities will benefit in the long run.

MAP 1: LAND USE CONCEPT

Portion of a Future Land Use Map identifying lands for short term annexation