Public Report

To:	Safety and Facilities Services Committee
From:	Adam Grant - Commissioner, Safety and Facilities Services
Report Number:	SF-23-29
Date of Report:	September 12, 2023
Date of Meeting:	September 18, 2023
Subject:	Feasibility of adding trail lighting between Bruce Street and Front Street on the existing Michael Starr Trail
Ward:	Ward 4 and Ward 5
File:	03-05

1.0 Purpose

On April 3, 2023, Council carried the following Motion in relation to SF-23-15 – Lighting Options for the Michael Starr Trail (Ward 5):

That Staff investigate the feasibility and options for lighting the Michael Starr Trail between Bruce Street and Front Street and report back in the Third Quarter, 2023.

This purpose of this report is to respond to the Council direction noted above.

2.0 Recommendation

That the Safety and Facilities Services Committee recommend to City Council:

That Report SF-23-29 dated September 12, 2023 concerning the feasibility of adding trail lighting between Bruce Street and Front Street on the existing Michael Starr Trail be referred to staff for consideration as part of future Capital Budgets.

3.0 Executive Summary

NA

4.0 Input From Other Sources

Community and Operations Services

Corporate Security

5.0 Analysis

On April 5, 2023 the City retained a consultant to review the feasibility of adding lighting to the Michael Starr Trail between Bruce Street and Front Street. The following summarizes design considerations, constraints, and options.

5.1 Site Considerations and Constraints

5.1.1 Corporate Security has identified the train track area, east-west walkway along the tracks, and sections of the trail far from vehicular access roads as areas that exhibit high levels of unwanted activities during the day. It should be considered that providing lighting to these areas may encourage unwanted gatherings and loitering during the night.

5.1.2 Most of the adjacent properties along the trail are residential so luminaires should be provided with full cut-offs to focus lighting along the pathway and to avoid lighting the adjacent properties and surrounding areas.

5.1.3 The City of Oshawa requires that all site lighting be full cut-off luminaires, Dark Sky Compliant and that lighting levels shall not exceed 0.1 fc (foot candles) at the shared property lines.

5.1.4 There is a one-meter setback requirement for installation of fixtures and furnishings along the trail.

5.1.5 There are no existing mandates or requirements in the City of Oshawa to provide lighting or maintain a certain level of lighting along trails.

5.1.6 It has been confirmed by Community and Operations Services that this portion of the Michael Starr Trail is currently maintained year-round.

5.2 Analysis and Design Considerations

5.2.1 Industry standard Crime Prevention Through Engineering Design (CPTED), is a primary design consideration. As such, it is recommended by Corporate Security that the use of bollards be excluded from design considerations due to the potential for tampering and vandalism.

5.2.2 Utility Infrastructure: The consultant reached out to the local electrical utility company, Oshawa Power & Utilities Corporation (OPUC), for coordination on how the lighting along the trail could be serviced from their nearby infrastructure. In reviewing with OPUC, it was discovered that the existing electrical infrastructure that OPUC has along the trail is high voltage. Additionally, they do not currently have any 120V/240V service lines that run along the trail route. The electrical service would have to come from intersecting streets or multiple step-down transformers located along the trail. OPUC confirmed that the cost for any transformer requirements to provide power to the lighting along the trail would be

covered by the City for this project. OPUC will be responsible for providing power to the first luminaire in a series of daisy chained fixtures, and the City's contractors will be responsible for the remainder of the installation. OPUC advised that final costs associated with providing power to the trail will be determined upon completion of the detailed design.

5.2.3 Lighting Design: The City does not have specific requirements for lighting levels along trails. The only applicable requirement indicates any lighting to be installed at a minimum of 1m away from the trail to maintain clearances for maintenance. The Illuminating Engineering Society Handbook (IES) was referenced for general guidelines for exterior lighting of pathways. Although there are no specific guidelines for exterior pathways, a general consensus for exterior lighting for security purposes is to achieve an average maintained value of 0.3 fc. A photometric analysis design of the trail was completed and achieved an average of 0.5 fc utilizing a luminaire with a lumen output of 3,600 mounted on an 8' pole with a 2.75" base (total mounting height of 10.75') and spaced approximately 20m apart. The height of the luminaire was chosen to limit the lighting spread while also considering the need to keep it high enough off the ground as to limit the chance it would be vandalized. This configuration will result in a total of 54 luminaires. The luminaires on the trail will be equipped with a photocell for operation only during sunset and sunrise. For this study, we assumed the total hours of darkness in a day to be 8 hours. The electricity rate for this study has been assumed to be 10.3c/kWh.

5.2.4 Luminaire Options: Various luminaire options were considered for this study with the high consideration given to the location of the trail with respect to electrical infrastructure, its length and risk of vandalism. The options provide robust product options as well as provide an option to negate the requirement of an electrical service from OPUC.

5.2.5 Existing trail conditions: It was confirmed that some lighting is existing along the trail but only provides minimal lighting with some areas not being covered at all. The current lighting consists of a mixture of cobra heads, wall packs on buildings adjacent to the trail (not City owned) and lighting spill from luminaires dedicated to parking lots located adjacent to the trail.

5.3 Options

5.3.1 **Option 1:** Lighting connected to hard-wired electrical service with modern style luminaire. This option includes post top style luminaires installed on 8' poles with 2.75' bases. There are fixtures available that can provide attractive lighting at night and 0% up-light for Dark Sky compliance. The model required for this application would consume 36W per luminaire. During night hours (operation based on photocell), there are also options to operate at 25% for energy savings. The estimated costs for this option would be: **$700,000**

5.3.2 **Option 2:** Lighting connected to hard-wired electrical service with general style luminaire. This option includes general area luminaire mounted on 8' poles with 2.75' bases. There are luminaire options that provide 0% up-light for Dark Sky

compliance. The model required for this application would consume 40W per luminaire. During night hours (operation based on photocell), it will operate at 50% and increase output to 100% when motion is detected. The estimated costs for this option would be: **$490,000**

5.3.3 **Option 3:** Solar powered luminaires. This option includes solar powered pole mounted luminaires installed on 8’ poles with 2.75’ bases. This luminaire would come equipped with solar panels for power and is not required to be connected to the electrical utility grid. There are products available with various pre-programed operating profiles to provide programmable fixture dimming during night hours as desired. Remote monitoring may not be available for this product. However, such luminaires can provide energy without sunlight for 10 days. Products and fixtures can be procured that are licensed for Canadian winters and rated for operation between -40 and +60 degrees Celsius. The estimated costs for this option would be as: **$1,050,000**

5.3.4 **Option 4:** Providing luminaires on existing utility poles. This option includes utilizing the existing utility poles to install new luminaires to light the path. The utility confirmed this type of installation is possible however due to the age of the poles along the trail and the lack of an existing secondary bus, a full engineering analysis will need to be done to determine the feasibility. The result of this analysis by the utility will increase the costs of this project significantly. Luminaires in this installation would align with a common Cobra-Head style. The model required for this application would consume 20W per luminaire. In stand-alone operation, luminaires can be installed with a motion sensor to provide dimmed operation at 10% and increase to 100% when motion is detected. The dimmed operation level can be adjusted. In the networked control operation, the multi-sensors work as an input devices. The sensors can then be configured through the Interact City lighting management system. The network systems can connect a maximum of 512 sensors. The additional costs to provide a fixture on a network system is $150 each. The utility confirmed there are 40 existing poles along the path within the limits of our investigation. There are utility poles located throughout most of the path however there would be some areas without luminaires if this option was pursued exclusively. The estimated costs for this option would be: **$495,000**

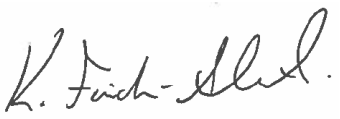
5.3.5 **Option 5:** No installation of luminaires. This option is presented to account for all available options. There is no mandate from the City for this trail to be provided with luminaires and there are many trails within the City that currently do not have lighting along the trail. There is currently some lighting along the trail that would provide minimal lighting. There is no guarantee that providing additional lighting along the trail would enhance security and could actually lower overall security along the trail by inviting vandalism through the introduction of electrical infrastructure.

6.0 Financial Implications

There are no financial implications directly related to this report.

7.0 Relationship to the Oshawa Strategic Plan

This report aligns with Oshawa Strategic Goals of: Accountable Leadership; Social Equity; and, Environmental Responsibility.



Kevin Alexander, Director,
Facilities Management Services

Adam Grant - Commissioner, Safety and Facilities Services
Safety and Facilities Services