
The Corporation of the City of Windsor Pollution Control - Preventative Maintenance Compliance & Accountability Internal Audit

*Final Internal
Audit Report*

June 25, 2018

Distribution List

For action

Mark Winterton, Corporate Leader Environmental Protection & Transportation (Sponsor)
Chris Manzon, Senior Manager of Pollution Control
Mechanical Process Engineer, Mechanical Engineer of Pollution Control
Mark Marshall, System Maintenance Clerk

For information

Onorio Colucci, Chief Administrative Officer
Joe Mancina, CFO & City Treasurer
Marco Aquino, Executive Initiatives Coordinator
Dwayne Dawson, Executive Director/Deputy City Engineer

Limitations & Responsibilities

This document has been prepared only for The Corporation of the City of Windsor and solely for the purpose and on the terms agreed with you. This document may contain our confidential commercial, financial or other proprietary information, the disclosure of which may prejudice us. We accept no liability (including for negligence) to anyone else in connection with this document, and it may not be provided to anyone else, without prior written consent from PricewaterhouseCoopers LLP.



Table of Contents

Internal Audit Context	3
Background Information	3
Scope	3
Internal Audit Objectives	4
Summary of Internal Audit Results	5
Report Classification	5
Summary of Positive Themes	7
Summary of Findings	8
Summary of Significant Findings	9
Management Comments	9
Detailed Observations	10
Considerations for Improvement	16
Appendix A: Basis of Findings Rating and Report Classification	17
Appendix B: Limitations and responsibilities	20

© 2018 PricewaterhouseCoopers LLP, an Ontario limited liability partnership. All rights reserved.

PwC refers to the Canadian member firm, and may sometimes refer to the PwC network. Each member firm is a separate legal entity. Please see www.pwc.com/structure for further details.

Internal Audit Context

Background Information

The Preventative Maintenance Compliance & Accountability (“PMCA”) internal audit is part of the Council approved 2017/18 Internal Audit Plan. Internal Audit has been tasked to assess the preventative maintenance compliance processes and controls of various city departments. Specifically, Pollution Control and Fleet Division are in scope for this internal audit.

While preventative maintenance objectives are consistent across Pollution Control and Fleet Division, the conducted processes are distinct for each group. Based on the process and internal controls within these two groups a separate internal audit report will be issued for each area. The results of Pollution Control are contained within this report.

Pollution Control performs the majority of preventative maintenance internally with the department staff performing this work. Specific preventative maintenance inspections and or tasks are conducted by third party service providers.

Preventative maintenance conducted by Pollution Control is supervised by the Senior Manager, supported by six supervisors across the two major sites: Lou Romano Water Reclamation Plant (LRWRP), Little River Pollution Control Plant (LRPCP), as well as Pump Stations (PS) located throughout the city. At each major site, supervisors are supported by a number of staff to conduct preventative maintenance tasks.

Scope

For the purposes of this internal audit, we considered controls over the assets held and managed by the Pollution Control Centre.

The scope of our internal audit considered management's attainment of the control objectives spanning the following four areas:

1. Policy framework and evidence of compliance;
2. Preventative maintenance requirement assessment;
3. Maintenance and inspection scheduling;
 - a. Schedule amendments/exceptions;
 - b. Escalation of schedule of non-compliance; and
4. Progress review and monitoring.

The scope of this internal audit included the assessment of the controls in effect for the period January 1, 2017 through December 31, 2017.

Specific Scope Exclusions

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

1. The design, implementation and operation of the Information and Technology (IT) environment and IT general controls, End User Computing controls, application controls and data integrity for IT dependent manual 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. Preventative maintenance related to facilities management is excluded from the scope of this review as there is a planned project for next year's coverage in facilities;
4. Preventative maintenance related to fleet is excluded from the scope of this report as there is specific fleet report under separate cover for the objectives and scope period; and
5. Preventative maintenance service delivery rendered through the use of third party providers/suppliers.

Internal Audit Objectives

In conducting this internal audit, we considered the process and control mechanisms management has in effect to achieve the following control objectives:

1. Policy framework and evidence of compliance

- 1.1 Policies governing the Preventative Maintenance Program for the City of Windsor are approved and are in effect. Such policies addresses elements such as scheduling, controlling hazards, defining operational procedures and training personnel, and other required elements;
- 1.2 Methods of assessing compliance, and non-compliance, are in effect and supported by evidence; and
- 1.3 Areas of non-compliance are identified and have rationale as to the basis for non-compliance.

2. Preventative maintenance requirement assessment

- 2.1 Preventative Maintenance ("PM") needs assessments are required at specific intervals or milestones/triggers for all relevant assets;
- 2.2 PM needs assessments are executed as planned/required for all relevant assets; and
- 2.3 Areas of non-compliance, and trends, are reviewed and approved with appropriate mitigating actions.

3. Maintenance and inspection scheduling

- 3.1 Facility systems and equipment are inspected and maintained according to the City PM schedule as a minimum. Schedule Amendments are appropriately approved;
- 3.2 Preventative Maintenance plan is monitored and exceptions are known, approved and resolved in a timely manner for all relevant assets;
- 3.3 Records of inspections and maintenance are completed and maintained for review and approval; and
- 3.4 City maintenance staff allocates sufficient time and effort to preventative maintenance tasks.

4. Progress review and monitoring

- 4.1 PM Program has mechanism to report instances of non-compliance, and trends, with PM Policy and requirements.
- 4.2 Escalation standards are defined and applied such that delays and elements of non-compliance are reported to the appropriate level of management as required.

Summary of Internal Audit Results

Report Classification

Overall, Pollution Control is aware of the importance of processes and controls on preventative maintenance compliance and accountability. There is reliance on computerized maintenance management systems (CMMS) to carry out PM compliance, with Anterro being the system used. In the course of the internal audit, specific controls were identified that address some control objectives listed above. However, there are several processes and controls require improvements to achieve the stated control objectives.

Policies and Procedures

There are no formal policies or procedures to highlight the preventative maintenance elements. Instead, operational procedures to conduct PM are original documents from manufacturer equipment manuals. These procedures are used as guidance in creating the PM task templates in Anterro from which PM staff reference when conducting preventative maintenance. A lack of clear policies and procedures can create a disconnect between management's goals and staff's expectations, as noted with untimely completion of PM work orders.

Preventative Maintenance Scheduling

Pollution Control schedules PM inspections for pollution control assets according to the manufacturer equipment manuals. Deviations from the manufacturer manual may occur to meet specific needs or to be reflective of the current operating environment. These deviations are not formally documented or supported with concrete documentation. When updated manufacturer lifecycles are known, the asset PM template in Anterro is updated. In Anterro, assets can be scheduled for preventative maintenance based on number of days or the calendar year.

Execution of Preventative Maintenance

For Pollution Control, the system maintenance clerk begins the PM execution process by setting assets according to the standard PM templates in Anterro. The work orders for the week are printed and distributed to supervisors, and then allocated to staff. Staff complete the standard PM task instructions which are printed directly on each work order. The supervisor will review the work order for completion; however, samples lacked clear evidence of supervisors' acknowledgement of their review. The completed work orders are returned to the system maintenance clerk. The system maintenance clerk performs a quality review prior to updating the work order as complete in Anterro.

Monitoring Compliance and resolution process

For Pollution Control, the Monthly Delinquent report is the primary source used in identifying non-compliance and exceptions. The report is generated monthly by the system maintenance clerk and sent to the site supervisors as an escalation measure. This process requires improvement as a large number of work orders become delinquent and remain delinquent. In addition, no further action is taken such as performing trend analysis to appropriately identify the non-compliance root causes.

Based on the controls identified and assessed for design as part of the Pollution Control Preventative Maintenance Compliance and Accountability internal audit, 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
For the objectives related to 1. Policy framework and evidence of compliance				
Controls over the process are designed in such a manner that there are:				
Sample tests indicated that process controls were operating such that there are:				
For the objectives related to 2. Preventative maintenance requirement assessment				
Controls over the process are designed in such a manner that there are:				
Sample tests indicated that process controls were operating such that there are:				
For the objectives related to 3. Maintenance and inspection scheduling				
Controls over the process are designed in such a manner that there are:				
Sample tests indicated that process controls were operating such that there are:				
For the objectives related to 4. Progress review and monitoring				
Controls over the process are designed in such a manner that there are:				
Sample tests indicated that process controls were operating such that there are:				

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

Summary of Positive Themes

Based on the fieldwork conducted by Internal Audit, the following positive themes were noted:

Policy Framework and Evidence of Compliance

- Pollution Control aligns its operational procedures with the equipment manuals and assists staff by writing the procedures to be conducted directly on work orders generated from Anterro. This demonstrates integration between PM-conducted and the PM system.
- Pollution Control has strong measures to maintain PM compliance with automatically-generated PM work orders in Anterro. Also, PM templates are setup for each type of equipment to follow PM tasks.

Preventative Maintenance Requirement Assessment

- A large number of PM work orders marked complete had corroborating completed work order forms.

Maintenance and Inspection Scheduling

- Pollution Control has a strong reporting mechanism in Anterro to identify exceptions.
- Pollution Control maintains strong supporting documentation, albeit informal, for completed work orders going back ten or more years.

Progress Review and Monitoring

- Pollution Control generates a key report to identify non-compliance (delinquent report).
- Pollution Control has appropriate PM system capabilities and segregation of duties which enable the escalation processes.

Summary of Findings

Finding #	Topic	Rating ¹			Management Action Plan
		Significant	Moderate	Low	
1. Policies and Procedures for Policy Framework and Evidence of Compliance					
1	Formalize PM Policy Framework (<i>Design Effectiveness</i>)	-	-	X	As an initial step Pollution Control team will appoint a PM group that represents each department: Operations, Mechanical and Electrical, and the group will set up reasonable goals for achieving the targets indicated later in this report.
2	Enhance PM Compliance (<i>Operating Effectiveness</i>)	-	X		Quarterly meetings will be arranged with supervisors and PM clerk to discuss any discrepancies related to work orders that are not properly signed off. PM clerk to make sure that the work orders are reviewed by the respective supervisors.
Preventative Maintenance Requirement Assessment					
3	Enhance PM Task Instruction Accuracy (<i>Design Effectiveness</i>)	-	X	-	A group to include Operations, Mechanical, and Electrical, will review the work orders quarterly related to major equipment. Additional resources will be required to sustain this task and this will be brought forward for consideration at the 2019 budget.
4	Conduct Trend Analysis (<i>Design Effectiveness</i>)	-	X	-	The Pollution Control team will discuss the ways to analyse the delinquent work orders based on criticality of the equipment, site, and the delinquency age. Existing resources may be impacted by this task. This will be brought forward for consideration at the 2019 budget.
Maintenance and Inspection Scheduling					
	None				

¹ See Appendix A for Basis of Finding Rating and Report Classification

Finding #	Topic	Rating ¹			Management Action Plan
		Significant	Moderate	Low	
4. Progress Review and Monitoring					
5	PM Escalation Standards (Design Effectiveness)	X	-	-	Pollution Control team will update Antero with equipment and work order priorities. The previously suggested PM group will identify critical equipment and priorities of the work orders. Once the prioritization is completed, the delinquent reports can be filtered/sorted based on prioritization. Existing resources may be impacted by this task, and will be brought forward for consideration at the 2019 budget.
Total		1	3	1	

Summary of Significant Findings

Internal audit identified one significant finding related to the design effectiveness of controls, specifically:

- 1) A large number of delinquent work orders remain delinquent for a significant period of time. There is a lack of evidence to support management oversight and escalation of high priority work orders.

Management Comments

We are always trying to keep the total number of delinquent work orders less than 10% of the annual total at any given moment. The respective supervisors are reviewing the delinquent work order report and prioritize the urgent work orders. Due to the available work force, it is always a challenge to reduce the delinquencies. Due to competing priorities, management resources are limited to address procedural issues identified in the audit.

Name: Chris Manzon
 Title: Senior Manager of Pollution Control
 Date: May 15, 2018

Detailed Observations

Formalize PM Policy Framework - (Design Effectiveness)		Overall Rating: Low	
Impact:	Low	Likelihood:	Likely
<p>Observation: No formal policies or procedures are in place to govern Preventative Maintenance elements. Staff are aware of how to complete the preventative maintenance tasks as instructed by the work order, similar to work orders for maintenance, emergencies, etc. However, the lack of communication of the department's overarching PM policy can create a gap between management's goals for preventative maintenance compliance and staff's perceived expectations. We noted this disconnect in the untimely and incomplete execution of PM procedures.</p>			
<p>Implication: Potential behaviors and actions that are not in line with management's expectations. A lack of policy and procedures may increase the risk of process failure or inefficiency when personnel lack experience in completing the PM tasks and documented procedures are not available.</p> <p>Informal communication of the department's overarching PM policy may create a gap between management's goals for preventative maintenance compliance and staff's perceived expectations (we noted a large volume of overdue and incomplete PM items).</p>			
<p>Possible root cause: For Pollution Control, policies and procedures (or sub-components thereof) have not been formally defined and approved.</p>			
<p>Recommendation: Management should develop targets and/or goals for the preventative maintenance compliance program, and communicate these expectations to all staff on a regular basis.</p>			
Management Action Plan			
<p>Action Plan: Management agrees with the observation and recommendations. As an initial step Pollution Control team will appoint a PM group that represents each department: Operations, Mechanical and Electrical and the group will set up reasonable goals for achieving the targets indicated later in this report.</p>		Responsible Party:	Mechanical Process Engineer
		Due Date:	Q3 2018

Enhance PM Compliance - (Operating Effectiveness)		Overall Rating: Moderate	
Impact:	Medium	Likelihood:	Likely
Observation: Sixteen (16) out of twenty-five (25) sampled work orders did not show evidence of supervisor acknowledgement or review.			
Implication: For work orders to be marked as completed, supervisor review is not acknowledged or required. This increases the risk of PM conducted being insufficient or inadequate.			
Possible root cause: PM work orders are considered a lower priority to be completed by PM staff in comparison with other areas, emergency repairs for instance. Due to the large amount of work orders to be complete overall, this may result in completed work orders not reviewed by the supervisor. This is especially prevalent for PM work orders which are lower priority within PM, such as routine oil changes.			
Recommendation: Management should formally establish a policy for supervisors to adhere to with regards to PM review and approval. Review of PM work orders should be performed on all work orders or on a prioritized sample basis. The review procedure should be clearly communicated to all staff. Such a procedure would clarify the exact conditions needed prior to a work order being officially marked as complete in Anterro. Categorizing PM by risk type and ensuring that the higher risk areas are reviewed in a timelier manner and the lower risk items are batch reviewed within a reasonable timeframe may ensure that key items of risk are addressed appropriately.			
Management Action Plan			
Action Plan: Management agrees with the observation and recommendations. Arrange quarterly meeting with supervisors and PM clerk to discuss any discrepancies related to work orders that are not properly signed off. PM clerk to make sure that the work orders are reviewed by the respective supervisors.		Responsible Party:	Mechanical Process Engineer
		Due Date:	Q3 2018

Enhance PM Task Instruction Accuracy - (Design Effectiveness)		Overall Rating: Moderate
Impact:	Medium	Likelihood: Likely
<p>Observation: For Pollution Control, PM task instructions set for each PM template may not correspond to the manufacturer equipment manual. We found 15 exceptions in our sample of 25:</p> <ol style="list-style-type: none"> 1) 8 out of 25 sample PM templates had generic PM tasks based on the equipment type instead of the specific instructions set forth in the corresponding equipment manuals; 2) 5 out of 25 sample PM templates had significant deviation from the specific instructions set forth in the corresponding equipment manuals; and 3) 2 out of 25 sample PM templates were incomplete/inaccurate on a stand-alone basis (oil change for unspecified part, unspecified lubrication or oil type, reference to an employee who is no longer involved in process). 		
<p>Implication: There is risk the preventative maintenance tasks are incorrect and/or incomplete for equipment, which may cause operational failures and an increase in emergency maintenance work orders. With generic PM tasks, this increases the risk of procedures being applied inconsistently.</p> <p>PM tasks outlined on all sample PM templates exhibit specific modifications that are based on staff's knowledge and expertise. While this exhibits strengths such as PM tasks being more relevant in today's environment and specific to Pollution's needs, there remains the risk of tasks being incorrect and outdated.</p>		
<p>Possible root cause: Common PM tasks are expected to be generally understood by staff. Staff are expected to refer to the equipment manual for complex PM tasks. Manufacturer equipment manuals can become outdated and require deviations in PM tasks in the current environment.</p>		
<p>Recommendation: The PM tasks stated in the manufacturer equipment manuals may be outdated in today's current environment. Management should document supporting sources and references in making updates to the PM tasks for best practice. Management should formalize a review process of PM templates on a regular basis, with representation from both management and ground-level staff.</p>		
Management Action Plan		
<p>Action Plan: Management agrees with the observations and recommendations. However, it should be noted that the generic PM tasks are set for non critical equipment and the implications will be insignificant. Previously suggested PM group that include Operations, Mechanical, and Electrical will review the work orders quarterly (at least 25 -30) related to major equipment. Additional resources will be required to sustain this task and this will be brought forward for consideration at the 2019 budget.</p>	Responsible Party:	Mechanical Process Engineer
	Due Date:	Q2 2019

Conduct Trend Analysis - (Design Effectiveness)		Overall Rating: Moderate
Impact:	Medium	Likelihood: Likely
<p>Observation: Trend analysis for delinquent work orders to assess performance is not currently conducted.</p>		
<p>Implication: With no trending performed, improvement opportunities and underlying issues may not be readily identified and addressed. Trend analysis can be used to assess performance of the key metrics and groups. Given the large number of delinquent work orders noted in Finding #5, trend analysis may be used to identify or support the root causes.</p>		
<p>Possible root cause: Management has acknowledged Anterro has the capabilities for trend analysis. In the current environment, there has been a time constraint limiting the growth of the compliance practice.</p>		
<p>Recommendation: Management should analyze trends within delinquent PM work orders to gather insights on improving the exception process. Pollution Control may consider beginning with the following:</p> <ul style="list-style-type: none"> • By equipment type; • By equipment site (LWRWP, LRPCP, PS); and • Aging analysis (0-30 days, 31-60 days, 61-90 days, 90+ days). 		
Management Action Plan		
<p>Action Plan: Management agrees with the observation and recommendations. However, the Antero software does not offer any trend analysis. But it is capable of generating EXCEL reports that could be used for trending analysis. Pollution Control team will discuss the ways to analyse the delinquent work orders based on criticality of the equipment, site, and the delinquency age. Upon identification of trends for analysis, Pollution Control Team will implement trend analysis for regular reporting and monitoring. Existing resources may be impacted by this task. This will be brought forward for consideration at the 2019 budget.</p>	Responsible Party:	Mechanical Process Engineer
	Due Date:	Q2 2019

PM Escalation Standards - (Design Effectiveness)			Overall Rating: Significant
Impact:	Medium	Likelihood:	Very Likely
<p>Observation: For Pollution Control, a large number of work orders become delinquent and remain delinquent. There is a lack of evidence to support management oversight and escalation of high priority work orders.</p> <ul style="list-style-type: none"> • 12 out of 25 sampled work orders were not completed within the scheduled month and became delinquent. • 65 out of 69 delinquent work orders on 2 sample delinquent reports were not completed by the next scheduled month. <ul style="list-style-type: none"> ○ 50 out of 52 delinquent work orders for LRPCP. ○ 15 out of 17 delinquent work orders for PS. <p><i>Refer to Appendix C for graphical representation of aging analysis by department.</i></p>			
<p>Implication: Risk of operational failure and equipment breakdowns. Poor escalation standards leads to untimely completion of overdue preventative maintenance, ultimately leading to increased risk of operational failure. Failure to document rationale for non-compliance increases risk of non-compliance not being appropriately accounted for and showcases ineffective compliance policies.</p>			
<p>Possible root cause: Management has noted a large number of work orders remain delinquent on a monthly basis. It has been conveyed there is a resource constraint (labour and financial) that makes timely completion unlikely.</p>			
<p>Recommendation: Resource constraints can place a significant burden on limiting the timeliness of work order completion. For work orders remaining beyond the initial delinquent report should be identified and prioritized within the next report considering all required and emergency tasks.</p> <p>Management should consider conducting an assessment of the allocation process of work orders and determine if a more efficient process may be implemented:</p> <ul style="list-style-type: none"> • Grouping of similar PM task instructions to be completed at the same time; • Strategic completion of work orders throughout the period; • Identifying outdated PM templates and extending PM trigger (i.e. Monthly to quarterly); or • Use of a secondary “No later than date” which drives prioritization. <p>Management should also revise the escalation process to appropriately assign priority to delinquent work orders and conduct a formal review of prior month’s report for delinquent work orders remaining outstanding. Management may consider adding a review flag (or some other demarcation) to the delinquent report to allow supervisors to indicate which items have been reviewed and identified as false positives.</p> <p><i>Refer to Appendix C for graphical representation of priority ratings of delinquent work orders.</i></p>			

<i>Management Action Plan</i>		
<p>Action Plan: Management agrees with the observations and the recommendations. Pollution Control team will update the Antero with equipment and work order priorities. Previously suggested PM group will identify critical equipment and priorities of the work orders. This will take some time to identify critical equipment/ work orders and prioritize them. Once the prioritization is completed, the delinquent reports can be filtered/sorted based on prioritization. Existing resources may be impacted by this task. This will be brought forward for consideration at the 2019 budget</p>	<p>Responsible Party:</p>	<p>Mechanical Process Engineer</p>
	<p>Due Date:</p>	<p>Q2 2019</p>

Considerations for Improvement

PM Staff

Observation:

Pollution Control does not track the labour hours spent by staff on PM work orders.

Recommendation:

Management should consider tracking budget to actual labour hours spent on PM work orders. Analysis may lead to insights on the timeliness of execution and completion of PM work orders and resolve other potential issues and inform work load requirements (refer to Finding #4 PM Execution).

PM Reporting Capabilities

Observation:

Pollution Control does not utilize the reporting capabilities of Anterro to identify trends in costs, labour hours, and exception trending.

Recommendation:

Management should track costs associated with PM to gather insights and ultimately increase the efficiency (time and cost wise) of the PM compliance process. There may be opportunities to enable cost comparisons with external service provider alternatives.

Appendix A: Basis of Findings 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	<ul style="list-style-type: none"> · History of regular occurrence of the event. · The event is expected to occur in most circumstances.
Likely	<ul style="list-style-type: none"> · History of occasional occurrence of the event. · The event could occur at some time.
Unlikely	<ul style="list-style-type: none"> · 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 ²	Financial impact likely to exceed \$250,000 in terms of direct loss or opportunity cost.
	Judgmental Assessment	<p>Internal Control Significant control weaknesses, which would lead to financial or fraud loss.</p> <p>An issue that requires a significant amount of senior management/Board effort to manage such as:</p> <ul style="list-style-type: none"> · Failure to meet key strategic objectives/major impact on strategy and objectives. <ul style="list-style-type: none"> · Loss of ability to sustain ongoing operations: <ul style="list-style-type: none"> - Loss of key competitive advantage / opportunity <ul style="list-style-type: none"> - 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. <p>Legal / Regulatory Large scale action, major breach of legislation with very significant financial or reputational consequences.</p>
MEDIUM	Dollar Value	Financial impact likely to be between \$75,000 to \$250,000 in terms of direct loss or opportunity cost.
	Judgmental Assessment	<p>Internal Control Control weaknesses, which could result in potential loss resulting from inefficiencies, wastage, and cumbersome workflow procedures.</p> <p>An issue that requires some amount of senior management/Board effort to manage such as:</p> <ul style="list-style-type: none"> · 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. <p>Legal / Regulatory Regulatory breach with material financial consequences including fines.</p>
LOW	Dollar Value	Financial impact likely to be less than \$75,000 in terms of direct loss or opportunity cost.
	Judgmental Assessment	<p>Internal Control Control weaknesses, which could result in potential insignificant loss resulting from workflow and operational inefficiencies.</p> <p>An issue that requires no or minimal amount of senior management/Board effort to manage such as:</p> <ul style="list-style-type: none"> · Minimal impact on strategy · Disruption to normal operations with no effect on achievement of corporate strategy and objectives · Minimal reputational sensitivity. <p>Legal / Regulatory Regulatory breach with minimal consequences.</p>

² 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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 backup 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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.

Appendix B: Limitations and responsibilities

Limitations inherent to the Internal Auditor's work

We have undertaken the “specified” internal audit of Pollution Control – Preventative Maintenance Compliance & Accountability, subject to the limitations outlined below.

Internal control

Internal control systems, no matter how well designed and operated, are affected by inherent limitations. These include the possibility of poor judgment in decision-making, human error, control processes being deliberately circumvented by employees and others, management overriding controls and the occurrence of unforeseeable circumstances.

Future periods

Our assessment of controls is for the period specified only. Historic evaluation of effectiveness is not relevant to future periods due to the risk that:

- the design of controls may become inadequate because of changes in operating environment, law, regulation or other; or
- the degree of compliance with policies and procedures may deteriorate.

Responsibilities of management and Internal Auditors

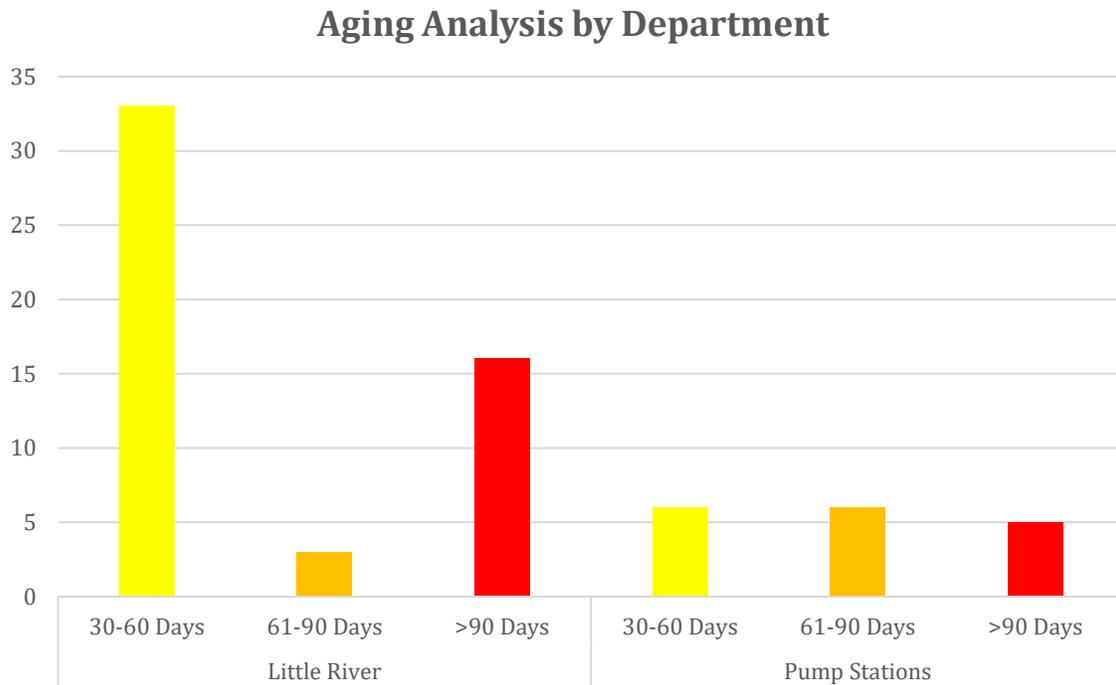
It is management's responsibility to develop and maintain sound systems of risk management, internal control and governance and for the prevention and detection of irregularities and fraud. Internal audit work should not be seen as a substitute for management's responsibilities for the design and operation of these systems.

We endeavour to plan our work so that we have a reasonable expectation of detecting significant control weaknesses and, if detected, we shall carry out additional work directed towards identification of consequent fraud or other irregularities. However, internal audit procedures alone, even when carried out with due professional care, do not guarantee that fraud will be detected.

Accordingly, our examinations as internal auditors should not be relied upon solely to disclose fraud, defalcations or other irregularities which may exist.

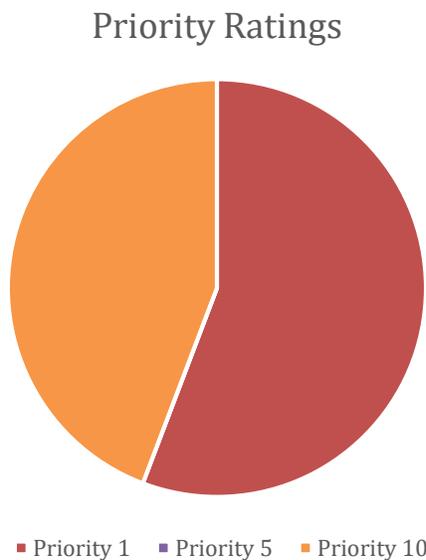
Appendix C: Exhibits

Exhibit 1: Aging Analysis by Department



There is a significant number of work orders being delinquent for over 90 days, over three months past due.

Exhibit 2: Priority Ratings of Delinquent Work Orders



Pollution Control does not rely on its priority rating. Analysis on priority ratings for delinquent work orders notes a significant portion being the highest priority (priority 10). No Priority fives(5) noted.



This document has been prepared only for The Corporation of the City of Windsor and solely for the purpose and on the terms agreed with The Corporation of the City of Windsor in our agreement dated June 9, 2016. We accept no liability (including for negligence) to anyone else in connection with this document, and it may not be provided to anyone else.

© 2018 PricewaterhouseCoopers LLP. All rights reserved. In this document, "PwC" refers to PricewaterhouseCoopers LLP (an Ontario limited liability partnership), which is a member firm of PricewaterhouseCoopers International Limited, each member firm of which is a separate legal entity.