

Federal funding provided by Infrastructure Canada has made it possible for communities across BC to build, rehabilitate and maintain much needed infrastructure across the province. For example, Memorial Hall in Harrison Hot Springs had deteriorated considerably and recently required a major overhaul. Renovations are now complete thanks in part to a \$200,000 contribution from the Infrastructure Stimulus Fund. As a result, the community is better positioned to sustain its long-standing role as a tourist destination of choice.



Memorial Hall, Harrison Hot Springs, BC

The Infrastructure Stimulus Fund provided an additional \$237,500 investment to help extend Lansdowne Road in Richmond. This project has made it easier for people to use the Canada Line as a direct link to Vancouver and the rest of the lower mainland and included the addition of high-efficiency lighting, geothermal sidewalk warmers to reduce annual maintenance costs and bike lanes to increase safety for cyclists.



Lansdowne Road Extension, Richmond, BC

Infrastructure Canada is investing in these projects and thousands of others like them with our partners across the country. By making these funds available, the Department is helping to keep the economy rolling, contributing to a cleaner environment and making our cities better places to live and work.

Integrated Rainwater Management: Move to a Levels-of-Service Approach to Sustainable Service Delivery

By Kim A Stephens

In collaboration with Glen Brown, Carrie Baron, Rémi Dubé, John McMahon, Kim Fowler, Stan Westby, Robert Hicks and Jim Dumont

Note to Readers: During the November-December 2010 period, the Water Sustainability Action Plan for British Columbia released a series of five articles that are designed to inform local governments and others about a 'course correction' for **Integrated Stormwater Management Plans (ISMPs)**. The fourth in the series introduced the 'infrastructure deficit' as a driver for the ISMP Course Correction. It connected the dots to Asset Management as a way to re-focus the ISMP process on what really matters. This article is adapted from that series.

Prepare Communities for Change

Use of the ISMP term is unique to British Columbia. First used by the City of Kelowna in 1998, the term quickly gained widespread acceptance by local governments and environmental agencies to describe a comprehensive approach to watershed-based planning in an urban context. In 2001, Metro Vancouver's member municipalities recognized the benefits of integrating hydrology, ecology and land use and made a commitment to the Province to have ISMPs in place by 2014 for their watersheds. Geographically, about half of British Columbia's population resides within these watersheds.

When the Province released **Stormwater Planning: A Guidebook for British Columbia** in 2002, the ISMP approach was expanded and became a recognized provincial process. A decade ago, the approach reflected a significant shift in community values. The implicit goal was to build and/or rebuild communities in balance with ecology – that is, accommodate development while protecting property and aquatic habitat. A decade later, 'climate change' and 'sustainable service delivery' have also become integral parts of the goal.

The term Sustainable Service Delivery describes a life-cycle way of thinking about infrastructure needs and how to pay for those needs over time. The link between asset management and the protection of a community's natural resources is emerging as an important piece in Sustainable Service Delivery.

The Province's **Living Water Smart** and **Green Communities** initiatives constitute an over-arching policy framework that encompasses both the 'ISMP course correction' and asset management. They are preparing communities for change: start with effective green infrastructure and restore the urban fabric. Actions and targets in Living Water Smart encourage 'green choices' that will foster a holistic approach to infrastructure asset management.



A watershed-based plan that is outcome-oriented is a potentially powerful tool to achieve a vision for 'green' infrastructure that: protects stream health, fish habitat and fish; anticipates climate change; connects the dots to Sustainable Service Delivery; is affordable, and is supported by the community.

Do More With Less

An increasing local government 'infrastructure deficit' means that there will be even more competition for available funding. Simply put, this means the cost to renew or replace aging infrastructure exceeds taxpayer ability to pay the cost. The unfunded liability is increasing year after year. Thus, a driver for the ISMP Course Correction is to demonstrate how to 'do more with less' by placing emphasis on what really matters and being outcome-oriented.

Asset management usually commences after something is built. The challenge is to think about what asset management entails BEFORE the asset is built. This paradigm-shift starts with land use planning and determining what services can be provided sustainably, both fiscally and ecologically.

Local governments can develop a truly integrated Asset Management Strategy that views the watershed and the strategy through an environmental lens. This outcome can be achieved through a front-end effort that connects with the community and gets the watershed vision right. Then create a blueprint to implement green infrastructure that truly restores the urban fabric. Recognize that implementation will be a multi-decade commitment.

In the minds of some, the main purpose of an ISMP is to identify infrastructure shortfalls and provide a capital plan for future implementation. Going forward it will be necessary to resolve this apparent divergence in expectations and correctly attribute

future costs to sustaining the environment versus infrastructure renewal. To that end, key objectives of watershed-based Sustainable Service Delivery are identified as follows:

- Recognize that each watershed area is unique, and its needs are unique.
- Integrate drainage planning with land use, environment, parks, and other infrastructure and community needs.
- Have short, medium and long term goals / visions for the plan area, complete with integration of opportunities.

The linkage to asset management is a way to (re)focus ISMPs on outcomes: create a vision of a future watershed complete with intact environmental values, healthy streams abundant fishery resources, and a functional infrastructure. In this context, use of the word 'stormwater' is dated because it is associated with a 'pipe-and-convey' engineering philosophy; and reflects a single function view of the rainwater resource. Furthermore, stormwater is created by human activities.

All in all, the 'stormwater' way of thinking is the antithesis of RAINwater management – which is holistic, landscape-based, seeks to capture rain where it falls, and is guided by a 'design with nature' philosophy. Thus, the time is now right to make the vocabulary change to **IRMP** from ISMP, where IRMP is the acronym for **Integrated Rainwater Management Plan**. This re-branding will help facilitate the current paradigm-shift in the local government setting.

Everyone needs to be thinking in terms of life-cycle costs, especially future recapitalization of the investment. Historically this has not been considered as significantly in traditional infrastructure decision-making. While developers and new home purchasers pay the initial capital cost of municipal infrastructure under either greenfield or redevelopment scenarios, it is local government that assumes responsibility for the long-term cost associated with operation, maintenance and replacement of infrastructure assets.

A rule-of-thumb is that the initial capital cost is about 20% of the life-cycle cost. The other 80% represents an unfunded liability. This underscores the vital necessity of making a sound front-end infrastructure investment decision. Don't build a liability!



Embrace a Level-of-Service Approach

Land use planning in British Columbia may be significantly improved when integrated with asset management planning in local governments. The legislative authority for integration of land use planning and asset management, including financial management, already exists within the Local Government Act and Community Charter.

'Level-of-Service' is the integrator for everything that local governments do. What level of service does a community wish to provide, and what level can it afford? Everyone will have to make level-of-service choices. Thus, a guiding principle for an IRMP could be framed this way: Establish the level-of-service that is sustainable to protect watershed health, and then work backwards to determine how to achieve that level of protection and level of drainage service.

From the stream health perspective, appropriate and effective green infrastructure is a way to increase the level-of-service – for example, green infrastructure that restores the rainfall absorption capacity of the watershed landscape will increase the level of ecological protection. Also, water-centric green infrastructure that maintains or restores the natural water balance has value because it protects aquatic habitat and hence stream health.

To make the link, think in terms of the 'Level-of-Service' an urban tree canopy provides for rainfall interception. As trees grow, the interception capability increases; and the 'infrastructure value' of this natural asset appreciates. This contrasts with pipe assets that depreciate over time.

The process of establishing an acceptable 'Level-of-Service' will require local governments to reassess the rationale for existing practices and standards; and determine whether and what changes may be necessary in future to achieve a balance between cost, affordability and community willingness to pay. If, for example, application of new standards that accommodate climate change would trigger a costly upgrade of existing drainage infrastructure to provide greater system capacity, one could question whether the perceived benefit would justify the cost - particularly if there is no extensive history of widespread flooding and damage resulting from rainfall or storms. One could then ask whether different criteria might result in a lower cost solution.

A shift to a 'Level-of-Service' approach would be a more rational way of providing community infrastructure with acceptable levels of service and cost. The level-of-service concept may need to include a revision of the design standard to a uniform drainage capacity rather than one subject to changing design frequency and intensity.

In short, attribute the costs to the infrastructure, not to the vision of the watershed and not to reduction of impacts to the stream.

Improve the Resiliency of Communities

The accelerating pace of change in our communities will continue, requiring local governments to become much more nimble, collaborative and integrated with a long-term focus. Each local government may determine where to start based on its particular circumstances - whether that be an asset management policy or plan, corporate strategic plan, long-term financial plan or IRMP - but the longer these plans are delayed, the more drastic and/or necessary the following measures will be in order to survive financially:

- Lowering of service levels;
- Reduction or elimination of some assets;
- Challenging risk acceptance limits;
- More collaboration and partnerships; and
- More user pay charges.

The change is here, and it is accelerating. Local governments have an opportunity to mitigate the infrastructure deficit and adapt to climate change within existing legislative authority and by means of a 'design with nature' approach to green infrastructure practices, respectively. The combination will improve the resiliency of communities.

Thus, with respect to landscape-based rainwater management, an **Integrated Rainwater Management Plan** is a vehicle for local government to strategically connect the dots between land use planning, development and infrastructure standards, and asset management. And by 'designing with nature', a local government could make a very strong case for having a higher level of service, at a lower life-cycle cost, with 'assets' that appreciate, not depreciate.

Collaboration, a 'Design with Nature' approach, and re-use of resources are keys to climate change adaptation and infrastructure deficit mitigation

- Develop compact, complete communities
- Increase transportation options
- Re-use and recycle water, energy & nutrients from liquid wastes
- Protect and restore urban 'green' space
- Strive for a lighter 'water footprint'
- Achieve higher levels of stream, wetland and marine environment protection