



OPERATIONS COMMITTEE AGENDA

Operations Committee Meeting
Monday, February 6, 2017
Tom Davies Square

COUNCILLOR ROBERT KIRWAN, CHAIR

Evelyn Dutrisac, Vice-Chair

4:00 p.m. OPERATIONS COMMITTEE MEETING
COMMITTEE ROOM C-11

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DECLARATIONS OF PECUNIARY INTEREST AND THE GENERAL NATURE THEREOF

PRESENTATIONS

1. Report dated January 17, 2017 from the General Manager of Infrastructure Services regarding Waste Disposal/Processing Methods. **4 - 25**
(ELECTRONIC PRESENTATION) (FOR INFORMATION ONLY)
 - Chantal Mathieu, Director of Environmental Services
 - Aziz Rehman, Manager of Waste Processing and Disposal Services

(A high level review of various waste disposal methods.)
2. Report dated January 16, 2017 from the General Manager of Infrastructure Services regarding Proposed Amendments to Traffic and Parking By-Law 2010-1 - Cycling Facilities. **26 - 30**
(ELECTRONIC PRESENTATION) (RESOLUTION PREPARED)
 - Joe Rocca, Traffic and Asset Management Supervisor

(This report provides the framework for how the City proposes to update the Traffic and Parking By-Law 2010-1 to permit the use of existing in-boulevard cycling facilities and enable future opportunities to implement additional cycling facilities where boulevards are appropriately retrofitted.)

ADDENDUM

CIVIC PETITIONS

QUESTION PERIOD AND ANNOUNCEMENTS

NOTICES OF MOTION

ADJOURNMENT

Presented To:	Operations Committee
Presented:	Monday, Feb 06, 2017
Report Date	Tuesday, Jan 17, 2017
Type:	Presentations

For Information Only

Waste Disposal/Processing Methods

Resolution

For Information Only

Finance Implications

No financial implications.

Background

In Greater Sudbury, household waste is categorized into seven waste streams and handled as follows:

Signed By

Report Prepared By

Aziz Rehman
Manager of Waste Processing &
Disposal Services
Digitally Signed Jan 17, 17

Division Review

Chantal Mathieu
Director of Environmental
Digitally Signed Jan 17, 17

Recommended by the Department

Tony Cecutti
General Manager of Growth and
Infrastructure
Digitally Signed Jan 19, 17

Recommended by the C.A.O.

Ed Archer
Chief Administrative Officer
Digitally Signed Jan 20, 17



This requested report has been written to provide the Committee with a brief introduction of the most commonly used methods of waste disposal and processing. The report will provide a high level overview on the various composting and disposal methods, including waste to energy alternatives. Details on various reuse and recycling processes have been excluded.

WASTE DISPOSAL/PROCESSING METHODS

COMPOSTING

Composting is a biological decomposition process in which solid waste ultimately degrades organic materials to carbon dioxide, water and a stabilized residue called finished compost. Finished compost can be used as a mulch, soil conditioner or a top soil replacement. Depending on the type of household, approximately 20 to 40% of waste can be composted.

These are the various composting processes or methods:

Windrow Method

Windrows composting is carried out where the waste is piled up in triangular strips/rows about 1-2 m high by 3-4 m wide and allowed to degrade. Regular turning of the piles is necessary to add oxygen, which helps the composting process and avoids odours in the heaps. This is a simple process but requires a large land area to cope with the long processing time.

The City of Greater Sudbury uses the windrow process to compost its leaf & yard trimmings and organic materials.

Aerated Static Pile Method

The aerated static pile method involves forming compostable materials into large piles, which are aerated by drawing air through the pile or forcing air through the pile. The pile is not turned. Extracted and processed microbes are also used to enhance the microbial activities for reducing the time and land requirements.

Enclosed Aerated Windrow Method

An aerated windrow is essentially a hybrid between a windrow and an aerated static pile. It uses both forced air (to more directly control oxygen levels and temperatures) and pile agitation, which accelerates the physical breakdown of composting materials and thus the composting process.

Enclosed Aerated Static Pile (Non-Vessel)

This technology uses aerated static pile composting in a heavy-duty plastic (polyethylene) silage bag. Air is blown into the bags and exits through small ports on the sides of the bag.

Modular In-Vessel Containers (Static)

Contained composting systems are modular and individual containers are added as volume increases. The number of units or modules determines the scale of operation. This category of in-vessel systems uses a static composting method which means that turning or stirring of the material is provided when the material is unloaded. Fans supply oxygen and remove moisture and heat. In most cases, air is introduced at the base of the material and flows up through the composting mass. In other examples, air is pulled through the material. In either aeration mode (positive or negative), process air is treated through a biofilter, frequently housed in a separate container.

Modular In-Vessel Tunnels (Static)

Tunnel composting systems are essentially aerated containers that have forced aeration through a floor system, internal air circulation and usually a biofilter. They are loaded from one end and operate in batch mode after the tunnel is fully loaded. Multiple tunnels can be used to attain a nearly continuous operation. Tunnel dimensions vary considerably.

In-Vessel Bays (Mechanical Agitation)

Agitated beds compost materials in “beds” contained by long channels with concrete walls. A turning machine, travelling on top of the beds, agitates and moves the materials forward. Forced aeration is provided through the floor of the channel; the top of the channel is open. Therefore, an agitated bed is technically not a vessel, but falls into this category because it is typically enclosed in a building.

Anaerobic Digestion

Anaerobic digestion is the biological breakdown of organic materials in the absence of oxygen. In the process, biogas containing methane and carbon dioxide is produced. This biogas can be used as a fuel to generate energy. The material remaining after digestion is a partially stabilized organic material, which can then be aerobically cured and used as compost.

THERMAL TREATMENT (ENERGY FROM WASTE)

Thermal treatment is a waste disposal process that involves the destruction of waste using high temperatures. There are two main types of thermal treatment approaches:

Conventional Thermal Treatment

Conventional energy from waste systems are the simplest of thermal treatment systems. Systems operate with excess air to ensure complete destruction of the waste. Systems are designed to ensure nearly total conversion of carbon to energy. Conventional energy from waste technology is very flexible with regards to feedstock type and quality. However, poor quality feedstock can have a negative impact on energy production and/or heat generation.

During processing, the waste is dumped into a storage pit or bunker and then transferred to a combustion chamber which converts the waste into residue ashes and hot gaseous products. The process reduces the volume of waste to

one tenth of the original volume. The ash produced from the burning is collected to recover metals and the balance is shipped for landfilling. Hot gases generated during the combustion processes are used to produce heat, steam or electricity in co-generation projects. The storage bins maintain negative pressures to prevent smell. The plants are also equipped with gas scrubbers and hazardous particulate filters.

Advanced Thermal Treatment

Advanced thermal treatment systems are more complex than conventional energy from waste systems. The three main types of advance thermal treatment systems are as follows:

Pyrolysis (blazing)

Pyrolysis is a process which involves high temperature breakdown of waste (300 to 500°C) in the absence of air. An ongoing energy source is required to generate the heat required to initiate and maintain the pyrolysis process. Pyrolysis requires a very consistent and controlled waste feedstock, usually requiring waste to be pre-processed. The main products resulting from the pyrolysis process are a synthetic gas (syngas), pyrolysis oil and char. The products represent about 50 percent of the initial volume of the original matter. Municipal solid waste is not only heterogeneous, but may differ greatly from one batch to the next, therefore to date, pyrolysis of solid waste has had limited application worldwide but has been used at both pilot-scale and full-scale with some degree of success.

Gasification

Gasification is a high temperature (greater than 700°C) advanced thermal treatment process that does not involve combustion. Controlled amounts of oxygen and steam are used in the gasification process to covert waste into carbon monoxide, hydrogen and carbon dioxide. Similar to pyrolysis, a consistent and controlled (i.e. pre-processed) waste feedstock is required. The main product is a syngas with a very low carbon ash residue. The syngas produced from both the gasification and pyrolysis process is relatively low quality but can be combusted in a secondary process to fuel conventional steam boilers.

Plasma Gasification

Plasma gasification is also a gasification process, but utilizes electrical energy and high temperature (greater than 2000°C) to breakdown waste into its elemental gases. Due to the high levels of energy required associated with high energy costs, plasma gasification is generally not used on its own for processing waste. More typically, if used, it is in a secondary stage to a pyrolysis or gasification system.

REFUSE DERIVED FUEL

Refuse derived fuel is produced through the processing of solid waste for use in thermal treatment facilities. Refuse derived fuel can also be used to create energy and/or heat for power plants or other operations such as cement kilns. The solid waste is sorted, shredded, dried and densified as a waste product, for further use as a fuel in the combustion process. The production of refuse derived fuel has a high risk unless a long term user of the material can be secured.

SANITARY LANDFILLING

Sanitary landfilling is an engineered method for disposal of solid wastes on land, trenches or depressions. Waste is disposed in layers, compacted and covered, along with other environmental control measures to mitigate or minimize the adverse impacts associated with waste degradation.

Intermediate covers are provided during waste disposal operations and a final cover is installed once the area has reached its limit of waste. A cover will minimize infiltration, limit the release of gases, suppress vector problems, limit potential fires and provide a suitable surface for re-vegetation.

Sanitary landfill sites also include surface water management designs to divert storm water which would otherwise infiltrate into the site.

Modern sanitary landfills or landfills of a certain size will collect and treat landfill leachate and gases.

Leachate is the contaminated liquid that seeps through a solid waste disposal site. This liquid may enter the landfill from external sources like rainfall, surface and groundwater, waste deposited or may be produced from decomposition of the waste. Leachate generation rates and characteristics vary widely from landfill to landfill, with the age of the landfill, and even within a given landfill.

Landfill gas is generated during the decomposition of waste. Landfill gas management includes active or passive venting systems and may involve flaring of landfill gases or gas to energy recovery systems.

Modern landfill requirements will also require double bottom liners to contain leachate.

WASTE EXPORTING

Waste export options refer to disposal of wastes outside the jurisdiction and/or control of the City. Export options can be landfill and non-landfill disposal of waste at public or private facilities. In order to be economical, waste exporting typically involves the construction of a waste transfer station, with or without compacting features.

Next Steps

The various waste disposal/processing methods will be reviewed in greater detail during the Solid Waste Master Plan update, scheduled to commence in 2021. The plan will ultimately determine the preferred methods to be used once our current sites have reached capacity in 25 to 30 years or so.

In the meantime, staff will continue to monitor new technologies, legislative changes and opportunities to extend landfill life. This includes, but is not limited to, the expansion of the organic program and the reuse or recycling of additional construction, demolition or renovation type waste materials.

Waste Disposal and Processing Methods

Presented by:

Chantal Mathieu and Aziz Rehman

February 6, 2017



Managing our Waste Streams



Overview

The Committee had requested a high level report on various waste disposal and processing methods, including waste to energy processes. Today's presentation will provided a brief overview of:

- Composting Methods
- Thermal (Heat) Treatment Methods – Waste to Energy
- Sanitary Landfills
- Waste Exporting

A more detailed report will be provided as part of the Solid Waste Master Plan Update, scheduled to commence in 2021.

Composting

- Windrow Method



The City utilizes the windrow method to process its leaf & yard trimmings and organic materials.

Composting

- Aerated Static Pile Method



Composting

- Enclosed Aerated Windrow Method



Aeration pipes
located in
concrete floor

Composting

- Enclosed Aerated Static Pile (Non-Vessel)



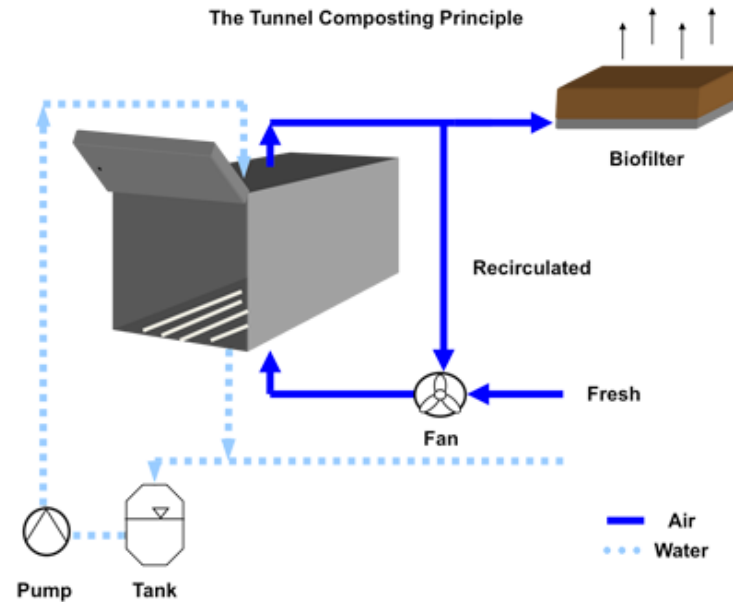
Composting

- Modular In-Vessel Containers (Static)



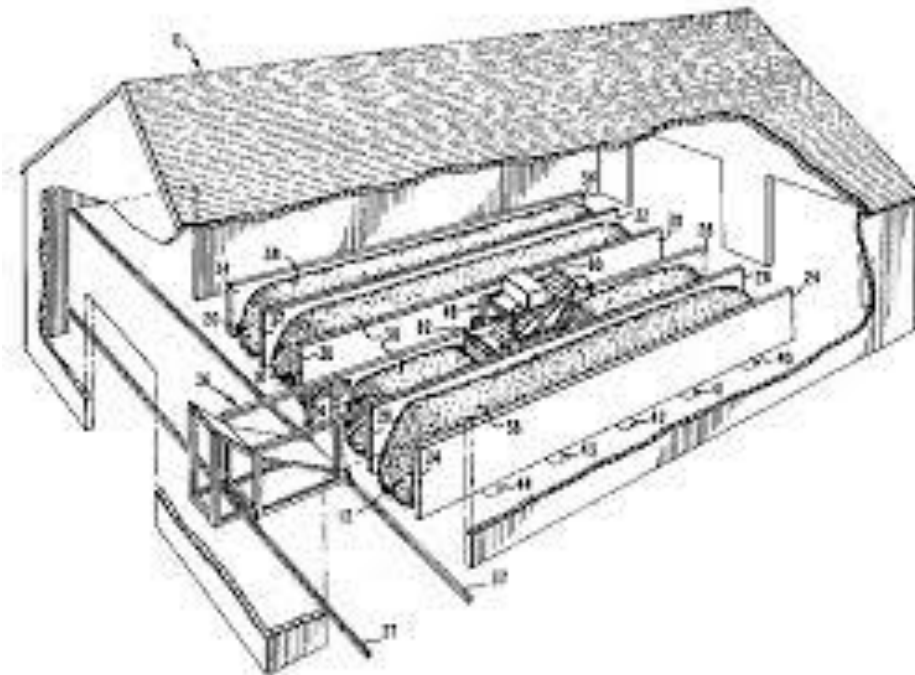
Composting

- Modular In-Vessel Tunnels (Static)



Composting

- In-Vessel Bays (Mechanical Agitation)



Composting

- Anaerobic Digestion



Thermal Treatment Methods (Energy from Waste)

– Conventional Thermal Treatment

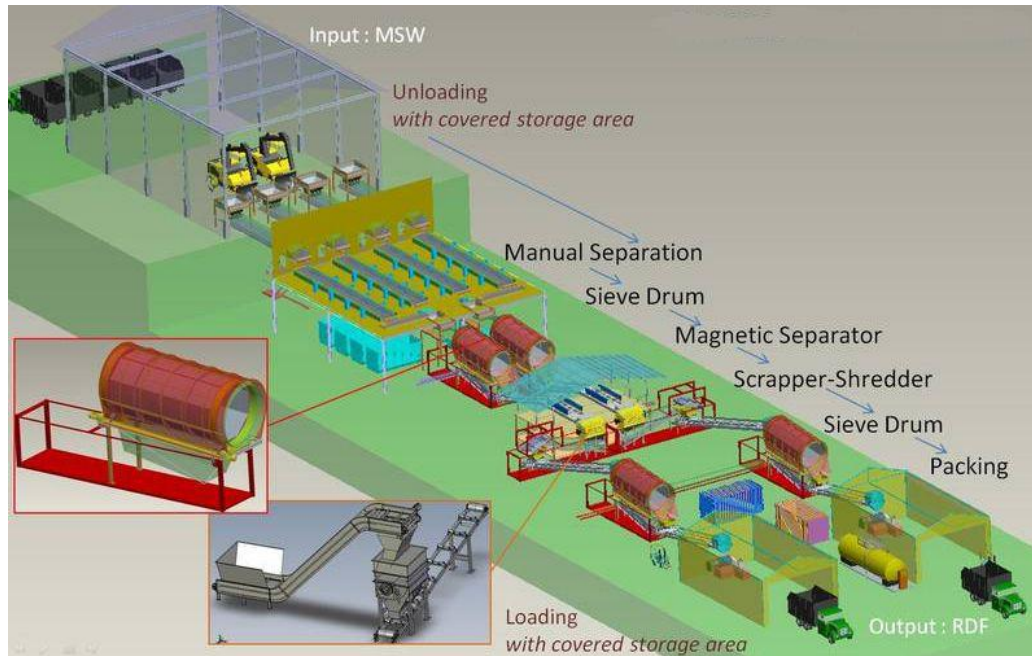


Thermal Treatment Methods (Energy from Waste)

- Advanced Thermal Treatment

- *Pyrolysis*
- *Gasification*
- *Plasma Gasification*

Refuse Derived Fuel

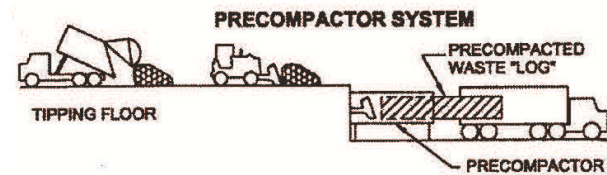
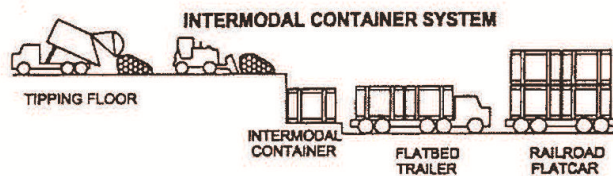
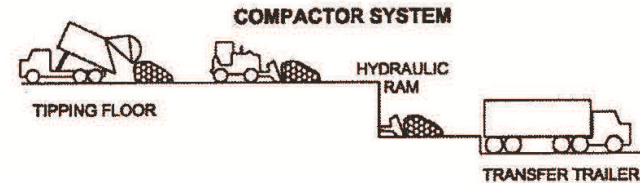
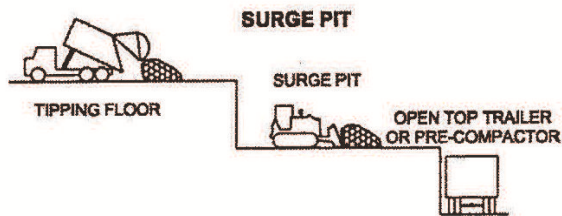
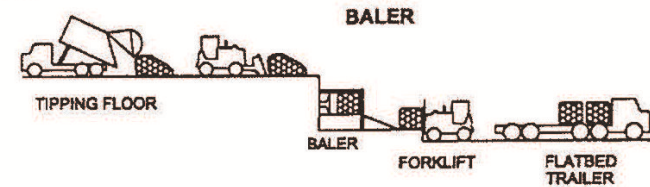
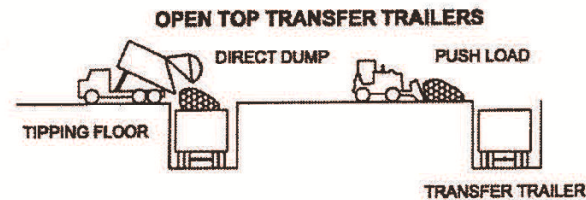


Sanitary Landfills



Sudbury Landfill & Waste Diversion Site

Waste Exporting



Next Steps

- Monitor new technologies
- Monitor rapidly changing legislation
- Expand programs
- Initiate Master Plan Update

Presented To:	Operations Committee
Presented:	Monday, Feb 06, 2017
Report Date	Monday, Jan 16, 2017
Type:	Presentations

Request for Decision

Proposed Amendments to Traffic and Parking By-Law 2010-1 - Cycling Facilities

Resolution

THAT the City of Greater Sudbury designate the boulevard on the east side of Paris Street from Ramsey Lake Road to 200 metres south of York Street as a cycling facility;

AND THAT the City of Greater Sudbury designate the boulevard on the south side of MacIsaac Drive from 240 metres east of Long Lake Road to Algonquin Road as a cycling facility;

AND THAT a by-law be prepared to amend Traffic and Parking By-Law 2010-1 in the City of Greater Sudbury to implement the recommended changes in accordance with the report from the General Manager of Growth and Infrastructure dated January 10, 2017.

Background

In September 2016, Council endorsed the use of designated and appropriately retrofitted boulevards as a cost-effective means to provide physically separated cycling infrastructure for residents. Staff were also directed to expedite the ongoing review of the Traffic and Parking By-law 2010-1 ('By-law') and provide recommendations on how to modify the By-law to allow for the use of appropriately retrofitted boulevards as cycling facilities, as identified in the Transportation Master Plan (TMP).

The TMP recommends the City of Greater Sudbury modify current by-laws to continue to restrict cycling on sidewalks for adults and to allow cycling on paved portions of boulevards, where it is safe to do so for specific routes. This report provides the framework for how staff propose to update the By-law to legalize the use of existing in-boulevard cycling facilities and enable future opportunities to implement in-boulevard cycling facilities.

In-boulevard Cycling Facilities

A 'boulevard' is generally defined as the area between the curb and the sidewalk or the right-of-way limit, which may include any or all of the following elements; paved or grassed areas intended for seasonal snow storage, trees or other plantings, street furniture including waste receptacles, utility poles, signage, and/or illumination standards. While boulevards play an important role in the operation and maintenance of the

Signed By

Report Prepared By

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Active Transportation Coordinator
Digitally Signed Jan 16, 17

Division Review

David Shelsted
Director of Roads & Transportation
Digitally Signed Jan 16, 17

Recommended by the Department

Tony Cecutti
General Manager of Growth and Infrastructure
Digitally Signed Jan 19, 17

Recommended by the C.A.O.

Ed Archer
Chief Administrative Officer
Digitally Signed Jan 20, 17

City's road network for snow storage during the winter months, the opportunity to allow cyclists to use certain designated boulevards during the summer months is being explored, particularly where recommended by the TMP.

For use as a cycling facility, an existing boulevard must have sufficient width and would ideally be retrofitted by adding appropriate paint markings, removing obstacles such as signs and ensuring curbs are designed and integrated at intersections to provide for safer cyclist movements. A retrofitted boulevard may also be referred to as a "raised cycle track", which is formally defined as a cycling facility adjacent to, but vertically separated from motor vehicle travel lanes to the level of the sidewalk or an intermediate level between that and the roadway (OTM Book 18). Raised cycle tracks are typically implemented adjacent to roadways with higher motor vehicle speeds and volumes along key cycling corridors to provide a physically-separated alternative for cyclists to riding in mixed traffic. The City currently has two such facilities; on Paris Street from Ramsey Lake Road to south of York Street (Exhibit 'A') and on a section of MacIsaac Drive between Long Lake Road and Algonquin Road (Exhibit 'B').

It is important to recognize that not all existing boulevards are or will be considered for use as raised cycle tracks, but only those that have been appropriately designated and retrofitted. The City's two existing raised cycle tracks are currently illegal under the Traffic and Parking By-law 2010-1. In response to Council direction, staff are proposing an approach to update the By-law to legalize existing cycle tracks and enable future opportunities to deliver similar infrastructure to support active transportation. Where a long term (11+ years) solution has been recommended in the TMP, retrofits to a boulevard may be completed only as an interim solution, while a permanent solution is planned.

Proposed Amendments to Traffic and Parking By-law 2010-1

The Traffic and Parking By-law 2010-1 regulates traffic and parking within the City of Greater Sudbury and is updated from time to time to remain current with legislative requirements and changes as well as industry and municipal best practices.

Roads and Transportation staff are working in partnership with Legislative Services to prepare an update to the Traffic and Parking By-law 2010-1 to legalize existing in-boulevard cycling facilities and enable future opportunities to implement this type of infrastructure to promote active transportation in the City.

Updates to the By-law will include:

PART I: DEFINITIONS

- Addition of new and updated definitions for various terms including, but not limited to, "Bicycle Lane", "Boulevard", "Cycle Track", "Footpath", "Highway", "Pedestrian" and "Shoulder"

PART IV: OPERATION OF VEHICLES

- Revised Section 29 "Bicycle Lanes" to be more inclusive and comprehensive; including new provisions for regulating all forms of recommended cycling infrastructure in the TMP, in line with provincial guidelines and best practices

SCHEDULE T: DESIGNATED BICYCLE LANES

- Revised title of Schedule from "Designated Bicycle Lanes" to "Designated Cycling Facilities"; and
- Complete update of Schedule T to provide a comprehensive list of all designated cycling facilities in the City of Greater Sudbury, not just those defined as "Bicycle Lanes"

Summary and Next Steps

Proposed amendments to the Traffic and Parking By-law 2010-1 outlined in this report will provide the legal

framework for staff to regulate the use of existing raised cycle tracks and begin planning to appropriately retrofit boulevards on some roads, as part of the 5-year Roads Capital Program and in line with recommendations of the Council approved TMP. This report seeks Council approval to designate existing in-boulevard cycling facilities on Paris Street and MacIsaac Drive as raised cycle tracks, once appropriate enabling amendments to the By-law are completed. Opportunities to implement additional boulevard retrofits will be completed as required and as funds become available.

Staff will work with Communications and Community Engagement to inform residents when the new by-law is enacted and when new infrastructure is planned and/or delivered.

Financial Implications

Recommendations of this report may be carried out within existing approved budget and staff complement.

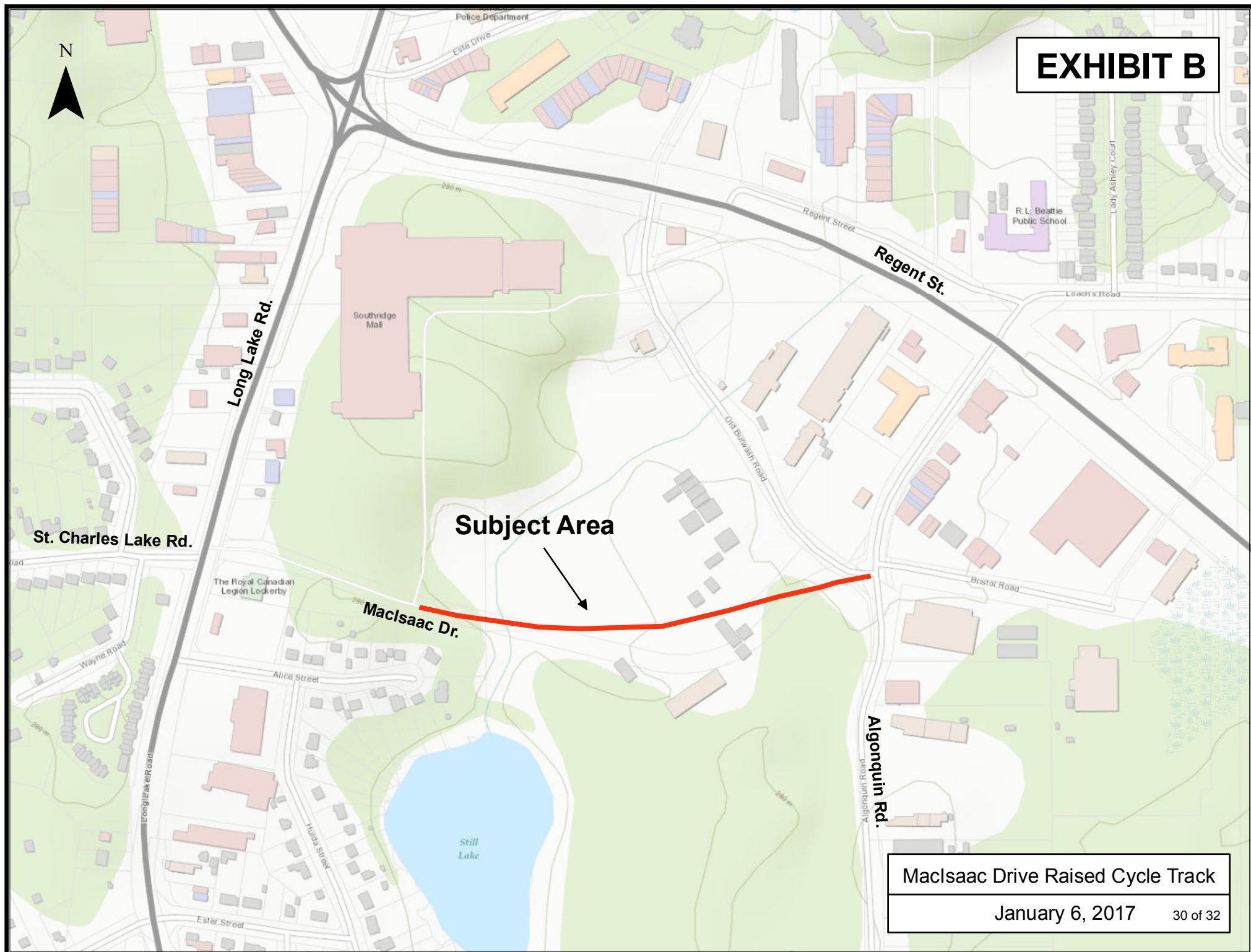
EXHIBIT A



Paris Street Raised Cycle Track

January 6, 2017

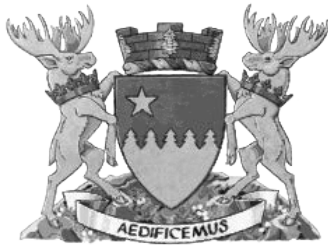
EXHIBIT B



MacIsaac Drive Raised Cycle Track

January 6, 2017

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City of Greater Sudbury Charter

WHEREAS Municipalities are governed by the Ontario Municipal Act, 2001;

AND WHEREAS the City of Greater Sudbury has established Vision, Mission and Values that give direction to staff and City Councillors;

AND WHEREAS City Council and its associated boards are guided by a Code of Ethics, as outlined in Appendix B of the City of Greater Sudbury's Procedure Bylaw, most recently updated in 2011;

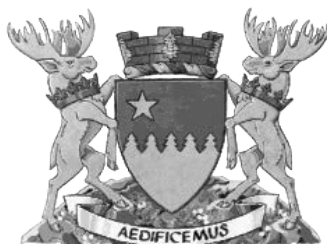
AND WHEREAS the City of Greater Sudbury official motto is "Come, Let Us Build Together," and was chosen to celebrate our city's diversity and inspire collective effort and inclusion;

THEREFORE BE IT RESOLVED THAT Council for the City of Greater Sudbury approves, adopts and signs the following City of Greater Sudbury Charter to complement these guiding principles:

As Members of Council, we hereby acknowledge the privilege to be elected to the City of Greater Sudbury Council for the 2014-2018 term of office. During this time, we pledge to always represent the citizens and to work together always in the interest of the City of Greater Sudbury.

Accordingly, we commit to:

- Perform our roles, as defined in the Ontario Municipal Act (2001), the City's bylaws and City policies;
- Act with transparency, openness, accountability and dedication to our citizens, consistent with the City's Vision, Mission and Values and the City official motto;
- Follow the Code of Ethical Conduct for Members of Council, and all City policies that apply to Members of Council;
- Act today in the interest of tomorrow, by being responsible stewards of the City, including its finances, assets, services, public places, and the natural environment;
- Manage the resources in our trust efficiently, prudently, responsibly and to the best of our ability;
- Build a climate of trust, openness and transparency that sets a standard for all the City's goals and objectives;
- Always act with respect for all Council and for all persons who come before us;
- Ensure citizen engagement is encouraged and promoted;
- Advocate for economic development, encouraging innovation, productivity and job creation;
- Inspire cultural growth by promoting sports, film, the arts, music, theatre and architectural excellence;
- Respect our historical and natural heritage by protecting and preserving important buildings, landmarks, landscapes, lakes and water bodies;
- Promote unity through diversity as a characteristic of Greater Sudbury citizenship;
- Become civic and regional leaders by encouraging the sharing of ideas, knowledge and experience;
- Work towards achieving the best possible quality of life and standard of living for all Greater Sudbury residents;



Charte de la Ville du Grand Sudbury

ATTENDU QUE les municipalités sont régies par la Loi de 2001 sur les municipalités (Ontario);

ATTENDU QUE la Ville du Grand Sudbury a élaboré une vision, une mission et des valeurs qui guident le personnel et les conseillers municipaux;

ATTENDU QUE le Conseil municipal et ses conseils sont guidés par un code d'éthique, comme l'indique l'annexe B du Règlement de procédure de la Ville du Grand Sudbury dont la dernière version date de 2011;

ATTENDU QUE la devise officielle de la Ville du Grand Sudbury, « Ensemble, bâtissons notre avenir », a été choisie afin de célébrer la diversité de notre municipalité ainsi que d'inspirer un effort collectif et l'inclusion;

QU'IL SOIT RÉSOLU QUE le Conseil de la Ville du Grand Sudbury approuve et adopte la charte suivante de la Ville du Grand Sudbury, qui sert de complément à ces principes directeurs, et qu'il y appose sa signature:

À titre de membres du Conseil, nous reconnaissons par la présente le privilège d'être élus au Conseil du Grand Sudbury pour le mandat de 2014-2018. Durant cette période, nous promettons de toujours représenter les citoyens et de travailler ensemble, sans cesse dans l'intérêt de la Ville du Grand Sudbury.

Par conséquent, nous nous engageons à :

- assumer nos rôles tels qu'ils sont définis dans la Loi de 2001 sur les municipalités, les règlements et les politiques de la Ville;
- faire preuve de transparence, d'ouverture, de responsabilité et de dévouement envers les citoyens, conformément à la vision, à la mission et aux valeurs ainsi qu'à la devise officielle de la municipalité;
- suivre le Code d'éthique des membres du Conseil et toutes les politiques de la municipalité qui s'appliquent à eux;
- agir aujourd'hui pour demain en étant des intendants responsables de la municipalité, y compris de ses finances, biens, services, endroits publics et du milieu naturel;
- gérer les ressources qui nous sont confiées de façon efficiente, prudente, responsable et de notre mieux;
- créer un climat de confiance, d'ouverture et de transparence qui établit une norme pour tous les objectifs de la municipalité;
- agir sans cesse en respectant tous les membres du Conseil et les gens se présentant devant eux;
- veiller à ce qu'on encourage et favorise l'engagement des citoyens;
- plaider pour le développement économique, à encourager l'innovation, la productivité et la création d'emplois;
- être une source d'inspiration pour la croissance culturelle en faisant la promotion de l'excellence dans les domaines du sport, du cinéma, des arts, de la musique, du théâtre et de l'architecture;
- respecter notre patrimoine historique et naturel en protégeant et en préservant les édifices, les lieux d'intérêt, les paysages, les lacs et les plans d'eau d'importance;
- favoriser l'unité par la diversité en tant que caractéristique de la citoyenneté au Grand Sudbury;
- devenir des chefs de file municipaux et régionaux en favorisant les échanges d'idées, de connaissances et concernant l'expérience;
- viser l'atteinte de la meilleure qualité et du meilleur niveau de vie possible pour tous les résidents du Grand Sudbury.