

August 22, 2017

Executive Committee, Item 6.1 – Comprehensive Multi-Disciplinary Approach on LID CR_4789

Mayor, Councilors, Administration:

- Studies show that once development exceeds 8% imperviousness there are impacts on fish bearing streams. With up to 30% imperviousness a site can still absorb storm water runoff with adequate soil depth and softscaping on the site. This is the case with many existing properties in mature neighborhoods. Up to 40% site coverage, absorption in the public realm (boulevards, parks and natural spaces) can offset and absorb storm water runoff before it hits riparian areas. However, as site coverage of 65 -70 % or more site with less site absorption results in serious impacts from significant increase to storm water runoff.
- I support the City of Edmonton's low impact development strategies to mitigate developmental impact by managing and reducing storm water runoff . However, much more comprehensive work must be done to see implementation of LID strategies on private property in addition to measures already in place in the public realm.
- The two LID strategies mentioned in the report: 1. Rain Gardens & 2. Naturalization have only been just introduced or introduced on only a limited scale on private property so it is unclear to what extent these initiatives will address the problem or the public acceptance and adoption of them. Although both have benefits to offer there are challenges to implementing both that are related to lot grading regulations and lack of education and awareness.
- I encourage the City of Edmonton to look outside the Raingarden in a Box and Naturalization Strategies and consider the following suggestions:
 1. **Change Lot Grading Regulations by requiring more soil.** Current minimum is 4 – 6” but frequently it is 4” or even less. A lot in Chapelle that I visited this week had only 1 – 2 “ of topsoil, not properly graded and clearly should not have passed final grade inspection. An 8” minimum and a 1’ maximum would increase site absorption. (See Table D.1 Average Annual Runoff Volume – Impervious Ratio and Absorbent Landscaping.
 2. **Provide incentives to encourage developers to avoid removing deep topsoil to the landfill** and where possible remove, stockpile and replace top soil on infill lots where it can be 1 – 2’ deep. (see Figure 1) Larch Park in McGrath is a community where the developer provided 1’ of soil, so it can be done.
 3. **Limit the use of sod** with high percentage of Kentucky Blue grass which has a shallow root system and requires more irrigation and encourage seeding lawns with drought tolerant fescue mixes.
 4. **Intensive planting** – Naturalization is one way to do this. (Figure 2) However, xeriscapes with mass planting of shrubs, perennials or ornamental grasses will also accomplish significant absorption of storm water. Plants also improve the percolation of water.

5. **Avoid direct discharge of roof leaders to the storm water system.** This bypasses any opportunity for storm water reduction, yet there are new developments in the City as well as infill developments that once discharged to the surface, but are later required to connect directly to the storm water system. (Figure 3) This then increases the need to use potable water for irrigation which is not a very LID strategy.
6. **Reduce the recently introduced a maximum 70 % impervious site coverage** and encourage developers to provide additional outdoor amenity space with greater absorbable area.
7. **Allow only detached garages with short driveways** to reduce site coverage that accompanies attached garages.
8. **Explore site capture and storage of rain water** in a cistern under a garage slab could be used for irrigation and flushing toilets.
9. **Launch a pilot project studying green roof technology** in the same way some municipalities like Okotoks have entire communities that use solar technology.
10. **Look at ways to incentivize LID strategies or a levy to be used elsewhere in the storm water system** to offset the impact development.
11. **Finally, there needs to be greater education and public awareness** about the economic, environmental and social benefits that truly sustainable development offers that encourage developers and private property owners to see value in implementing and wanting to adopt LID strategies.

Here are a few other thoughts and concerns related to the report:

The **Climate Change Adaptation and Resilience Strategy and River for Life Infrastructure Program** referred to in the report seem more applicable to the public realm and must be adapted and applied to the private realm.

Information provided on the City of Edmonton's Residential Infill site should be unbiased, correct or back up the statements with fact. Not long ago, it stated that infill development had no impact on the City's drainage system because low flow toilets and shower heads and fewer people living in these homes resulted in less demand on the sewage system which is not what this is about. **This is about increased site coverage and storm water runoff.** Currently under impacts to drainage infrastructure it states: "While large infill developments like apartment buildings) will require and evaluation of the sewer's capacity, smaller infill developments (like new houses or duplexes) are easily handled by the existing sewer system". This is not supported by the findings of the City of Calgary's "User Manual Water Balance Spreadsheet", Table D.1, p. 110 which compares percentage imperviousness to soil depth and site absorption. Figure 4 shows a google image of Ritchie comparing the site coverage and softscaping of several infill developed sites with existing homes and landscaping on mature neighbourhood lots. It is clear which properties will shed more storm water and which will absorb more on site.

A thorough review of Zoning Bylaw 12800 is important to ensure there is maximum potential to achieve sustainable development by incorporating LID strategies not only in the public, but also in

the private realm. The City of Edmonton should consult outside of the new Urban Form and Corporate Strategic Development Department and consult with other municipalities such as Vancouver, Saskatoon and Portland which have implemented LID strategies on private property. The Alberta Low Impact Development Partnership, of which the City and Epcor are members, also can provide research and information and professional organization such as the Landscape Alberta Nursery Trades Association and or a professional horticulturist will be able to provide practical “boots on the ground” experience in the real world.

The City of Calgary’s Municipal Development Plan has a goal of 10 - 20% imperviousness corresponding to annual average runoff of 40 – 90 mm and also varying for different rates of development. This would be accomplished by requiring offsets in the private or public realm to reduce and absorb storm water. Calgary also is requiring some infill to “shave the peak” and provide peak flow control of storm water by holding it on site to be discharged after a rain event with development approval contingent on this. The principle is similar to the use of ponds to hold peak flow in the public realm to be discharged later. Edmonton should develop similar goals and work toward reaching them both in the public and private realm.

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