The Corporation of the City of Windsor
Manage Infrastructure

Final Internal Audit Report

8 January 2016

Distribution List

For action

Mark Winterton, City Engineer (Project Sponsor)
Onorio Colucci, Chief Financial Officer & City Treasurer
Dwayne Dawson, Executive Director of Operations
Wesley Hicks, Senior Manager, Infrastructure and Geomatics/Deputy City Engineer
Melissa Osborne, Senior Manager of Asset Planning
Diana Digirolamo, Technical Support Manager
Phong Nguy, Manager of Contracts, Field Services & Maintenance

For information

Helga Reidel, Chief Administrative Officer
Stephen Cipkar, Executive Initiatives Coordinator

Limitations & Responsibilities

pwc

Contents

Summary of Internal Audit Results

The engagement has been performed in accordance with the scope of work per Appendix A**.**

Report Classification

For the scope period, January 1, 2014 – December 31, 2014, management has designed and implemented controls in many areas of the Manage Infrastructure process. Throughout testing, it was noted that in the majority of cases, controls were operating as designed, in areas such as budget planning, business interruption notifications, as well as reporting of information. However, there were several design and operating deficiencies noted throughout the review, which are further discussed below.

Control Environment

The activities of this process are guided by two documents:

- The City of Windsor Official Plan: this document is prepared by various departments throughout the City, with a section reserved for the City's infrastructure management strategy. This sets out the City's goals, objectives and general policies involving the City's transportation system. It addresses the details of its desired infrastructure system, traffic management strategy, and other infrastructure strategies. This publically available document must be observed in regards to any infrastructure management decisions.

- The Capital Budget: this document is created on an annual basis and dictates the City's planned projects for the current year and intended projects for the following five, with details as to what funds will be required to complete them. The projects are initially determined by senior members of the Office of the City Engineer and reviewed by the Corporate Leadership Team before being formally approved by Council. This document serves to carry out the strategy as dictated in the City's Official Plan.

The CLT and City Council are responsible for determining the final budget as all budget issues are reviewed by the CLT and the final budget approved by City Council.

Risk Assessment

The key risks of the process were analyzed by the Office of the City Engineer, while assessing the impact of carrying out its infrastructure management in consideration of the impact it would have on residents and businesses, as well as determining the prioritization of which assets to repair or replace.

Control Activities

The process relies on its asset inventory system, Hansen. The system tracks all known assets, including age, type, and maintenance history. It is updated upon the closing of work orders and is managed by Technical Support. The system is also available to a small number of individuals in various departments who carry out the maintenance of infrastructure assets.

The effectiveness of IT general controls, application controls and reporting integrity controls was beyond the scope of this review but have a direct relation to the effectiveness of the controls and information we tested.

Information & Communication

Upon approval of the capital budget, departments have the authorization to begin planning for their projects for the year, including the design of specifications to begin the procurement process where applicable. Before the project

can begin, the department will notify residents and businesses of potential interruptions in their access and use of roads and other City services.

Monitoring

Before any work can begin on current year projects, the capital budget is reviewed by the Corporate Leadership Team as well as City Council (who are responsible for its approval). On a semi-annual basis, a budget-to-actual variance report is prepared by the Asset Planning group which analyses each capital project, requiring an explanation for significant variances.

Hansen is managed and overseen by the Technical Support group. They are responsible for the integrity of information within the system. They provide assistance with the scheduling of infrastructure asset inspections for roads, alleys, bridges, and sidewalks, with asset maintenance and inspection programs, and with associated record-keeping. WinCan is managed and overseen by the Field Services group. The Field Services group coordinates the scheduling and performance of CCTV sewer inspections and uses WinCan to record sewer inspections and analyze the results. Field Services is also responsible for construction inspection, quality assurance/control, surveying services, specifications development, Ontario 1 Call functions, and Bylaw 25 enforcement.

Based on the controls identified and tested as part of the Internal Audit of the City's Manage Infrastructure process and controls we have determined that there is reasonable evidence to indicate that:

	No or limited scope improvement	No Major Concerns Noted	Cause for Concern	Cause for Considerable Concern
Controls over the process are designed in such a manner that there is:			✔	
Sample tests indicated that process controls were operating such that there is:		✔		

Management has provided comprehensive action plans, which we believe will address the deficiencies noted.

Summary of Positive Themes

During the review of the processes and controls, the following areas were noted as positive themes:

Asset Catalog System: The Technical Support group utilizes an asset cataloging system, Hansen, to track known assets, age of the asset, maintenance history and inspection results. The information maintained in this system is used to support current and future decisions regarding the execution of the infrastructure management strategy. This is supported by a Hansen User Guide, which provides guidance to systems users as well as those carrying out work in the field to assist them in submitting work order records to update the system. This provides a database of City-owned infrastructure assets, with a standard methodology for updating and maintaining its data to drive future decision making.

Development of an Asset Management Plan: The Asset Management Plan (approved by Council in December 2013) is being further developed to enhance management's decision making capability by estimating future construction costs to assist in determining what type of work to carry out for an asset and when (i.e. repair vs replace). This Plan promotes a greater focus in terms of carrying out preventive maintenance, as well as prescribing how to reduce the City's backlog of assets in need of attention. This Plan is overseen by the Asset Planning Steering Committee, which is comprised of various members of the Corporate Leadership Team and the

Senior Management Team, who provide guidance to allow for its development and implementation. This plan, upon full implementation, will be a mechanism to enhance the City's decision making capabilities in regards to infrastructure management.

Inspection and Maintenance Plans: All infrastructure assets are assigned a regular cycle of either inspections or maintenance programs. Inspections and maintenance are tracked by Technical Support, who are also responsible for the input of these activities into Hansen. This regular cycle provides an opportunity to determine whether assets in operation are in need of attention or whether unexpected circumstances have caused a decline in its useful life.

Franchise Agreements: Franchise agreements are in place with several companies who have assets buried beneath City roads and sidewalks. These agreements set out the rights, responsibilities and obligations of both parties in regards to what is required of them when performing their own work which could interfere with the other's assets. This lessens potential ambiguity and allows for consistent outcomes.

Preventive Maintenance Programs: In an attempt to prolong the useful lives of its assets, or require a full replacement of an asset, the City has several preventive maintenance strategies, including pothole patching, road rehabilitation, inspection of assets, sewer flushing and smoke testing and recoating, among others. This is designed to extend an asset's useful life and reduces the overall backlog of assets in need of immediate attention.

Business Interruption Notification: Before any non-routine work is to be carried out, the City informs property owners in affected areas of the work to be done, as well as the expected date of completion and contact information at the City. This provides those affected with a reasonable expectation of how long the interruption will last and a means to contact the City should they require further information.

Inspection Training Manuals: It was noted that the Technical Support Group has created inspection training manuals for some infrastructure assets which include the standards of the City, different types of materials to inspect, details of potential deficiencies, scoring, and reporting the results. This provides for a consistent approach to carrying out this function, as well as a reference point for new employees.

Summary of Findings

Finding #	Topic	Rating[1]			Management Action
		Significant	Moderate	Low	
Infrastructure Governance					
1	Budgeting of maintenance costs		X		Maintenance costs to be presented with future capital projects – Senior Manager of Asset Planning – 2016 Q4
2	Asset Planning Meetings			X	Asset Planning Steering Committee will meet four times annually and will minute all meetings – Senior Manager of Asset Planning - Complete
3	Prioritization Protocol		X		Enhanced transparency and consistency of the prioritization methodology – City

#					Engineer – 2017 Q2
Maintenance and Replacement of Assets					
4	Review of service request trends		X		Management will add an agenda item to monthly meeting to address service requests – 2016 Q4
5	Sewer Condition Ratings	X			Multi-disciplinary and multi-year business process and technical assessment initiative – 2016 Q2 to 2018 Q4
6	CCTV Usage	X			Explore new technologies to reduce reliance on CCTV – Manager of Contracts, Field Services & Maintenance – 2017 Q2
7	Number of Road Inspectors	X			Formalization of road inspection procedures manual – Manager of Contracts, Field Services & Maintenance – 2017 Q2
8	Work Orders Closed Without Formal Approval			X	Review of existing work order forms to ensure appropriate authority is identified – Manager of Contracts, Field Services & Maintenance – 2017 Q2
Total Audit Findings		**3**	**3**	**2**	

Summary of Significant Findings

As noted above in the Summary of Audit Findings, Internal Audit has classified a total of three (3) findings as "significant" which require management action. Here is a brief summary of the significant area where the City's Manage Infrastructure processes should be improved:

Sewer Condition Ratings

- It was noted that in a sample of 19 sewer inspections selected for testing, in each instance, the date of reference noted in Win Can did not match that in Hansen in each selection. This was caused by data issues in the reference field (date) in WinCan. In addition, manual processes were noted in transferring the data between systems, resulting in many inspection results not being provided to the Technical Support group and included in Hansen in a timely manner. It was also noted that the WinCan database resides on a standalone computer not subject to standard City IT environment controls.

CCTV Usage

- It was noted through data analytics that since the CCTV program's inception in 1991, approximately 23.34% of sanitary sewer segments had been inspected, while 16.97% of storm sewers have been inspected. This is caused by CCTV being the primary means of inspection. While established targets were not noted for this program, this appears to be low for a near-25 year period.

Number of Road Inspectors

- In a sample of 19 road inspections, it was noted that every road inspection was carried out by one individual. Upon further discussion with management, it was noted that he is the sole road inspector at the City, presenting the risk of over reliance on one individual and potential loss of knowledge should the individual no longer work for the City.

Management Comments

Management generally agrees with the findings of the report, recognizing that the Audit represents a "snapshot in time". Significant progress has been made on most of the findings since the date of this report. In particular, the issue of Sewer Condition Ratings and CCTV Usage has undergone a thorough internal review resulting in many improved processes and procedures as noted in the Management Action Plan comments. We look forward to further implementation of our Action Plans with a goal of continuous improvement.

Name: Mark Winterton
Title: City Engineer and Corporate Leader for Environmental, Transportation, Parks and Facilities
Date: 8/01/2016

Detailed Observations

Findings & Action Plans

Finding	Rating[1]	Recommendation & Action Plan
1. Budgeting of maintenance costs		
Observation When a project is approved, the initial costs are considered, although future maintenance and operational costs are not always provided in future budgets on a project-by-project basis.	**Overall** Moderate **Impact** Medium	**Recommendation** Management has been developing an Asset Management program since 2013. The list of current projects for the program include the Levels of Service initiative, which will provide projections to enable more informed decision making in regards to determining all costs associated with owning an asset, including but not limited to capital, operational and maintenance costs as well as any renewal or rehabilitation costs. It is recommended that management explore the options available through the program to determine anticipated preventive or reactive maintenance costs. This information can then be used on an ongoing basis in determining whether sufficient funds will be available when needed. Following the scoping period, as part of the Levels of Service initiative, management developed performance measures to consider condition ratings of assets, asset failures, and time-based measures. As part of this project, management should consider formally reporting performance measures to keep City Council and management aware of its results to date, as well as in comparison to past performance. This will illustrate current trends and provide a clearer picture of current success and challenges.

---

[1] See Appendix B for Basis of Finding Rating and Report Classification

		Likelihood	Management Action Plan
		Likely	Management concurs with the finding. Necessary funding and a funding source will be identified for approval by council to account for future maintenance costs of approved capital projects during budget deliberations. Consultation with the Contracts, Field Services and Maintenance Division shall be done prior to budget deliberations to account for the necessary ongoing and future maintenance requirements for all future proposed capital projects. Reporting of performance to Council on an annual basis will form part of the ongoing maintenance regime.
Implication By not assessing future maintenance, renewal or rehabilitation costs, the City leaves itself exposed to potential shortfalls in required funds for maintenance costs in future years. Furthermore, it could reduce management's ability to conduct preventive maintenance and be required to incur a larger repair cost at a later date.			
Root Cause The current budgeting process considers only the costs to implement capital projects, not the long-term maintenance costs. Operating costs including repairs and maintenance relating to large capital projects are not always reflected in future operating budgets.			**Responsibility** Senior Manager of Asset Planning **Due Date** Q4 2016

Finding	Rating[2]	Recommendation & Action Plan
2. Asset Planning Meetings		
Observation The Asset Planning Steering Committee is comprised of various members of the Senior Management team across multiple disciplines. A main function of this group is to oversee the design and implementation of the Asset Management Plan. The group did not meet its target of meeting quarterly (as per the minutes of the January 17, 2014 meeting), nor were meeting minutes taken in all instances. There is evidence that the group met 3 out of an expected 4 times. **Implication** By not keeping a record of minutes from a meeting, key decisions reached, or important events will not be recorded for reference should a conflict ever arise. **Root Cause** Minutes were not taken at one meeting due to there being no action items raised during the meeting	**Overall** Low **Impact** Low **Likelihood** Likely	**Recommendation** Management should require that all meetings involve an approved set of minutes, regardless of the length of meeting or content involved. Furthermore, should a meeting be cancelled, a note confirming the cause, rationale and need (or lack thereof) for a reschedule of the cancellation should be maintained in the Committee's records. **Management Action Plan** The one meeting which was missed was solely a presentation to the committee with no action items. It has been noted that all meetings even if there are no action items or value added discussions which took place and need to be recorded, must at least put forward a document stating none existed. This is in effect as of the first draft of the findings in 2015. . **Responsibility** Senior Manager of Asset Planning **Due Date** Complete

---

[2] See Appendix B for Basis of Finding Rating and Report Classification

Finding	Rating[3]	Recommendation & Action Plan
3. Prioritization Protocol		

Finding	Rating[3]	Recommendation & Action Plan
Observation While the City is faced with a backlog of assets in need of repair, there is the need to prioritize projects. This is addressed during the creation of the recommended capital budget. There is a further requirement to prioritize unplanned service requests on a day-to-day basis. It was noted that this prioritization process is not documented.	**Overall** Moderate **Impact** Medium **Likelihood** Likely	**Recommendation** Management should formally document its prioritization protocol in regards to addressing infrastructure assets in need of repair, as well as the prioritization of its unplanned service requests. This should set out a criteria in decision making, giving more weight to factors which involve public safety.
Implication By not having a prioritization protocol documented, management could make decisions that are not consistent with prior years, or which would not be in accordance with the City's best interests. This also reduces the City's ability to appear transparent in regards to the projects they select to execute.		**Management Action Plan** As part of the 20 year service level funding project for roads, guidelines for the selection of roads was documented and presented to Council. Management will expand upon the guidelines for infrastructure prioritization through the use of a rating matrix which will be developed to assess the condition of the assets and assign a ranking that will be used in conjunction with information from other utility providers in order to determine the infrastructure prioritization. The guidelines and rating matrix will be developed and documented for consistency and transparency. Meetings with other stakeholders will continue to be held regularly to discuss priorities and minutes of those meetings will be documented. Unplanned service requests come in daily from 311 and are dispatched to the appropriate crew to be completed. Priorities are communicated verbally by the supervisors depending on the service request. Management will document the priority protocol that will serve as a guide for the supervisors. Safety related issues will continue to be given top priority. **Responsibility** City Engineer **Due Date** Q2 2017
Root Cause While management is able to set priorities in terms of which projects to carry out in the current year and on a day-to-day basis, a formal protocol has not yet been drafted.		

---

[3] See Appendix B for Basis of Finding Rating and Report Classification

Finding	Rating[4]	Recommendation & Action Plan
4. Review of service request trends		
Observation On a monthly basis, various reports are created by Communications & Customer Service which enables management to identify trends with regards to types of service requests made, by location and type. However, while a meeting is held by those involved in maintenance and repairs on a regular basis, there is no evidence that these trends were discussed. **Implication** By not reviewing the reports, management would not gain the appropriate insights into where specific issues are occurring, thus preventing them from determining if preventive maintenance could be conducted in order to prevent future complaints. **Root Cause** Management does not record the outcomes of these regular meetings and any trends discussed.	**Overall** Moderate **Impact** Medium **Likelihood** Likely	**Recommendation** Management should record action items and issues raised during their regular meetings where they discuss the types of service requests by location and decide whether any preventive work can be done to lessen future costs involved in repairing assets **Management Action Plan** While Management agrees with the observation made, we do not agree with the proposed recommendation. Although we can review the monthly reports generated by Communications and Customer Service for trends in service request type and service, the reports do not provide specific locations. If the trend of specific locations are intended to be identified, further reports would need to be generated on a long term basis. On a day to day basis, response to each service report provides insight to where problems lie, and appropriate response is generated by the responding department. Once problems are identified through repeated requests, actions are taken to provide long term solutions through communication between departments. Management will add an item to the monthly meeting agenda to address service requests. By doing this, Management will have a chance to both discuss the monthly reports and to get feedback from supervisors regarding observations in the field that are or could become trends that need to be addressed. Maintenance trends will be formally analyzed and documented including recommendations, on an annual basis. **Responsibility** Manager of Contracts, Field Services and Maintenance **Due Date** Q4 2016

---

[4] See Appendix B for Basis of Finding Rating and Report Classification

Finding	Rating[5]	Recommendation & Action Plan
5. Sewer Condition Ratings		
Observation When a sanitary or storm sewer is inspected through the use of CCTV cameras, the results of the inspection are input into the Win Can system by Field Services. These results are then provided to Technical Support to be input into Hansen. However, in a sample of 19 sewer condition inspection records, we noted that for each instance, the date of reference provided from Win Can did not correspond to the year of inspection, resulting in each record not agreeing to the records in Hansen. It was noted that all 2,181 sewer inspections between 2012 and 2014 were missing from the Hansen database at December 31, 2014 as these were not yet provided to Technical Support until the summer of 2015. The Win Can database is on a standalone machine which is backed up using a portable hard drive on a monthly basis. This backup is taken to the IT Department and stored in a secure onsite location. The live database is not housed on the City network nor is the ability to recover the backup medium tested on a regular basis (for standard restores and loss of the standalone machine).	**Overall** Significant **Impact** High	**Recommendation** It is recommended that management consider the following recommendations: 1) Management should consult with IT about the possibility of creating an interface between Hansen and WinCan to allow for an automatic upload of inspection ratings into Hansen. This will relieve pressure on staff to carry out a manual upload, and lessen the risk of human error in the process. 2) Field Services and Technical Support should hold regular meetings to discuss the CCTV inspections being carried out, or planned to be carried out in order to provide a means for both departments to have accurate information in their systems, as well as provide a means to discuss potential issues in a timely manner. 3) Management should review the extent of inspection results missing in Hansen and assign a team to oversee the update of records in Hansen to allow it to be up to date. 4) Should an interface not be attainable, management should reconsider its use of two separate systems for the recording of sewer inspection results. This should be considered in light of allowing Hansen to be updated upon the completion of the inspection, without the need to duplicate the information in WinCan. 5) Management should evaluate the cost benefit of implementing more robust controls around the Win Can solution, moving the solution to the controlled IT environment/network or if the data is not required to

---

[5] See Appendix B for Basis of Finding Rating and Report Classification

		have either of the control environments why it is required to be maintained.
		Management Action Plan Management appreciates the objective review of the sewer condition rating process, was aware that challenges and issues exist in current processes, and is in the process of addressing these issues.
Implication As Win Can data and Hansen data are relied on for decision making purposes, this could expose the City to increased liability as sewers in need of repair may not be identified. As Hansen and the EIS system are interfaced, it may not have the correct overall CCTV sewer rating. This could lead to the failure of the asset, and potential property damage.	**Likelihood** Highly Likely	The Operations Department has consulted with IT and the corporate Business Process Centre of Excellence (IT) conducted a business process assessment (BPA) of the sewer inspection process in 2015.
All data regarding the CCTV sewer inspections is kept in Win Can, thus should there be any data loss, there would be no simple recovery. By not maintaining daily backup procedures, the City is exposed to the potential loss of Win Can data, the impact of which is dependent on the most recent manual backup of the database. This would lead to lost data which may be irrecoverable, resulting in potentially significant efforts to recover or reconstruct the data. Further, not testing a full restore for data on a standalone computer with only one access id and one software license could impair the ability to recover the data unless regularly tested or validated.		The BPA concluded that the root causes for the data issues & untimely CCTV data were related to a WinCan software version that created data management & accessibility barriers and did not adequately support the sewer inspection process.
		The BPA included discussions of centralizing a solution for sewer inspection data into Hansen. Initial discussions lead to the understanding that migrating the WinCan solution into Hansen would involve a significant effort and additional funding that would outweigh the benefits. Therefore, the focus of the BPA shifted to the WinCan upgrade. The BPA recommendations include upgrading the WinCan solution to a network solution within IT's controlled environment and establishing a self-service data model to address these root causes. Should the WinCan upgrade not satisfactorily address the data flow process from WinCan to Hansen, the data flow process would be the subject of a future business process assessment.

In addition, 2181 sewer inspections performed between 2012 and 2014 were provided by Field Services to Technical Support in the summer of 2015 and to-date approximately 56% of these records have been processed into Hansen. To improve data integrity, Field Services is in the process of correcting invalid data in the WinCan system by reloading data from original source files, and forwarding data sets to Technical Support for review and input into Hansen. Field Services plans to commit additional resources to review, analyze, and input data in a timely manner in order to keep CCTV inspection data current in WinCan and to make it available for input into Hansen.

As such, Management will undertake the following action plan to address this Finding:

1. Business Process Assessment & Recommendations Implementation
   a. IT to finalize report and obtain final sign off on report recommendations by the Executive Director of Operations.
   b. Operations Department and IT to develop an implementation plan for the BPA recommendations.
   c. Upgrade the current WinCan version 8 software to a networked WinCan Analyst version housed on the Corporate network fully supported within IT's controlled environment/network to improve data security, management & accessibility of sewer inspection data and to facilitate the implementation of a self-service model for sewer inspection data requests. Timelines are contingent on resourcing and the BPA implementation plan referenced in Item #1(b).

2. A team from Field Services and Technical Support will develop and implement a plan to update WinCan and Hansen with relevant historical and current CCTV sewer inspections records and condition ratings in order for the two systems to be consistent.
3. Field Services and Technical Support to meet on a quarterly basis to discuss record keeping of CCTV sewer inspections and condition ratings (issues, progress, upcoming contracts, etc.) in their systems.

Responsibility

1.a. Manager of Business Process Centre of Excellence, and Executive Director of Operations

1.b. Manager of Business Process Centre of Excellence, and Manager of Contracts, Field Services, & Maintenance

1.c. Deputy CIO/Manager of Project Management & Applications, and Manager of Contracts, Field Services, & Maintenance

2. Manager of Contracts, Field Services, & Maintenance, and Technical Support Manager

3. Manager of Contracts, Field Services, & Maintenance, and Technical Support Manager

Due Date
1(a) Q2 2016
1(b) Q4 2016
1(c) Q4 2017
2   Q4 2018
3   Q2 2016

Root Cause

Some data contained within Win Can is invalid, and in some cases provide the wrong date of inspection. This discrepancy requires further manual input to correct any errors.

Also, regular meetings are not held between Technical Support and Field Services to communicate challenges and issues involved in the record keeping of sewer condition assessments.

As Hansen and Win Can do not have an interface, the results are transferred between systems via manual effort, increasing the likelihood of human error.

The Win Can application and database reside on a standalone computer that is not backed up on the network nor subject to standard City IT environment controls.

Finding	Rating[6]	Recommendation & Action Plan
6. CCTV Usage		
Observation The City began using CCTV cameras to inspect its sewer system in 1991. While sewers are on a five-year maintenance cycle, it was noted in a data analytic across all sewer condition inspections under this method that 23.34% of sanitary sewer segments have been inspected using closed circuit television, while only 16.97% of storm sewers have been inspected in that time. While established targets were not noted for this program, this appears to be low for a near-25 year period.	**Overall** Significant	**Recommendation** While the accuracy provided by CCTV inspections should be considered for continued use in higher risk sewers, management should consider other supplemental techniques which can inspect sewer segments rapidly and at a lower cost.
	Impact High	**Management Action Plan** Management concurs with the findings. To increase the percentage of storm and sanitary sewers inspected, we will explore new technology and techniques for initial inspection to reduce the reliance on CCTV. In 2016 we propose a test program using the SLRAT acoustic sounding technology combined with Zoom/Pole camera inspections. These inspections will allow Field Services, with the assistance from Technical Support, to focus the more costly CCTV inspections on areas of concern in a timely manner. At the same time these technologies will allow for additional rating information to be provided to Technical Support for input into the Hansen system for asset management. We will also research similar programs used by other municipalities (e.g. Hamilton) which implemented a Zoom Cam program to increase inspection rates and reduce costs.
Implication Given the significant amount of time required to inspect sewers, it increases the likelihood that a sewer in need of repair will not be identified in a timely manner which could lead to the failure of the asset, resulting in property damage and increased costs to the city.	**Likelihood** Highly Likely	
Root Cause Management has relied on CCTV to conduct its inspections.		**Responsibility** Manager of Contracts, Field Services and Maintenance **Due Date** Q2 2017

[6] See Appendix B for Basis of Finding Rating and Report Classification

Finding	Rating[7]	Recommendation & Action Plan
7. Number of Road Inspectors		
Observation In a sample of 19 road inspections, it was noted that the same employee performed all inspections. Upon discussion with management, it was noted that this employee performs all road inspections at the City. While management has prepared a draft procedure manual for inspections, and utilizes standard inspection forms, this creates a single point of failure/dependency and a skill/knowledge repository that is unique to one individual. **Implication** This leaves the City exposed to a significant loss of knowledge and skill should the employee not be available to or employed by the Corporation. This would result in the City being exposed to the learning curve of a new inspector performing a very important task. This could lead to a greater liability to the City should an incorrect assessment be made. **Root Cause** Reliance on a single individual to carry out all road inspections.	**Overall** Significant **Impact** High **Likelihood** Highly Likely	**Recommendation** Management should consider recruiting more inspectors or having inspectors of other assets trained on road inspections. As the City is at risk of losing a significant amount of knowledge, new inspectors should work alongside the current inspector to learn from his experience and preserve that knowledge base within the City, as well as become aware of specific issues or concerns involved with particular roads during their training. Management should also consider training further inspectors to serve as backups should new inspectors resign from the City or be required to take time off. **Management Action Plan** Management concurs with the observation, however, other current supervisors have the skill set required to complete the road inspections. Road inspections is not a full time position nor is it a full time duty. It is a task performed by one inspector to maintain consistency year over year. It is acknowledged that having a different supervisor complete the road inspections would be less efficient initially but the accuracy and reliability of the results should not vary significantly. Management will formalize the procedures manual for road inspections and will train additional supervisors so, in the event that the current supervisor responsible for road inspections retires or moves on from the department, a transition to a new supervisor completing the road inspections is as seamless as possible. **Responsibility** Manager of Contracts, Field Services and Maintenance **Due Date** Q2 2017

---

[7] See Appendix B for Basis of Finding Rating and Report Classification

Finding	Rating[8]	Recommendation & Action Plan
8. Approval of Closed Work Orders		
Observation In a sample of 60 work orders tested, it was noted in 50 instances that a formal supervisor's signature was not applied to supporting forms used to close work orders. It was noted that this is not documented in a policy or procedure, thus there is no requirement to do so. **Implication** Should work orders be approved by an inappropriate employee, it could be closed at an inappropriate time, leaving information in Hansen inaccurate. By not including this in a policy or procedure, inappropriate personnel could be providing approvals to close work orders.	**Overall** Low **Impact** Low **Likelihood** Likely	**Recommendation** It is recommended that all work orders not be closed until the signature of an authorized employee is noted on the supporting documents used to indicate the work has been carried out. Furthermore, it is recommended that management formally document the requirement that an authorized member of the maintenance team approve any form required to close a work order. Management should determine what levels of staff would be appropriate to approve. **Management Action Plan** Currently a number of forms are used by staff to record work completed depending on the nature of the work undertaken. The forms require the employee or supervisor to be identified however a signature is not typically required on the form. Partially completed forms have been submitted by supervisory staff in some instances. Other sources are also used to close work orders and to validate work completed such as construction drawings, as-built drawings, construction notices, project letters, field verification, e-mails, etc. It is important to note that the forms are completed and reviewed prior to being entered into the corporate database to close out work orders. Supervisors are responsible for multiple crews. Forms for work completed are submitted by the crews to the supervisors and in turn the paperwork is reviewed by the supervisors and is forwarded for input to the corporate database. Currently, the form are not routinely signed off by the supervisor as the supervisor is not able to visually confirm the completion of each work order personally due to the volume of work (approximately 41000 work orders in each of 2014 and 2015). Also, adding a supervisor's signature to the thousands of work orders completed each year would be duplication, time consuming and non value added.

---

[8] See Appendix B for Basis of Finding Rating and Report Classification

	Management will review existing forms and modify them to identify an appropriate level of staff authority, signature type and location for signature on the forms to authorize the close of a work order in the corporate database.
Root Cause Work orders are closed without an appropriate signature noted on support forms such as the Road Patching Record. In some cases, a map of the area where the work was performed was submitted without the rest of the form attached. The requirement to sign these forms has not been documented in a policy or procedure.	**Responsibility** Manager of Contracts, Field Services and Maintenance Technical Support Manager **Due Date** Q2 2017

Considerations for Improvement

There was one additional considerations for improvement noted as follows:

<div style="background-color:#a01010;color:white">

1. Meeting Minutes from Capital Budget Initial Meeting

</div>

The initial project selection for the Capital Budget is determined in a meeting between the Executive Director of Operations and the Senior Manager of Infrastructure and Geomatics from the City of Windsor, as well as the Director of Engineering from the Windsor Utilities Commission. While the decisions from this meeting make up the Book of Recommended Projects, it was noted in the period under testing that no minutes were taken of the meeting.

It is recommended that meeting minutes be taken to record what projects were accepted, as well as those which were not picked for repair/replacement in the coming year. This results in three added benefits:

- to provide a greater level of consistency between budget years (particularly when there is a new employee in one of the three positions) in terms of how decisions are reached and what factors are considered;
- to provide a catalogue of assets not being addressed in the current year, thus providing a full list of assets to be considered in future years; and
- to provide a historical record of the meeting for reference purposes.

Appendix A: Background & Scope

Linkage to the internal audit plan

As part of the Council approved revised 2014/15 Internal Audit Plan, Internal Audit will review processes surrounding the management of infrastructure at The Corporation of the City of Windsor (the "City") and the associated processes and controls to ensure that City policies are implemented.

As part of the internal audit plan development, this business process area has processes and controls associated with mitigating and managing the following corporate risks: Legislative and regulatory, Funding, Public Relations and expectations, Vandalism, Public Safety, Reputation, Conflicting priorities/demands, Infrastructure, Service delivery, Technology Enablement, Technology cost, Asset protection, Capital structure, Treasury/liquidity, Loss/theft of assets.

Scope

Overview of the business/process to be reviewed

As part of internal audit of the business processes and controls in effect for managing infrastructure, Internal Audit considered:

1. Infrastructure Governance
2. Asset Planning
3. Maintenance and Replacement of Assets
4. Performance Monitoring

Infrastructure is vital to the economic well-being of the City, as well as providing the general public the ability to safely traverse the City, while being a key part of providing local businesses with the opportunity to succeed. Given this importance, we evaluated whether the processes and controls surrounding the planning and implementation of replacing and restoring infrastructure are appropriate in assisting the City with meetings its goals and objectives. While infrastructure pertains to several classes of assets, for the purposes of this internal audit, our testing focused on Roads Infrastructure (including bridges and culverts), Sidewalks, Water and Wastewater Infrastructure owned and managed by the City.

Our scope period covered January 1-December 31, 2014.

The structure of the operating department is changed in 2015 in order to consolidate the management team, combining the responsibilities of field services, contract services and repairs and maintenance. This change did not impact the scope or period under review.

Specific Scope Limitation

During the audit, a scope limitation was identified in regards to financial considerations pertaining to the decision to replace or repair an asset. As the Asset Management Plan had not been fully implemented during the scoping period, Internal Audit did not have a baseline or appropriate criteria to evaluate processes in place to ensure cost is considered when making decisions to replace or restore an asset.

Specific Scope Considerations

While our engagement involved the analysis of financial information and accounting records, it does not constitute an audit or an audit related service in accordance with Canadian generally accepted accounting standards, and accordingly no such assurance is provided in our report.

Consistent with commonly accepted practices, our work was dependent on the following management activities which are excluded from the scope of this review:

1. The effective design, implementation and operation of the Information and Technology (IT) environment and IT general controls.
2. The effective design, implementation and operation of business system and application controls related to the capture, processing, storage, reporting/presentation and exporting of information and data.
3. Controls over the completeness, accuracy, reliability and validity of the evidence, information and data provided by management during the course of this review.

Managing and planning for new infrastructure was not included in the scope of this internal audit. Infrastructure owned or managed by agencies, boards and commissions (for example, Windsor Utilities Commission) was not included in the scope of this review.

Repairs and maintenance work regarding sewer cleaning activities was included. While open drains were in scope, water treatment plants were excluded.

The following was excluded from our scope:

- Road clearing programs
- Managing and planning for new infrastructure
- Infrastructure owned or managed by agencies, boards and commissions (for example, Windsor Utilities Commission)
- While open drains and repairs and maintenance work regarding sewer cleaning activities were included, water treatment plants were excluded
- Purchasing and Procurement of Repair & Maintenance services
- OMBI reporting
- Assets under construction at December 31, 2014
- Traffic and Transportation planning; and
- Life-Cycle costing framework.

Appendix B: Basis of Finding Rating and Report Classification

Findings Rating Matrix

Audit Findings Rating		Impact		
		Low	**Medium**	**High**
Likelihood	**Highly Likely**	Moderate	Significant	Significant
	Likely	Low	Moderate	Significant
	Unlikely	Low	Low	Moderate

Likelihood Consideration

Rating	Description
Highly Likely	• History of regular occurrence of the event. • The event is expected to occur in most circumstances.
Likely	• History of occasional occurrence of the event. • The event could occur at some time.
Unlikely	• History of no or seldom occurrence of the event. • The event may occur only in exceptional circumstances.

Impact Consideration

Rating	Basis	Description
HIGH	Dollar Value[9]	Financial impact likely to exceed $250,000 in terms of direct loss or opportunity cost.

	Judgemental Assessment	**Internal Control**
		Significant control weaknesses, which would lead to financial or fraud loss.
		
		An issue that requires a significant amount of senior management/Board effort to manage such as:
		• Failure to meet key strategic objectives/major impact on strategy and objectives.
		• Loss of ability to sustain ongoing operations:
		   - Loss of key competitive advantage / opportunity
		   - Loss of supply of key process inputs
		• A major reputational sensitivity e.g., Market share, earnings per share, credibility with stakeholders and brand name/reputation building.
		
		Legal / Regulatory
		Large scale action, major breach of legislation with very significant financial or reputational consequences.

MEDIUM	Dollar Value	Financial impact likely to be between $75,000 to $250,000 in terms of direct loss or opportunity cost.
	Judgemental Assessment	**Internal Control** Control weaknesses, which could result in potential loss resulting from inefficiencies, wastage, and cumbersome workflow procedures. **An issue that requires some amount of senior management/Board effort to manage such as**: • No material or moderate impact on strategy and objectives. • Disruption to normal operation with a limited effect on achievement of corporate strategy and objectives • Moderate reputational sensitivity. **Legal / Regulatory** Regulatory breach with material financial consequences including fines.
LOW	Dollar Value	Financial impact likely to be less than $75,000 in terms of direct loss or opportunity cost.
	Judgemental Assessment	**Internal Control** Control weaknesses, which could result in potential insignificant loss resulting from workflow and operational inefficiencies. **An issue that requires no or minimal amount of senior management/Board effort to manage such as:** • Minimal impact on strategy • Disruption to normal operations with no effect on achievement of corporate strategy and objectives • Minimal reputational sensitivity. **Legal / Regulatory** Regulatory breach with minimal consequences.

---

[9] Dollar value amounts are agreed with the client prior to execution of fieldwork.

Audit Report Classification

Report Classification	The internal audit identified one or more of the following:
Cause for considerable concern	• Significant control design improvements identified to ensure that risk of material loss is minimized and functional objectives are met. • An unacceptable number of controls (including a selection of both significant and minor) identified as not operating for which sufficient mitigating back-up controls could not be identified. • Material losses have occurred as a result of control environment deficiencies. • Instances of fraud or significant contravention of corporate policy detected. • No action taken on previous significant audit findings to resolve the item on a timely basis.
Cause for concern	• Control design improvements identified to ensure that risk of material loss is minimized and functional objectives are met. • A number of significant controls identified as not operating for which sufficient mitigating back-up controls could not be identified. • Losses have occurred as a result of control environment deficiencies. • Little action taken on previous significant audit findings to resolve the item on a timely basis.
No major concerns noted	• Control design improvements identified, however, the risk of loss is immaterial. • Isolated or "one-off" significant controls identified as not operating for which sufficient mitigating back-up controls could not be identified. • Numerous instances of minor controls not operating for which sufficient mitigating back-up controls could not be identified. • Some previous significant audit action items have not been resolved on a timely basis.
No or limited scope for improvement	• No control design improvements identified. • Only minor instances of controls identified as not operating which have mitigating back-up controls, or the risk of loss is immaterial. • All previous significant audit action items have been closed.