Land Use Planning and Asset Management

A Sustainable Service Delivery Primer

2019

A companion document to Asset Management for Sustainable Service Delivery: A BC Framework

Land Use Planning and Asset Management *is one of a series of primers developed to expand upon concepts in Asset Management for Sustainable Service Delivery: A BC Framework. Other primers, and the BC Framework are available on the Asset Management BC website: www.assetmanagementbc.ca.*

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Asset Management Framework and Primers

This primer is one of a series of primers that are provided to expand upon concepts in Asset Management for Sustainable Service Delivery: A BC Framework. While the content in this primer can be used alone, we recommend reading it in conjunction with the Framework. The other primers can also provide additional context and insight into the asset management process.

Primers in this Series

- Climate Change and Asset Management
- Integrating Natural Assets into Asset Management
- The Role of Operations and Maintenance in Asset Management
- Land Use Planning and Asset Management

Who Should Read This?

The Asset Management Framework and Primer series is designed for local government staff. Asset management is an inherently multidisciplinary process. This content is relevant for all departments / disciplines involved in asset management.

Introduction

The sustainability of core service delivery is a concern for local governments across Canada. The 2016 Union of BC Municipalities report titled *The Status of Asset Management in British Columbia*[1] identified that local governments are not investing in infrastructure rehabilitation and renewal at recommended levels[2], and local governments struggle to implement levels of preventative maintenance required to manage risk and extend the life of assets. Climate change is introducing new stresses on assets, typically decreasing lifespan, and making it more difficult to deliver levels of service. Rather than continuing to attempt to do more with less, local governments have an opportunity to do things differently—and achieve better results. Two critical things local governments can do to improve their asset management (AM) and the sustainability of their services are to:

- Fully integrate asset management principles into land use planning
- Properly consider land use within asset management processes

All local governments in British Columbia have legislated land use planning powers[3]. Local governments are also involved in providing the services needed to support land uses and invariably these services rely upon assets (e.g., roads, piped systems, treatment plants, parks, firehalls, and recreational facilities)[4]. If a local government changes its land use plans, there's a very good chance these changes will eventually impact existing assets and/or require new assets. Moreover, land use plans can significantly impact the long-term affordability of a service. There is no question that land use planning and asset management are inextricably linked.

[1]Union of BC Municipalities, October 2017.
[2]Informing the Future: Canadian Infrastructure Report Card, 2016
[3]Through the Local Government Act, Community Charter, and associated legislation.
[4]Assets refers both to engineering infrastructure such as pipes and roads as well as community buildings and facilities such as community centres and libraries.

Unfortunately, land use planning and asset management are all too often treated as separate processes. Communities assume significant risk when they fail to connect the two, particularly when it comes to managing the cost of providing needed or critical services, at the level of service expected or required. Communities that do connect land use planning and asset management are in a much better position to provide affordable, reliable services to current residents and generations to come. Ideally, land use planning, asset management, and financial planning should all be integrated.

Purpose of this primer

This primer has been written for staff of local governments in BC. It is intended to help local governments connect land use planning and asset management. It provides an overview of the following topics:

- Foundational key concepts
- The importance of connecting land use planning and asset management
- The steps involved in connecting land use planning and asset management processes

This primer is a companion document to Asset Management for Sustainable Service Delivery: A BC Framework (the Framework) and builds on the concepts and asset management process in the Framework. This document was developed by a team of asset managers and community planners with the intention of bridging the two disciplines in a meaningful and practical way.

A Tips for Planners checklist can be found in the appendix to this document. Developed by planners, this provides special guidance for how asset management can be integrated into land use planning processes.

Key Concepts

Land Use Planning

Land use planning is "the process of protecting and improving the living, production and recreation environments in a city through the proper use and development of land" (Land Use Planning Made Plain 2nd Edition, Hok-Lin Leung, 2003). In practical terms, it is about establishing the pattern, scale, density, location, and type of development that is desired by the community.

Land Use Planning Regulations

Local governments in BC use a variety of regulatory tools to manage land use. These regulations allow local governments to improve service sustainability at all scales; some regulations are applied at the regional scale while others are implemented at the individual lot level. Local governments may use land use regulations to support asset management through some or all of the following ways:

- Directing development to areas that can be serviced affordably
- Increasing densities to improve economies of scale (i.e. spreading costs over more users)
- Ensuring an appropriate and affordable level of service to support planned land uses
- Protecting natural assets
- Reducing greenhouse gas (GHG) emission
- Adapting to climate change impacts
- Minimizing development's impact on assets

The table below provides a summary of typical land use regulations.

Regulation	Purpose
Regional Growth Strategy (RGS)	To establish long-range growth plans on a regional level for regions with high growth.
Official Community Plan (OCP)	To establish a long-term vision for the community, associated policies, relatively broad land use designations, and high-level infrastructure plans. OCPs offer an opportunity to identify infrastructure-related goals for asset management and other priorities, such as climate change.
Neighbourhood Plans	To establish land use, density, character, urban design, and servicing for an individual neighbourhood—substantially more detailed than an OCP.
Zoning Bylaw	To regulate density and use, as well as site-level details such as setbacks, site coverage, parking requirements, and other aspects that can have an impact on services (e.g., stormwater drainage, landscaping, roads and transportation, parks and recreation spaces).
Subdivision and Development Servicing Bylaw	To regulate the provision of on- and off-site services, and to establish servicing/design standards. These regulations can be used to address infrastructure-related goals, such as adapting to climate change and reducing environmental impacts including GHG emissions.
Development Permit Guidelines	To regulate development in development permit areas to minimize environmental impacts, manage impacts on existing infrastructure, respond to climate change, and identify how new services are integrated into existing neighbourhoods.

Land use needs to match an appropriate level of service for services to be sustainable – too small of a community with too low a density and a high level of service is not sustainable.

Density & Development

Level of Service

Capacity

When considering land use planning in terms of asset management, capacity is a key concept. For a pipe, capacity can be easily understood in volume terms as it relates to the number of people serviced. For facilities it is about "catchments" and the relationship with density/number of people in the service catchment and access to a given amenity like a recreational facility or a library. Land use patterns that put pressure on a service and push it over capacity are problematic, but so too are land use patterns that leave too much excess capacity in a system (because they are difficult to fund sustainably and/or cause technical issues).

Density/Scale of Development and Level of Service

Land use plans regulate the density and scale of development, among other things. To achieve sustainable service delivery, the density and scale of development must be aligned with the appropriate level of service. In smaller communities with relatively low rural densities, rural-type levels of service make sense (e.g. individual wells and septic tanks, gravel roads) because these levels of services are more sustainable in the rural context. In larger, more dense communities, urban-type levels of service make sense (e.g. community water and sanitary systems, paved roads with sidewalks) because higher density urban areas are more likely to have the economies of scale required to sustain these levels of service.

It is important that the density/scale of development matches the level of service. Urban-type services can become unaffordable when they are provided in low density rural areas, while rural-type services will not be able to keep up with the demands of higher density urban communities. The types of service provided will inform overall lifecycle costs of assets. The density will influence the ability of users to pay: compared to low density areas, high density areas can afford more infrastructure and a higher level of service because the cost can be shared among a greater number of users.

Sustainable Service Delivery

Sustainable service delivery is a process of providing services to the community in a way that fosters the economic, socio-cultural, and environmental well-being – today and into the future.

Why Connect Land Use Planning and Asset Management Processes?

1. Land use planning has direct and long-lasting impacts on service sustainability and lifecycle costs.

Land use planning not only drives demand for services but also directly influences a community's ability to achieve sustainable service delivery. The following table outlines the most significant ways that land use plans can impact service sustainability.

Land Use Plans Establish...	How does this impact sustainable service delivery and lifecycle costs?
Location of development	Location has a significant impact on construction and O&M costs. For example, it's less costly to: ▪ Develop adjacent to existing services than to extend services many kilometres ▪ Develop in an area where infrastructure systems have excess capacity ▪ Provide service to an area that can rely on gravity than to provide service to an area that requires pumping ▪ Provide services in areas that are not expected to be affected by climate change or other environmental risks, such as flooding, rising sea levels, etc. (see reason #3)
Density of development	Increased density typically reduces servicing costs and improves long-term affordability by minimizing the lineal metre of pipes/roads needed per home/building. Higher densities do, however, reduce available capacity in existing infrastructure.

Land Use Plans Establish...	How does this impact sustainable service delivery and lifecycle costs?
Scale of development	The level of service provided is determined by a variety of factors, particularly community desires and ability to pay. Typically, the larger the development, the more infrastructure assets that are needed to support it. More assets = increased lifecycle costs. However, larger developments are typically able to justify a higher level of service (e.g. paved roads vs. gravel roads) than smaller developments due to economies of scale, because the cost is spread out over a greater number of lots, units, or uses.
Level of service	Land use plans often establish broad levels of service – for example, requiring connection to a community water system vs. allowing individual wells. Land use plans can help ensure that the level of service is appropriate to the density/scale of development. The planning process can also help identify potential liabilities from developers committing to a higher level of service than could be reasonably maintained over time for the population.
Areas to protect	Land use plans can protect natural assets such as wetlands, aquifers, trees, and soil, thereby lowering lifecycle costs and helping ensure long-term service provision (see reason #4).

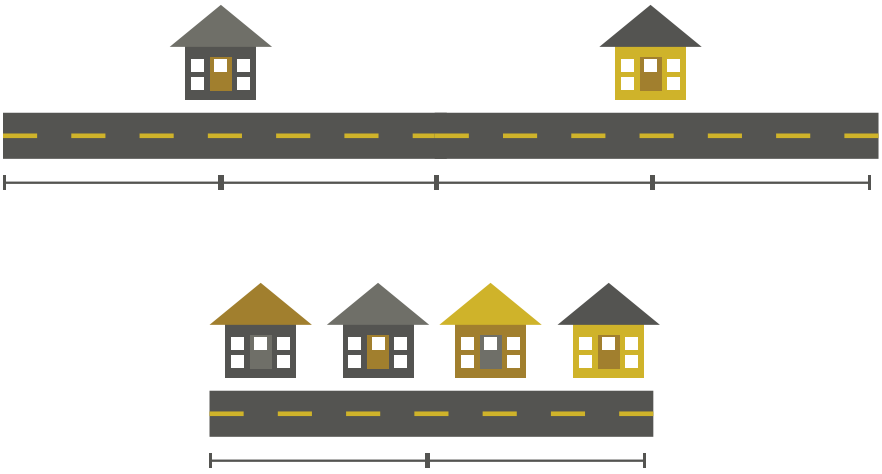
Land use planning decisions are long-lasting. Nearly all communities in BC are the result of land use decisions made over 50 years ago, if not more. Once land uses are established, they can be difficult to change. While communities typically revisit their long-range plans every five years, they don't often make major changes to existing developed areas. Consequently, it is imperative that communities think carefully about how planned future development will impact level of service, risk, and lifecycle costs. Once land use planning decisions are made, the range of choices for managing assets are immediately constrained.

DOES GROWTH REALLY PAY FOR GROWTH? IT DEPENDS

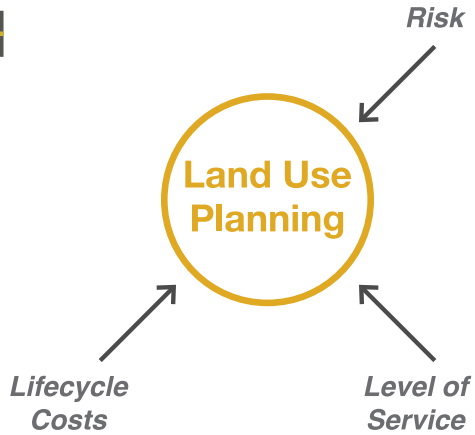
Over the life of an asset, O&M costs are estimated to be significantly more than initial capital costs. Because of this, sustainable land use planning decisions must consider not only the capital costs of the infrastructure needed for new development, but also the ongoing O&M and eventual renewal costs.

Many communities and the Province have adopted a "growth pays for growth" mindset. This means that new development is expected to pay for the cost of providing infrastructure to service it. While this shifts the burden of paying for new infrastructure from existing residents (who won't directly benefit from the infrastructure) to new ones (who do directly benefit), it can obscure the true cost of providing services. Once infrastructure is built, it is generally taken over by the local government to operate, maintain, and eventually replace. The cost to do this is therefore borne by the local government and its taxpayers. In some cases, what looks like a good deal—having development pay for shiny, new infrastructure—can end up having significant negative cost implications if the local government is then responsible for expensive new infrastructure or a high level of service without a plan in place for paying for its O&M and replacement.

MORE DENSE DEVELOPMENT MAKES MORE EFFICIENT USE OF EXISTING INFRASTRUCTURE, WHILE SPRAWLING DEVELOPMENT IS (IN GENERAL) MORE COSTLY TO SERVICE OVER THE LONG-TERM



LAND USE PLANNING DECISIONS MUST BE MADE WITH CONSIDERATION OF ASSET MANAGEMENT CONCEPTS SUCH AS LEVEL OF SERVICE, RISK, AND LIFECYCLE COSTS.



USING THE DEVELOPMENT APPROVALS PROCESS TO BENEFIT ASSET MANAGEMENT

In additional to establishing land use polices that support asset management, local governments can use the development approvals process to acquire needed assets. For instance, frontage works can be required through Subdivision and Development Servicing Bylaws and local governments can negotiate for other community benefits and amenities through re-zoning applications. For larger projects, local governments can enter into Phased Development Agreements to secure the delivery of assets (and other community benefits) in exchange for zoning commitments – these agreements can apply for up to 20 years.[5]

Development provides an opportunity to acquire new assets or replace existing assets, including community buildings such as fire halls. In this way, the development approvals process can help local governments ensure that new development pays for the cost of providing assets to service it. Conversely, if the cost of servicing a new development is not contemplated in the development approvals process, there can be negative cost implications for existing residents. Local governments also need to be mindful of the ongoing costs to operate, maintain, and eventually replace such infrastructure (see "Does growth really pay for growth?" on page 10).

2. Decisions about replacing or renewing assets should take into account future demands.

Asset management involves a multitude of decisions. Three key asset management decisions are:

- Is the asset still needed?
- Which assets should be prioritized for renewal or replacement?
- What should they be replaced with? (e.g. the same pipe size vs. a larger one)

These questions can be influenced by land use plans, which often dictate, in large part, future demands. For instance, it may make sense to delay replacing a stretch of aging watermain if fronting properties are expected to develop in the near future because the aging pipe can be replaced as part of the developer's frontage works. Or if a community is trying to revitalize and densify its downtown, the community may choose to prioritize upsizing aging infrastructure in that area so that lots are ready for increased density (and more attractive to developers).

Unfortunately, asset management plans do not always consider how land use changes might impact these types of decisions, and land use plans do not always consider asset management priorities. When communities connect land use planning and asset management processes, they are better able to take advantage of opportunities posed by new development and provide infrastructure needed by development in a timely manner.

3. Land use plans can help reduce the impacts of climate change on local government services, which can reduce lifecycle costs and improve service sustainability.

Altering land uses is one of the most effective ways of mitigating the impacts of climate change on community assets, or even reducing or eliminating the need for some infrastructure assets. For

[5] Section 517 of the Local Government Act allows local governments to enter into Phased Development Agreements that apply for up to 10 years, or 20 years with approval of the Inspector of Municipalities.

example, negative impacts from rising sea levels could be mitigated by moving development out of floodplains and directing growth to higher elevations. Floodplains can be designated as parks, a land use that is relatively resilient to flooding with proper design. In this way, local governments can reduce the need to adapt to the effects of climate change through expensive structural measures like dikes and seawalls, or difficult land use measures like moving established developments out of floodplains.

4. Land use plans can restore/protect natural assets, which can reduce lifecycle costs and improve service sustainability.

Land use decisions can eliminate or interrupt natural systems, leading to permanent loss of natural assets and the services they provide. For example, the interruption of waterways, from burying streams to destroying watersheds, has resulted in significant costs of replacing natural systems with built infrastructure. This can not only be expensive but can also result in lower resilience and greater vulnerability in extreme weather events when the landscape cannot properly absorb rainfall and built infrastructure becomes overwhelmed.

The type of infrastructure that is built and how it is maintained has significant implications for how a community can grow in the future. The potential problem is not just about having sufficient capacity. When assets need to be renewed, but the community has not planned and saved for this, the full cost of new infrastructure may need to be borne by new development, which can reduce the feasibility of the project.

SERVICING – PART OF THE LAND USE PLANNING PUZZLE

Servicing is an important consideration in land use planning. Determining whether it is a constraint or an opportunity is part of the land use planning puzzle. Servicing impacts should be evaluated explicitly, by looking at options, trade-offs, and one-time and long-term costs. Tools such as the Community Lifecycle Infrastructure Costing Tool (CLIC) were created to help local governments make these kind of land use-infrastructure trade-offs. In addition to servicing, land use planning decisions should consider:

- Environmental features and impacts, such as water ways and sensitive habitats
- Geotechnical constraints, such as slopes and soil types
- Proximity to amenities, such as schools and community centres
- Green or renewable infrastructure, including use of waste heat, solar or cogeneration.
- Proximity to transportation services, such as bike lanes, buses, and highways
- Social impacts of different forms of development, such as affordability of different housing types and potential of development to conflict with nearby uses (e.g. industrial development near a residential area)

5. Land use plans offer the opportunity to consider growth in the context of servicing needs.

Land use plans, including neighbourhood plans and OCPs, are the time when local governments often engage the community about their future wants and needs. If local governments fail to include servicing cost implications into the conversation during the land use planning process, these processes might generate a long list of "wants" that cannot be sustainably funded. By incorporating servicing considerations into land use planning, the public is much better positioned to make informed decisions about land use planning, and local governments avoid the problem of raising expectations unrealistically.

COMMUNITY LIFECYCLE INFRASTRUCTURE COSTING (CLIC) TOOL

Local governments are encouraged to consider infrastructure lifecycle costs when making land use planning decisions. The CLIC Tool was created for this purpose and can be used to assess the financial implications of varying land use typologies.

- Planning tool developed by the Ministry of Municipal Affairs and Housing
- Helps local governments better understand the long-term cost implications of land use decisions and build business cases for the development of more compact, complete communities
- Free, Excel-based tool that helps integrate infrastructure lifecycle costs (development, maintenance, servicing, and replacement) into land use and development decisions; can help analyze different residential scenarios over a 100-year lifecycle period
- Can be used to inform decisions at any planning scale – from subdivisions, to neighbourhood plans, OCP, and Growth Strategies.
- To use this tool:
    1. create scenario
    2. specify costing variables and parameters
    3. specify revenue variables (i.e. tax rates, development charges)
    4. enter development scenario characteristics (i.e. density, lengths of roads)
    5. specify allocation of costs (i.e. between developer, local government, users)
    6. specify replacement periods and cost discounts
    7. input additional details
    8. view result

Links:

https://www2.gov.bc.ca/gov/content/governments/local-governments/planning-land-use/local-government-planning/community-lifecycle-infrastructure-costing (link to tool)

https://www2.gov.bc.ca/assets/gov/british-columbians-our-governments/local-governments/planning-land-use/decision_support_tool_user_guide.pdf (user guide)

How to Connect Land Use Planning and Asset Management Processes?

Where to start

Complete the steps outlined on the following pages to ensure your community is doing all it can to properly link land use planning and asset management. Your organization will likely need to cycle through these steps several times to make significant, lasting progress on service sustainability. However, if you are looking for easy ways to build momentum, here are some small steps you can take immediately:

1. **Get your organization talking about the connection between land use planning and asset management.** Raising awareness is a key first step. Planners should be encouraged to talk to their engineering and finance counterparts, and engineers and finance managers should be encouraged to talk to their planning counterparts. Often, the connection between land use planning and asset management is missed simply because the right people are not at the table. Getting the conversation going is as simple as meeting a colleague for lunch.

2. **Require an assessment of lifecycle costs when land use changes are proposed.** Municipal councils and regional district boards routinely consider proposed land use changes – everything from a major update to the OCP to a re-zoning application for a single lot. As part of each of these deliberations, Council should consider how the proposed change may impact infrastructure and its community facilities and result in changes to lifecycle costs. Any report to Council on land use changes should include a section that explicitly outlines impacts on lifecycle costs.

3. **Take stock of existing plans** (asset management plans, land use plans, master infrastructure plans, etc) to identify potential gaps between land use planning and asset management processes.

   Review existing infrastructure plans and ask these basic questions:

   - Does this plan include commentary on servicing capacity (for both infrastructure and facilities)?
   - Does this plan consider infrastructure lifecycle costs?
   - Does this plan show how and by whom servicing costs will be funded? Are these costs expected to be affordable over time?
   - Does this plan protect natural assets?
   - Does this plan help mitigate or adapt to climate change impacts?
   - Does this plan consider green or renewable infrastructure?

   Review existing infrastructure plans and ask these basic questions:

   - Does this plan consider future land uses?
   - Does this plan highlight issues/opportunities with capacity (spare or excess) and/or condition that should inform future land use plans?

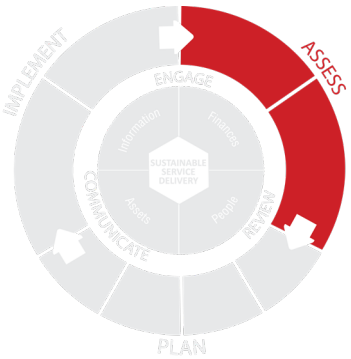
   Use the information gathered by asking these questions to have an inter-departmental conversation on how existing plans could be improved.

4. **Ensure terms of reference for upcoming plans and studies connect land use planning and asset management.** For plans and studies that are not yet underway, consider specifically requiring these to connect land use planning and asset management. Work plans and budgets for upcoming land use planning processes should allow time and resources to properly consider servicing and lifecycle costs. And, work plans and budgets for asset management plans should allow time and resources to consider the impact of planned land uses on renewal programs.

Integrating natural assets with the BC Asset Management Framework

AM PRACTICES

Assess AM practices to identify practical ways to consider land use in AM decisions AND assess how well AM processes generate information that is needed to inform land use decisions (and associated financial planning).

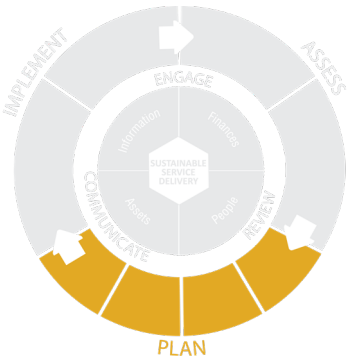


ASSETS

Assess the ability of current assets to support existing development AND future planned development.

AM POLICY

Formalize the organization's commitment to connecting land use planning and AM in the AM policy.



AM STRATEGY

Clearly show how AM will inform land use planning and how land use planning will inform AM.

AM PLAN

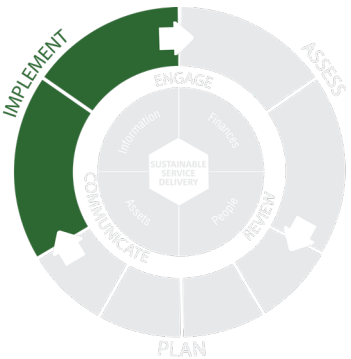
Identify planned land use changes and related impacts on each asset group.

LONG-TERM FINANCIAL PLAN

Update the long-term financial plan to show how one-time capital and ongoing infrastructure costs associated with community growth/decline will be funded.

IMPLEMENT AM PRACTICES

Use land use planning as a key policy lever to implement AM (or vice versa).



MEASURE AND REPORT

Measure and report on the organization's ability to provide infrastructure/services to support land use plans. Report to staff, council, and the public.

ASSESS

ASSESS ASSET MANAGEMENT PRACTICES

Assess AM practices to identify practical ways to consider land use in AM decisions AND assess how well AM processes generate information that is needed to inform land use decisions (and associated financial planning).

All local governments are involved in land use planning – it is one of their core responsibilities. Communities can make better asset management decisions if they consider land use plans. And they can make better land use decisions if they have a good understanding of their current systems (i.e. they have good asset management information at hand). Land use planners and asset managers need to be talking regularly; land use planners need to understand AM, and AM managers need to understand land use planning.

Activities

- Host an info session on AM for land use planners to introduce key concepts like risk, level of service, criticality, and lifecycle costs and explain how this information should inform land use decisions.
- Host an info session on land use planning for asset managers to provide an overview of your community's land use plans and to highlight the importance of considering these plans in AM decisions and how that can be accomplished.
- Review land use planning documents (both current and long-range) to gauge how well they incorporate AM information – review reports to Council on rezoning applications, OCP amendments, neighbourhood plans, subdivision and development servicing bylaws, and development permit guidelines – is there evidence that these decisions consider asset condition, lifecycle costs, level of service, willingness to pay, and funding sources?
- Review AM practices and plans to see if they adequately align with land use plans and how service demands may be changing (e.g. the OCP, neighbourhood plans).

A TAILORED APPROACH TO ASSESSING ASSET MANAGEMENT PRACTICES

Not all communities need to assess every asset management practice in detail. Focus your efforts on assessing those asset management practices that matter most for the pattern of development in your community. Consider the following:

- IF your community is experiencing rapid growth in greenfield areas...
- FOCUS on understanding the major, long-range planning processes that establish new development areas, and make sure your AM processes adequately address system-wide capacity issues, services provided by natural assets, and influence how level of service is determined for new areas. Where possible, ensure that new growth is not taking resources away from older areas and that spare capacity in the system is filled before taking on new liabilities. Ensure that greenfield developments not only pay the upfront capital but that ongoing O&M implications for infrastructure and facilities are well documented.
- IF your community is growing through infill and densification...
- FOCUS on understanding block or lot-level land use decisions, such as rezoning and subdivisions, and make sure your AM processes closely track remaining capacity in existing systems at a fairly granular level. Impacts on capacity are subtler under this scenario than for greenfield development and capacity should be allocated to users strategically. Also assess the degree of coordination between renewal and replacement programs with upsizing programs.
- IF your community's population is stable, or even in decline...
- FOCUS on understanding how existing assets can be maintained and renewed affordably despite little to no development. Extend the life of assets wherever possible. This scenario is trickier because it may not be possible to use land use planning to positively support sustainable service delivery. Rather, previous land use planning decisions will inform where the community is now and how sustainable its services are. A community in this scenario will be using AM to sustain existing services while navigating potential trade-offs between risks, costs, and level of service as assets age. Also consider how to make existing services more efficient (e.g., multi-use facilities, reducing operation hours), or eliminate services that are not needed or no longer financially feasible.

ASSESS THE CURRENT STATE OF ASSETS

Assess the ability of current assets to support existing development AND future planned development.

Sometimes asset management focuses exclusively on providing service to existing development, but sustainable service delivery is about thinking about providing service today AND tomorrow (that is, for existing and future community uses). All communities need to plan for how they will provide service in the future, and the first step in doing this is to assess the ability of current assets (both engineering and natural) to support new development.

Activities

- Before you begin the assessment, include land use planning/community planning (both current planning and long-range) on the AM cross-functional team, and ensure representatives have enough authority in the organization to have influence.
- Identify how land use changes (growth, decline, different uses) may impact the capacity of existing assets.
- Assess how land use changes will impact risks to delivering levels of service.

ENGINEERING SERVICING PLANS – INTEGRATING LAND USE PLANNING AND SERVICING

As a municipality experiencing significant growth, the Township of Langley (Township) knows how important it is to integrate land use planning with servicing. For the past fifteen years, the Township has completed engineering servicing plans (ESPs) in tandem with neighbourhood plans. Each ESP allows the Township to evaluate the impact of a draft land use pattern on municipal services, and to make needed adjustments to the land use plan to better support service sustainability. The Township's proactive approach to servicing means that plan implementation (such as rezoning and subdivision) can be facilitated in a more orderly and timely manner. The Township offers this key piece of advice to other communities: "Be sure to dedicate sufficient resources to integrating land use planning with servicing." The Township front-ends the cost of the ESP and recoups the funds through a neighbourhood planning fee that is levied on development. This fee helps ensure that "growth pays for growth" and that the planning team has the resources it needs to plan carefully for both land use and servicing.

OCP UPDATES

The Province of BC encourages local governments to consider infrastructure lifecycle costs when updating their RGSs and OCPs (see "CLIC Tool" on page 13). An OCP update is an excellent opportunity to consider the AM implications of land use decisions. To most effectively integrate AM into an OCP, the update process (work plan) should designed to clearly identify how and when asset managers should be involved, as well as what information is needed about existing servicing capacity and potential infrastructure impacts of different development forms to make sustainable service decisions.

PLAN

ASSET MANAGEMENT POLICY

Formalize the organization's commitment to connecting land use planning and AM in the AM policy.

An asset management policy provides direction from Council and sets the tone for staff about how big of a priority asset management is for the community. An asset management policy can send a clear message about the importance of connecting with land use planning.

Activities

Review and update the Asset Management Policy to identify where land use planning should be considered or integrated into asset management processes. Articulate how land use planning should be integrated.

ASSET MANAGEMENT STRATEGY

Clearly show how AM will inform land use planning and how land use planning will inform AM.

An asset management strategy can be used to establish broad organizational objectives for how asset management should connect with land use planning and provide direction for specific asset management plans. The Asset Management Strategy should cover a few key points:

- Directly reference the OCP and how AM should be a part of land use planning decisions.
- Describe the relationship between land use planning and AM, and how they should work together (including making explicit the typically implicit).
- Clarify departmental roles for the integration of land use planning and AM and assign individual roles and responsibilities for this integration (both inside and outside the planning department).

- Identify how the community will decide to provide new services and/or amend existing levels of service in relation to planned (or unplanned) land use changes.
- Identify how the community will consider services when changing land uses.

Activities

- Update the AM Strategy to speak directly to land use planning as a policy lever to support sustainable service delivery.
    - The AM Strategy should provide guidance to Council and staff on how to assess (from a service sustainability perspective) proposed land use changes (typically growth, extending neighbourhoods into new areas, or densification).
    - The AM Strategy should also provide guidance to Council and staff on how to match level of service to density/scale of development, and how to have the conversation about willingness to pay with residents.
- Consider developing a companion document to your AM strategy that helps with assessing service sustainability of land use decisions. This can be simple, such as the set of questions or checklist shown in the call out box to the right. Document procedures and practices to ensure that the set of questions or checklist is used routinely.
- Identify priorities for improving AM practices to better integrate land use planning considerations, based on findings from the assessment of practices and assessment of assets.

ASSESSING SERVICING IMPLICATIONS OF LAND USE DECISIONS

Every year, your community is faced with many decisions related to land use. These decisions might be small-scale, such as determining whether to rezone a single lot to increase density, or they might be large-scale, such as deciding whether to extend the urban containment boundary. No matter the scale of change, all land use changes have implications for service sustainability. To help ensure your community makes land use decisions that support service sustainability rather than detract from it be sure to consider these questions each time land use changes are proposed:

- Will new services be needed to support proposed land uses?
- What are the anticipated lifecycle costs of new infrastructure?
- Who will pay for constructing needed infrastructure?
- Are ongoing O&M costs affordable? Are residents willing to pay?
- Are there any future threats to service sustainability related to this land use change? E.g. increased flooding or forest fires due to climate change, regulatory changes that require increased level of service, etc.
- Can community objectives be met in other ways that would minimize servicing costs? E.g. by developing in other locations, through other means.
- When will this infrastructure need to be replaced? How much will that cost? How will these costs be covered?

The CLIC Tool discussed previously provides a method for thinking about some of these questions.

IDENTIFYING A GAP

Thinking through how land use decisions impact asset management may lead your community to take stock of the direction you're headed in. So what do you do if you realize that there is a gap between how the community wants to grow (and the services it would like to have) and the costs associated with growth and services? While it may seem scary to have to navigate these questions, it is far worse to ignore them and put them off into the future. Small changes in investment strategy now make big dividends in the future.

It is through this type of process that Council, staff, and the public may consider questions like:

- Is this land use decision reasonable? This may be the OCP, a neighbourhood plan, or a development approvals decision.
- Is the community willing to pay for this? How do we find out? What is the alternative if they are not willing to pay for this type of development/type of service/ service level?
- Are there alternatives to consider that we haven't explored yet? E.g. partnering with neighbouring local governments or First Nations to provide a service or renewable infrastructure (e.g. energy from waste).

The IMPLEMENT section identifies a few management strategies that can be used to address these gaps.

ASSET MANAGEMENT PLAN

Identify planned land use changes and related impacts on each asset group.

Asset management plans document the activities required to deliver the desired levels of service, manage risks, and contain costs over time. Your organization's asset management plans, work plans, procedures, and other processes should consider planned land use changes and major development. Staff will use the asset management plans to guide day-to-day activities and proactively considering how land use decisions will impact services will help reduce unexpected costs to budgets and staff time.

Activities

- Consider the following questions in the development of your AM plans:
  - How will demands on this asset change over time?
  - How long do we need this asset to last? Will demographics or development patterns change to a point where we don't need this asset anymore? Or is it likely that those patterns will change to the point where the asset will reach the end of its life sooner than anticipated?
  - How will future demands impact our plan to renew or replace this asset? Will we need to change the capacity, durability, or functional performance?
  - How will future demands impact our plan for operating and maintaining this asset?
  - Will proposed future development (e.g. OCP, neighbourhood plans) impact the natural assets that support this service area?
  - How will the overall asset base grow or change and how will this impact our approach to operations and maintenance (O&M)?

- Assess the sustainability of existing services in your community. Based on current and anticipated future demands, will this asset/service continue to function as expected or will costs, risks, or level of service be impacted negatively over time?
- Identify how gaps in sustainability can be addressed through day-to-day O&M, and how larger gaps need to be addressed through asset renewal or replacement or through changes to land use planning decisions.
- Consider climate change in asset lifecycles and replacement. Regional climate change trends are available through the federal government or through the PIEVC Protocol developed for Canada. (See Climate Change and Asset Management Primer)

LONG-TERM FINANCIAL PLAN

Update the long-term financial plan to show how one-time capital and ongoing infrastructure costs associated with community growth/decline will be funded.

It is important to recognize where land use plans may impact costs of service delivery and the approaches available to fund those costs.

Long-term financial plans should consider full lifecycle considerations in the planning, prioritization, and evaluation of capital projects and their operating budgets. If the protection and improvement of natural assets is not currently a priority in your community, consider the cost impact if your natural assets decline or fail and an investment in built infrastructure is needed to replace their functions (e.g. if a natural asset is destroyed due to a new development). And, be sure to take full advantage of growth financing tools to help cover initial capital costs (See "Using the Development Approvals Process" on page 11).

Activities

- Identify servicing costs (full lifecycle costs, not just one-time construction costs) associated with land use plans, e.g. by using the CLIC Tool.
- Identify sources of revenue and funding to provide services to support land use plans.
- Develop a specific approach for funding growth-related infrastructure and implement growth financing tools (e.g. development cost charges) where relevant.

IMPLEMENT

IMPLEMENT ASSET MANAGEMENT PRACTICES

Use land use planning as a key policy lever to implement AM (or vice versa).

This is about putting plans into action. Appropriate communication and engagement with key stakeholders such as staff council or board, and the public, through the earlier stages will help with successful implementation.

Activities

- Update capital plans to align with asset management plans.
- Update the OCP to reflect AM principles.
- Develop an approach to building the desired skills and knowledge within the organization to improve integration of land use planning and AM.

MEASURE AND REPORT

Measure and report on the organization's ability to provide infrastructure/ services to support land use plans. Report to staff, council, and the public.

Measuring and reporting on successes and challenges is critical to learning and maintaining momentum. Examples of platforms for sustainable service delivery reporting include annual reports, asset management maturity and progress reports, and service delivery or infrastructure report cards or dashboards

Activities

- Evaluate progress against actions identified in AM Strategy and AM Plan.
- Track changes in AM practices using an assessment tool like AssetSMART 2.0.
- Track changes in overall service sustainability using a tool like Sustainable Service Assessment Tool.
- Communicate results with staff and council or the board.
- Communicate messages about the community's land use planning and relationship to sustainable service provision through the annual report.

COMMUNICATE, ENGAGE, REVIEW

Communication and engagement about the connection between land use planning and asset management are key to equipping decision-makers with a holistic understanding of service delivery, from identifying community goals and aspirations, to implementing them through development and construction of infrastructure assets, to the end of an asset's lifecycle and decommissioning. It is with this broad view of asset management that communities can make decisions that consider the current population and their needs, as well as future generations.

The key audiences are staff, council or board, and the public, though not all stakeholders require the same information. Communications should be targeted to deliver the right information to the right person. Council should have the information it needs to make decisions about resources and projects, while staff should understand how asset management is part of the organization's culture, including in land use planning. The public should understand how goals and aspirations related to land use decisions impact service delivery and that making the best decision for the community requires considering the trade-offs between costs, risks, and service levels.

Finally, to truly understand the importance of connecting land use planning and asset management, it is important to communicate and engage about both successes and challenges. What we know about sustainable service delivery is as much from learning from past mistakes as it is about learning from best practices in other communities. This is particularly true for land use planning because decisions have such long-term impacts. One opportunity to engage the public, staff, and council or board is to examine past land use decisions using a sustainable service delivery lens. In many cases, the best decision may be different than the one that was taken!

Tips for Planners

Bringing planning into the asset management process is a key part of improving overall service sustainability. But connecting land use planning and asset management doesn't stop there. Below, we've outlined three key ways that planners can think about asset management in the land use planning process.

If your community is about to embark on a land use planning process, consider the following activities:

- Include someone familiar with asset management as part of the land use planning team.
- Include someone familiar with infrastructure financing as part of the land use planning team.
- Include time and budget in the work plan to assess servicing implications of land use plan options.
- Include time and budget in the work plan to educate and consult the community and council or board on servicing implications of land use plan options.
- Collect all pertinent servicing plans and studies to inventory infrastructure opportunities and constraints prior to starting the land use planning process. Be sure to include information on natural assets and climate change as part of the opportunities/constraints.
- Include work plan tasks early in the land use planning process to consider these servicing opportunities and constraints.

If your community is in the land use planning process and has just completed a first draft of the plan or is at another key milestone, use this checklist to check whether your plan has fully considered servicing:

- Does the land use plan identify an urban containment boundary and is it evident that long-term impacts on servicing were taken into account when establishing the location of the urban containment boundary?
- Does the land use plan include policies supportive of creating compact, complete communities?
- Does the land use plan include a section on servicing? Both one-time and long-term implications should be noted.
- Does the land use plan discuss natural assets and are they identified on a map? Does the land use plan identify how valuable natural assets will be protected or restored? If not, why not? The trade-offs should be documented and transparent.
- Does the land use plan include a section on climate change? Does the land use plan show how future land use patterns have been designed to minimize the impact of climate change? If not, why not? The trade-offs should be documented and transparent.
- Does the land use plan show phasing? Is long-term servicing one of the phasing considerations?
- Does the land use plan include a financing and implementation section for infrastructure/asset costs (at least one-time costs and ideally, ongoing costs including renewal)? Does the plan include policy statements supporting asset management?
- Does the land use plan consider level of service (e.g. rural or urban-type of service)? Is the anticipated level of service reasonable and affordable for the type of development proposed?

If your community already has a long-range land use plan and will not be making any major amendments to the plan anytime soon, consider the following activities:

- Create a development phasing plan (if your land use plan does not already have one, or if the one it contains is not sufficiently detailed). The following are some of the opportunities that could be identified: direct development to certain neighbourhoods to ensure infrastructure is used well, set minimum absorption thresholds for new subdivisions to achieve economies of scale faster, or direct new development to use excess capacity in existing systems to reduce the number of new assets.
- Develop a plan to coordinate infrastructure renewal with the construction of growth-related infrastructure projects (development coordinated works). Piggybacking on development can help get renewal projects financed and constructed, and also avoid ripping up roads multiple times.
- Review AM plans to ensure they are tied directly to land use plans. Infrastructure planning should be dictated by growth and level of service needs as established in the land use plan. When replacing aging infrastructure, be sure to build in capacity to meet future needs identified in the land use plan.
- Ensure AM principles and concepts (e.g. lifecycle costs) are used in the evaluation of OCP amendments and re-zoning applications (i.e. evaluate the short-term and long-term servicing implications of proposed approvals and development).
- Review the applicability of development finance tools (e.g. long-term debt, development costs charges, community amenity contributions, and fees) to ensure initial growth-related servicing costs are financed sustainably.
- Ensure long-term financial plans include provisions for growth financing and link directly to long-range land use plans.
- Review the Zoning Bylaw, Subdivision and Development Servicing Bylaws, and development permit guidelines to ensure they align with AM principles (e.g. zoning can limit imperviousness on a site, thereby reducing the need for storm sewers).

- Include references to land use planning in the asset management policy and vice versa.
- Have conversations with neighbouring local governments and First Nations to identify opportunities to provide services regionally. It is particularly important to take a regional perspective when protecting and restoring natural assets that span multiple jurisdictions.
- Ensure the development approvals process helps the local government acquire needed assets. Local governments can require frontage works through Subdivision and Development Servicing Bylaws and negotiate for other community benefits and amenities through re-zoning (these negotiations may result in formal Phased Development Agreements for large scale projects). Use these opportunities to acquire new assets or replace existing assets, including community buildings like fire halls.

Helpful Resources

Asset Management for Sustainable Service Delivery, A BC Framework

The framework for asset management is a guide through the circular process model for service, asset, and financial sustainability. The framework is scalable to any community size and capacity with a focus on desired outcomes and reflecting current best practices rather than specific methodologies.

https://www.assetmanagementbc.ca/framework/

APA Policy Guide on Smart Growth, American Planning Association

This Guide offers declarations, definitions, and core principles that can be used to develop land use planning policies that support Smart Growth. Describes benefits and expected policy outcomes.

https://www.planning.org/policy/guides/adopted/smartgrowth.htm

InfraGuide National Guide to Sustainable Municipal Infrastructure (Environmental Protocols: Land Use Planning), FCM

InfraGuide is a collection of best practices and principles designed to help local government staff and decision-makers involved in infrastructure management. The Environmental Protocols: Land Use Planning report highlights how land use planning and infrastructure management processes can be better integrated to improve services for communities.

https://fcm.ca/en/resources/infraguide-national-guide-sustainable-municipal-infrastructure

Guidance Documents and Resources, Partnership for Water Sustainability in BC

A library of BC documents that offer guidance on asset management related to water resources and related infrastructure, like stormwater. Designed for use by communities and land use professionals.

https://waterbucket.ca/guidance-resources/

Infrastructure and Communities: The Path to Sustainable Communities

This White Paper describes the characteristics of communities with sustainable infrastructure and land use patterns. Discusses how land use patterns can shape infrastructure that supports climate change adaptation and mitigation.

https://pics.uvic.ca/sites/default/files/uploads/publications/WP_Sustainable_Communities_November2008.pdf

Integrating Land Use Planning and Development Finance to Improve Local Government Sustainability

This article provides an overview of the links between land use patterns, local government finance, and infrastructure. Outlines how different forms of development have different financial impacts related to infrastructure and servicing costs.

https://viurrspace.ca/handle/10613/8448

Video: Why Invest in Asset Management?

This video highlights how engaging in asset management planning can help local governments to make better, sustainable infrastructure investments that make the most financial sense in the long term.

https://fcm.ca/en/resources/mamp/video-why-invest-in-asset-management

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