MEMO

TO: Manager of Development Approvals, City of Greater Sudbury
FROM: Rob Kell, P.Eng., – Dillon Consulting Limited
DATE: March 9, 2018
SUBJECT: Risk Management Plan: Kingsway Site – Preliminary Report
OUR FILE: 18-6947

Project Background

Dillon Consulting Limited (Dillon) has been retained by the City of Greater Sudbury (City), Gateway Casinos and Entertainment Limited, and 1916596 Ontario Ltd (the "Owner"), to assist in obtaining necessary planning approvals to allow the development of the subject lands for a proposed Event Centre/Arena, a Casino, and overflow parking. The three properties are described as:

- Proposed Casino – Part of PINs 73561-0258,73561-0261, 75361-0263, 73561-026, in Lot 9 and Lot 10, Con 4, Neelon Township, (north side of Kingsway), Sudbury, Ontario
- Proposed Arena/Event Centre – Part of PINs 73561-0258,73561-0261, 75361-0263, 73561-026, in Lot 9 and Lot 10, Con 4, Neelon Township, (north side of Kingsway), Sudbury, Ontario
- Proposed Overflow Parking – Part of PINs 73561-0264/0258/0261, in Lot 9 and Lot 10, Con 4, Neelon Township, (north side of Kingsway), Sudbury, Ontario.

While separated by a property line, the Site will be connected physically and form part of the "Kingsway Integrated Site Development" (Site). This development is envisioned to be an area for entertainment, providing exciting new opportunities for the expansion of Sudbury-based events for the residents of Greater Sudbury and visitors to the community.

The Site is located partially within the Ramsey Lake Issue Contributing Area. As a result, a Section 59 Source Water Protection Application for Municipal Drinking Water Protection was submitted for each of the properties as part of the planning approvals process. The Risk Management Official identified that a Risk Management Plan (RMP) is required for the Site to provide mitigation measures to protect the sensitive water features, ground water features, and their hydrologic functions from road salt.

Dillon has been retained by the City to prepare a RMP for the proposed Site to address the threat to drinking water from the application, handling and storage of road salt and the storage of snow. One RMP will be completed for the Site that encompasses the three properties described above.

This document provides a high level summary of the components of the RMP and outlines Best Management Practices for design and operation that will be considered for applicability.

Risk Management Plan (RMP)

Road salts or alternatives are regularly used as de-icing chemicals during winter maintenance to promote roadway, walkway and parking lot safety. The use of these substances frequently leads to the release of sodium and chloride to soil, groundwater, surface water, and the atmosphere through losses at salt storage and snow disposal sites, and runoff from salt application areas. Releases of road salts to the natural environment can adversely affect soil, groundwater, plant and animal life (Environment Canada, 2001).

As of April 1, 2015, the City must comply with the Approved Source Protection Plan for the Greater Sudbury Source Protection Area (2014) with respect to policies relating to applying, handling and storage of road salt and storage of snow to protect drinking water sources. A review of Source Water Protection mapping for the City indicates that the Site is located partially within the Ramsey Lake Issue Contributing Area and Intake Protection Zone 3 (IPZ3). In an IPZ3 area, the application, handling and storage of road salt and storage of snow are considered threats to drinking water (Greater Sudbury Source Protection Committee, 2014).

The *Clean Water Act* (2006) permits Source Protection Committees to address significant drinking water threats through Section 58 Risk Management Plans. A RMP is a site specific plan, which is negotiated locally between the landowner and the Risk Management Official. In the case of the Kingsway Site, the Risk Management Official identified that the application, handling and storage of road salt, and the storage of snow are threats to drinking water. The objective of the RMP is to indicate Best Management Practices related to design and operation that will reduce the risk to drinking water from application, handling and storage of road salt, and the storage of snow, while maintaining safe conditions for pedestrians and vehicles.

The creation of a RMP requires site specific details. As the Site is at the planning and design stage, many of the details necessary to develop a site specific RMP are not yet available. Once these details are available, additional assessment will be conducted and a thorough RMP will be developed. In the interim, this document provides Best Management Practices for design and operation that will be considered for applicability after additional details regarding the Site are determined. Resources that were reviewed and may be and incorporated into the RMP include the following:

- Code of Practice: The Environmental Management of Road Salts, Environment and Climate Change Canada (2017)
- Private Salt Management Plans in the City of Guelph (2016)
- Syntheses of Best Practices: Road Salt Management, Transportation Association of Canada (2013).

Risk Management Plan (RMP) Components

The RMP presents an overview of the proposed Site development and site features as they relate to the application, storage and handling of road salt and storage of snow. The RMP outlines the Best Management Practices that will be employed. The RMP consists of the following sections.

Identification of Traffic Areas and Sensitive Features

The RMP will describe areas of the Site development that are anticipated to have human and/or vehicular traffic and identify areas of high traffic. Areas anticipated to have high traffic will be considered when developing a winter maintenance plan.

The RMP will describe any sensitive features onsite; these features include those that may provide an opportunity for increased infiltration of salt into the subsurface and/or constructed or natural features that may need to be protected from salt exposure.

Identification of Snow Storage/Disposal Areas

The RMP will describe areas at the Site that have been designated for bulk snow storage, including the total surface area of these locations. Snow should be stored on impervious surfaces, where infiltration of melt off into the subsurface is limited, and is directed to storm water catchments.

Snow storage areas will be provided in the parking lot. Snow from these areas will be removed periodically and transported to an offsite approved snow dump facility in order to allow for snow storage capacity for the next snow event.

Proposed Use of Alternative Products

The RMP will consider alternatives to the use of road salt. It is understood that alternative products have different chemical properties that can reduce potential environmental impacts. For example, pickled sand, a low sodium concentration product, can be used in parking lot areas to manage ice conditions. It is expected that, since road salt is predictable and proven effective in achieving safe deicing conditions in high vehicle and human traffic areas, its use will not be totally eliminated. The Greater Sudbury Source Protection Plan (2014) indicates that sodium is the chemical of concern related to road salt. The use of alternative products including those with no or lower sodium concentrations, such as the application of sand, will be considered for conditions where it is safe and effective to do so. An effective way to reduce road salt use is through forecasting and proactive winter maintenance. Engineering and operational measures described below will help to minimize road salt use and subsequently decrease the release of sodium to the subsurface. Logging winter maintenance activities during the first implementation year of the RMP will also set a baseline for road salt use to be compared against for future years.

Recommended/Proposed Engineering Measures

The RMP will describe engineering measures that will be incorporated into the design of the Site. Several engineering measures will be assessed for applicability after site specific details are known and are discussed below.

Grading onsite, including roadways and sidewalks should be designed to establish positive drainage towards onsite storm water catchments. Grading in the vicinity of designated bulk snow storage should also be designed to establish positive drainage towards onsite storm water catchments. The implementation of effective drainage will reduce ice formation, subsequent road salt application and minimize infiltration of standing water to the subsurface. Directing water towards stormwater catchments can prevent it from entering the subsurface or nearby watercourses leading to Lake Ramsey. Storm water catchments onsite, will direct precipitation and runoff to an onsite stormwater management pond.

Although grading is necessary to direct precipitation and run off to storm water catchments, the slope of internal roadways, parking lots and sidewalks should be minimized to avoid the application of road salt. If grit for traction is required, sand can be considered as an option. Sand can provide traction, and much of it can be removed from runoff by oil/grit separators and catch basin sumps located in stormwater catchments.

Consideration should be given to the location of roof downspouts. Directing downspouts away from high traffic areas, and when possible towards storm water catchments will also reduce the need for road salt application.

In addition to frequent plowing, snow drift control measures may be considered onsite to minimize drifting. Snow drift control measures may include the use of temporary snow fences, or vegetation.

Operational Measures to Minimize Road Salt Use

The RMP will describe winter operational measures that will be implemented during the operation of the Site to minimize the use of road salt. As site specific details are not yet known about the Site, winter maintenance operations have not been finalized. Below describes a Preliminary Operations Plan, this preliminary plan will be analyzed for applicability once site details are known.

The primary method of snow and ice control will be the timely removal of snow on internal roads, parking lots and sidewalks, with a focus on areas of identified with high human and vehicle traffic. A winter maintenance contractor will be retained to remove snow, apply anti-icing/de-icing products and dispose of snow offsite. The contractor will store salt and snow removal equipment offsite, with the exception of totes of road salt near main building entrances during the winter months. Road salt stored in totes will amount to less than the 0.5 tonnes outlined in the Source Protection Plan. Snow removal equipment maintenance and washing will also occur offsite. The contractor will be responsible for moving snow to designated bulk snow storage areas, and when necessary removing the snow offsite.

The Contractor should monitor current and forecasted conditions in order to remove snow quickly after snowfall events with precipitation greater than approximately 5 to 8 cm.

Use of road salt will be limited to conditions, such as freezing rain, where its application is necessary for safety at the facility. The Site employees may add road salt to high traffic areas if conditions are considered to be unsafe. Alternatives to road salt containing no or lower concentrations of sodium will be evaluated and if proven effective may be incorporated into the winter maintenance activities.

It is understood that, when necessary for safety, the amount of road salt applied will be estimated and recorded by the contractor. Application rates will reflect the current and forecasted conditions. The City will communicate the Best Management Practices detailed in Synthesis of Best Practices, Road Salt Management (TAC, 2013) to the Contractor.

Adaptive Monitoring/Management

Once a thorough RMP has been finalized, adaptive monitoring will occur. The first year of operation at the Site, winter maintenance activities should be logged, including the amount of road salt used. This documentation will be used to create baseline winter maintenance conditions at the site. Annually, the RMP should be reviewed to assess the effectiveness of the previous year's winter maintenance operations in comparison to the baseline conditions that are to be established. The objective of this review is to identify opportunities for improvement. The review process will also provide an opportunity to consider emerging alternative ice control products and procedures for use that year. Conducting an annual review will create a dynamic RMP, which will evolve with the maintenance needs of Site and allow for responsible management of winter maintenance.

Summary

Overall, the RMP will consist of a summary of the actions to be taken to manage the application, handling and storage of salt and storage of snow at the Site. The RMP will clearly identify the parties that are responsible for implementing the RMP, and their roles in carrying out the RMP. As the Site is in the planning and design stage, and site specific details are not yet available, the RMP has not been fully developed. The RMP will meet the specific policies outlined in the Greater Sudbury Source Protection Plan (2014), and reduce the threat from road salt application, handling and storage, and storage of snow to the Ramsey Lake drinking water source.

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