

# *The Corporation of the City of Windsor*

*Enwin Utilities Ltd*

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*Final Internal Audit Report*

**9 August 2016**

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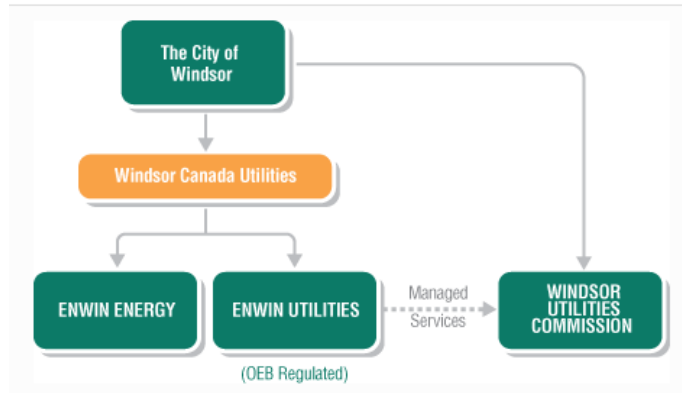
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# Summary of Internal Audit Results

## Background Information

The City of Windsor is the sole shareholder of Windsor Canada Utilities Ltd. (“WCU”), a holding company which owns both Enwin Energy Ltd. (“Enwin Energy”), as well as Enwin Utilities Ltd. (“Enwin Utilities”). Windsor Utilities Commission (“WUC”) is a local board of the Corporation of the City of Windsor, which receives managed services from Enwin Utilities (all three collectively, “Enwin”).

*The chart below describes the operating structure as of March 29, 2016.*



WCU provides strategic direction and financing to the operations of Enwin Utilities as well as Enwin Energy.

## Scope

Enwin Utilities is Windsor's Local Distribution Company, responsible for the distribution of electricity and the servicing and maintenance of Windsor's power line infrastructure. Enwin Utilities provides services to WUC with respect to the operating the water treatment and distribution system as well as District Energy. The services include: management, administrative services, construction operations, and maintenance services. The Corporation is responsible for providing all personnel required to operate the water system and District Energy. Enwin Utilities provides billing, credit, financial, and customer service on behalf of the City of Windsor in relation to waste water. Enwin Utilities also provides billing, credit, financial, customer service and other support services on behalf of Enwin Energy in relation to sentinel lighting and street light maintenance. Enwin Utilities' arrangements with these affiliates are subject to the Ontario Energy Board's Affiliate Relationships Code (the "ARC"), which is a code prescribed by and issued pursuant to the Ontario Energy Board Act, 1998.

Enwin Utilities has appointed multiple elected City officials on their Board of Directors, including the Mayor as well as independent Directors.

As WCU is wholly owned by the City of Windsor, they are accounted for on a modified equity basis, consistent with the generally accepted accounting treatment for a Government Business Enterprise ("GBE"). Under the modified equity basis, the business enterprise's accounting principles are not adjusted to conform to those of the City, and inter-organizational transactions and balances are not eliminated. On an annual basis, Windsor Canada Utilities may declare a dividend to its shareholder based on the results of the most recent fiscal year. Major transactions include the collection and remittance to the City of sewer surcharge billings.

## 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. Work Planning
2. Work Scheduling and Assigning

- 
3. Work Execution and Close Out
  4. Unplanned Work
  5. Work Management Performance Measures

Key work management processes that were considered as part of this engagement include:

- Work Planning
  - Identifying and specifying work to be performed;
  - Work prioritization and approval; and
  - Identifying resources required and arranging for resources to be available.
- Work Scheduling and Assigning
  - Schedule funnel, and application of priorities and other criteria used in scheduling; and
  - Work assignment.
- Work Execution and Close Out
  - Feedback provided for analysis and performance improvement.
- Unplanned Work
  - Emergency and other unplanned work performed.
- Work Management Performance Measures
  - Measures used and what decisions do they drive.

As part of this engagement, two conclusions were formed. The first pertains to the attainment of the objectives set out in the Scope Memo dated November 11, 2015. Also provided are risk & control conclusions involving the design and operating effectiveness of controls surrounding the objectives set out.

Our scope period covered November 1, 2014 – October 31, 2015.

#### *Specific Scope Considerations & Exclusions*

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 were 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 due to funding and resource constraints.

#### *Linkage to the internal audit plan*

As part of the Council approved revised 2015/16 Internal Audit Plan, Internal Audit performed a Performance-Based audit involving areas of asset management at Enwin Utilities, and the associated processes and controls involved in those areas.

## Report Classification

In general, controls are properly designed and are operating effectively for the purpose envisaged. Overall, Enwin Utilities has prioritized the assets in need of attention and have been following through on its plan to address these. Cost tracking is in place with a strong emphasis on meeting the established budget for the year and for the respective projects.



### Internal Audit Classification

Given the nature of this internal audit project we are providing an overall assessment using our traditional internal controls model as well as performance auditing measures.

### Internal Controls Assessment

While some design issues were identified, none were regarded as significant design deficiencies. If implemented, these recommendations would serve to provide for greater efficiencies and better leveraging of its system capabilities rather than addressing major control deficiencies. Enwin Utilities has been following its plan to maintain its assets and track the costs involved in this process.

Based on the controls identified and tested, 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.

### Performance-Based Audit Results

These results are based solely on Hydro Distribution work orders and accounts. The scope of our review considered the period of November 1, 2014 through October 31, 2015. In this period, we considered project estimates applied for individual projects subsequent to the approval of the Enwin Utilities budget. These project estimates are based on the original Enwin Utilities budget, as well as information that has been gathered about the project such as previously unknown conditions of the area of the work to be performed, foreign exchange fluctuations, or in the case of outsourced projects, the value of the agreed tender value.

**Performance objective 1: Overall projects are delivered within dollar values, effort hours and materials within 10% (over or under).**

**Assessment:** Performance measure of +/- 10% **is met**. Actual results had an overall unfavourable variance of 6.3% to internal operational estimates. Capital projects contributed significantly to this variance as opposed to ongoing operations and maintenance.

Projects associated with operations and maintenance **met** the performance objective having a favourable variance of 5.52% to internal operational estimates in the scope period, or \$171,615.22.

Capital projects **met** the performance objective having an unfavourable variance of 9% to internal operating estimates in the scope period, or \$1,108,269. However, upon review of the data provided from SAP, some estimated amounts were not recorded on the work order in the system. The most common causes noted were (1) as noted in Finding 10 below, the planned and estimated costs fields were not used consistently, resulting in work order estimated amounts not being entered in the system; and (2) capital projects included emergency work for which work order-level estimated costs are not estimated as repairing the assets are an immediate priority.

**Performance objective 2: Individual projects are delivered within dollar values, effort hours and materials within 10% (over or under)**

**Assessment:** On an annual basis, Enwin Utilities develops both a capital and operating budget. During our review, we noted that capital projects are given an estimate at the project level; however, this is not done for operating expenses. Rather, estimates are handled at a “general ledger” level, whereby the costs are classified based on the account types as opposed to by work order. Therefore, we are unable to assess this performance objective for operating expenses. However, as noted below, this assessment can still be carried out for capital projects.

Capital projects did **not meet** the performance objective given that 28% of the projects in the period met the performance variance expectation. There were 176 capital projects noted. The projects outside the performance measure targets were comprised of 2% had no estimated amount, 36% exceeded the threshold and 34% came in below the threshold. It was noted that savings from projects whose estimates were not fully spent are applied to those that exceeded estimates.

**Performance objective 3: Projects that exceed 10% variance threshold (over or under) have a variance analysis performed.**

**Assessment:** Performance measure of projects exceeding 10% variance threshold having a variance analysis performed **is not met**. Per review of 104 projects for which a variance analysis would be required, a variance analysis was performed in 25 situations. This result is further discussed in finding #1 below.

**Performance objective 4: Preventable asset breakdowns represent less than or equal to 10% of all breakdowns.**

**Assessment:** Performance measure of preventable asset breakdowns represent less than or equal to 10% of all breakdowns **is met**.

1,070 failures were noted in the year. 906 of these were either planned, uncontrollable by Enwin, or possibly preventable by Enwin representing 84.6%. While a further 129 did not have sufficient data to determine whether they were preventable or not, representing a further 12%.

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## Summary of Positive Themes

Greater than 50% of capital projects performed are done in-house with Enwin Utilities staff, allowing for a greater deal of flexibility in terms of allocating resources to different functions, as well as retaining the knowledge of performing these functions within the company.

When an asset failure occurs, following its correction, information involving the failure is recorded, including what asset had failed, the date of the failure, as well as the cause. This allows Enwin Utilities the ability to identify problem assets, as well as whether failures are caused by means that are beyond their control. This could lead to planned upgrades or repairs across the system for the asset type, or to provide the means to mitigate the risk of future breakdowns of similar assets.

An Asset Management Plan is in place which guides the next five years of asset repairs, maintenance and implementation. This is used in building logs of assets with a scoring mechanism to aid in determining how future work is prioritized.

Enwin Utilities has been focused on the capital side of the business and shown dedication in identifying its assets in need of repair or upgrade and carrying that out. With a focus on prioritizing these assets, Enwin Utilities has been able to deploy crews throughout the year in order to extend the useful life of its assets and provide continued service to its customers.

In terms of finding synergies and efficiencies between Enwin Utilities and WUC, there has been success in aligning processes and sharing of resources across the two business functions, specifically in relation to back office support, for example on work order generation, trouble calls, and work order close outs.

## Summary of Findings

Finding #	Topic	Rating <sup>1</sup>			Management Action
		Significant	Moderate	Low	
1	<b>Requirement and Timing of Variance Reporting</b>			X	The internal checklist will be updated to include the requirement for a variance report if the threshold exceeds 10%. Due: July 2016
2	<b>Kitting Process Delays</b>		X		Cost/benefit analysis will be completed and analysed to determine next steps. Due: October 2016
3	<b>Operations &amp; Maintenance Performance Measures</b>		X		Cost/benefit analysis will be completed and analysed to determine next steps. Due: October 2016
4	<b>Failure Codes</b>		X		Cost/benefit analysis will be completed and analysed to determine next steps. Due: October 2016
5	<b>Duplication of Work Type Statuses</b>		X		Cost/benefit analysis will be completed and analysed to determine next steps. Due: October 2016
6	<b>Lack of Description in Work Order Details</b>		X		Cost/benefit analysis will be completed and analysed to determine next steps. Currently moving to more detailed planning within SAP. Due: October 2016
7	<b>Operations &amp; Maintenance Activities Scheduling Horizon</b>		X		Cost/benefit analysis will be completed and analysed to determine next steps. Due: October 2016
8	<b>Work Order Results Review</b>			X	Cost/benefit analysis will be completed and analysed to determine next steps. Due: October 2016
9	<b>Root Cause Analysis Methodology</b>		X		Management will review various root cause analysis methodologies and select one for the organization. Due: September 2016
10	<b>Incomplete Work Order Forms</b>			X	Management will provide training to ensure proper use of planned/estimated costs for all capital projects. Management will review the cost/benefit of utilizing the Investment Module within SAP. Due: September 2016
<b>Total Audit Findings</b>		<b>0</b>	<b>7</b>	<b>3</b>	



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## *Summary of Significant Findings*

As noted above in the Summary of Audit Findings, Internal Audit did not classify any findings pertaining to Enwin Utilities as significant.

## *Management Comments*

Name: Victoria Zuber  
Title: Vice President of Finance and CFO  
Date: April 25, 2016

It is important to note that PwC has indicated that none of the findings are regarded as significant and that if implemented, the recommendations will provide greater efficiency and better leveraging of our work management systems rather than address any major control deficiencies. Overall management is in agreement with the findings and for the most part was already aware of the noted issues. Current funding and limited resources have resulted in a focus on the higher risk areas and ensuring they are adequately addressed. The audit report clearly indicates that management has done a good job in those areas.

SAP is our Enterprise Resource Planning (“ERP”) system. It went live in 2010. We have since installed a new Customer Information System (“CIS”) in 2014, and have just completed the installation of our Outage Management System (“OMS”). We embarked on a five year strategy to implement mobile field devices in 2013. Many of the recommendations in this report are recommendations to optimize our use of our systems. We will be evaluating those from a cost/benefit perspective as well as prioritizing any recommended enhancements.

## Detailed Observations

Finding	Rating <sup>1</sup>	Recommendation & Action Plan
<b>1. Requirement and Timing of Operational Variance Reporting</b>		
<p><b>Observation</b> For all capital projects, it is the practice of Enwin Utilities to create a variance report for internal/operational purposes when the final spend varies from internal operational estimates by 10% (favourable or unfavourable, thus creating a 20% threshold). While it was observed that this is generally occurring at Enwin Utilities, it was noted that a formal procedure is not in place to govern when these would be required.</p> <p>In a sample of ten capital projects, it was noted that in one instance, a variance report was not prepared despite being outside the 10% threshold from the estimated cost (the common threshold used).</p>	<p><b>Overall</b> Low</p> <hr/> <p><b>Impact</b> Low</p> <hr/> <p><b>Likelihood</b> Likely</p>	<p><b>Recommendation</b> Management should draft a procedure document that clearly defines what circumstances would require the creation of an internal/operational variance report and stipulates clearly the intended outcomes and focus areas for that document. This policy then should be introduced to all relevant stakeholders within the organization. The focus of variance reports should be to identify opportunities to lessen the risk of significant variances. The financial performance of projects should be reviewed by an appropriate level of management to determine whether the policy is being complied with.</p> <hr/> <p><b>Management Action Plan</b> Management agrees with the finding. Our internal checklist will be updated to include the requirement to create a variance report if the threshold exceeds 10%. Periodic internal reviews will be held to ensure compliance. Enwin will document a standardized formal process for completing internal variance reports for all capital project work for all companies. Periodic internal compliance will be monitored by Engineering and Finance.</p>
<p><b>Implication</b> Operational variance reporting may not occur in a timely manner to enable prompt learns and loss avoidance or optimization.</p>		<p><b>Responsibility</b> Director Hydro Engineering</p>
<p><b>Root Cause</b> Timeliness and compliance requirement not formally defined and implemented.</p>		<p><b>Due Date</b> July 2016</p>

<sup>1</sup> See Appendix A for Basis of Finding Rating and Report Classification  
PricewaterhouseCoopers LLP

Finding	Rating <sup>2</sup>	Recommendation & Action Plan
<b>2. Kitting Process Delays</b>		
<p><b>Observation</b>            At the beginning of each work day, work crews meet in the garage of the Operations Center to review their daily assignments, as well as pick up whatever tools and equipment that will be necessary, or their “kits”. It was noted that in the case of some capital projects, kits were prepared and contained in a locked container for crews to pick up. However, it was noted that the kitting for many O&amp;M projects were not ready at the beginning of the work day, and were picked up later in the work day, causing delays in crews heading to their job sites, delaying their ability to be productive during their shift.</p>	<p><b>Overall</b>            Moderate</p> <hr/> <p><b>Impact</b>            Medium</p> <hr/> <p><b>Likelihood</b>            Likely</p>	<p><b>Recommendation</b>            In conjunction with the recommendation in observation #7, schedules should be provided to those responsible for preparing kits in advance to reserve the appropriate tools for when they are needed using a “hard reserve” system where they cannot be checked out by others until it is used by the intended crew. Thus, these will be prepared days ahead of the planned work, reducing idle time for crews. Further benefits will be derived from the ability to better predict the demand for parts and equipment, allowing a greater lead time for ordering further supplies from vendors.</p>
<p><b>Implication</b>            This limits the visibility in the system in terms of what parts are available, even if they are sitting in a container and may not be used for a long period of time, potentially resulting in an inefficient use of resources and dollars. Furthermore, as kits are not prepared at the start of the day, it results in idle time for crews as they await the preparation of their kits.</p>		<p><b>Management Action Plan</b>            Management agrees with the finding. Cost/benefit analysis will be completed and analyzed to determine next steps.</p>
<p><b>Root Cause</b>            The scheduling horizon for crews is only one week, and kits are not prepared for crews on a timely basis.</p>		<p><b>Responsibility</b>            Director Hydro Operations</p>  <p><b>Due Date</b>            October 2016</p>

<sup>2</sup> See Appendix A for Basis of Finding Rating and Report Classification  
 PricewaterhouseCoopers LLP

Finding	Rating <sup>3</sup>	Recommendation & Action Plan
<b>3. Operations &amp; Maintenance Performance Measures</b>		
<p><b>Observation</b> A report titled Organizational Compliance, which identifies overall compliance to on-time work order delivery, work order count and Labmat % variance was noted, which provides real-time KPIs. However, this report provides a view of grand totals and does not provide work order detail. It only shows a percentage relative to the overall total and does not provide a capability of a drill down function to find the detail. This report does not take into account the costs per labour and material separately and does not provide information if the issues are related to planned material vs. actual nor planned labour vs. actual. The information does not provide the details on where improvements are needed to adjust estimates per work order.</p>	<p><b>Overall</b> Moderate</p>	<p><b>Recommendation</b> Management should consider determining the key performance indicators based on strategic and short-term targets, for which they could be provided with real-time progress. The SAP data structure could then be revised to provide reports capable of these figures at a more detailed level to provide further diagnostic information in determining the root cause of poor performing KPI, as well as what is leading to the strong performance of high-scoring KPI.</p>
<p><b>Implication</b> The way data is structured to capture costs only at higher levels makes it challenging and labour intensive to gain a granular view on the issues.</p>	<p><b>Impact</b> Medium</p>	<p><b>Management Action Plan</b> Management agrees with the finding. The current report used by the Hydro Supervisors, is generated to evaluate volume of work orders closed at a high level. The report achieves this intended outcome. Management will review cost/benefit analysis of including additional detailed information to determine next steps.</p>
<p><b>Root Cause</b> System capabilities are not used to their full potential. Currently, data structure is focused on the project level for capital projects and the cost centers level for Operations &amp; Maintenance, rather than the detailed work order level.</p>	<p><b>Likelihood</b> Likely</p>	<p><b>Responsibility</b> Director Hydro Operations Director Information Technology</p> <p><b>Due Date</b> October 2016</p>

<sup>3</sup> See Appendix A for Basis of Finding Rating and Report Classification  
PricewaterhouseCoopers LLP

Finding	Rating <sup>4</sup>	Recommendation & Action Plan
<b>4. Failure Codes</b>		
<p><b>Observation</b> The outage report from the hydro side focuses on the requirements of reporting outages to the Ontario Energy Board (OEB). This report fulfils OEB requirements, but can be used further to assist in understanding the reasons why outages occur and what can be done to prevent those types of outages in the future.</p>	<p><b>Overall</b> Low</p>	<p><b>Recommendation</b> Failure codes should be applied to work orders within SAP to allow for a greater level of analysis in understanding the cause for failures, as well as what can be done to lessen the risk of recurrence with other assets.</p>
<p><b>Implication</b> By focusing only on reporting outages to the OEB in order to fulfil compliance requirements, Enwin loses out on the possibility of learning new information to improve its practices to either better handle future failures or identify means to lessen the likelihood of recurrence.</p>	<p><b>Impact</b> Low</p>	<p><b>Management Action Plan</b> Management agrees with the finding. Outages are documented, categorized and in compliance with OEB requirements. Equipment failures represent approx. 20% of outages. Further cost/benefit analysis will be completed to determine next steps.</p>
<p><b>Root Cause</b> Structured approach for collection and utilization of data are limited in regards to improving work management processes.</p>	<p><b>Likelihood</b> Likely</p>	<p><b>Responsibility</b> Director Hydro Infrastructure</p> <p><b>Due Date</b> October 2016</p>

<sup>4</sup> See Appendix A for Basis of Finding Rating and Report Classification  
PricewaterhouseCoopers LLP

Finding	Rating <sup>5</sup>	Recommendation & Action Plan
<b>5. Duplication of Work Types</b>		
<p><b>Observation</b> As a result of receiving back office support from Enwin Utilities, WUC uses SAP for its day-to-day and reporting functions. Work order types are duplicated in SAP to separate Enwin Utilities and WUC from a cost allocation perspective, with costs being allocated to cost centres or project codes, rather than assets or work orders. As a result, Internal Audit was required to manually compile data as a part of its analysis as this information could not be readily prepared.</p>	<p><b>Overall</b> Moderate</p> <hr/> <p><b>Impact</b> Medium</p> <hr/> <p><b>Likelihood</b> Likely</p>	<p><b>Recommendation</b> Data structures should be reconsidered in addition to being set to the cost center, they also assign cost to work orders and/or assets. By doing so, it will be simpler to review the project's performance against its estimate at the work order and asset level. This will also enable Enwin to create reports which focus on KPI and dashboards that drive the overall business toward their strategic goals. This will enable Enwin to enjoy benefits related to automated reporting, allocating costs to individual assets, and to perform deeper analysis into asset classes to aid in decision making</p>
<p><b>Implication</b> The current data structure limits the potential reporting of detailed actual vs budget/estimated costs, preventing a system analysis of these figures at the asset or work order level, creating a challenge to determine the effort and true cost involved at these levels.</p>		<p><b>Management Action Plan</b> Management agrees with the finding. Cost/benefit analysis will be completed and analyzed to determine next steps.</p>
<p><b>Root Cause</b> Implementation data structure definitions possibly lacked detail on how operations should use the data and information derived from the data, for example to compare actual and planned costs</p>		<p><b>Responsibility</b> Director Information Technology</p> <p><b>Due Date</b> October 2016</p>

<sup>5</sup> See Appendix A for Basis of Finding Rating and Report Classification  
PricewaterhouseCoopers LLP

Finding	Rating <sup>6</sup>	Recommendation & Action Plan
<b>6. Lack of Description in Work Order Details</b>		
<p><b>Observation</b> While gaining an understanding of the work orders process, it was noted that the work orders provided a limited amount of detail. While general requirements are provided, the observed work orders do not provide details concerning specific parts required in a job, as well as detailed work steps, resulting in depending on Enwin staff having the experience to carry the work out.</p> <p>It was further noted that a variance analysis is not performed for O&amp;M work orders as cost estimates are not provided at a work order level. Rather, these costs are considered at a GL-level.</p>	<p><b>Overall</b> Moderate</p>	<p><b>Recommendation</b> Management should consider:</p> <ul style="list-style-type: none"> <li>a. providing training to communicate the need for a greater level of detail in regards to the work order description, including the required parts, as well as detailed steps needed to complete the task.</li> <li>b. creating a task force consisting of its more experienced staff members in drafting standard steps for routine work orders.</li> <li>c. updating its policies regarding work orders to require this level of detail to be provided.</li> <li>d. Management should consider adding estimated costs at a work order level in order to provide a means to carry out a variance analysis for work orders, whether it be for all work orders, or those of a certain size or importance.</li> </ul>
	<p><b>Impact</b> Medium</p>	
	<p><b>Management Action Plan</b> Management agrees with the finding. Cost/benefit analysis will be completed and analyzed to determine next steps. Currently moving to more detailed planning within SAP which allows for step by step instructions to be provided on the work order. Standard operating procedure documents currently provide the necessary details to complete the work required.</p> <p><b>Responsibility</b> Director Hydro Engineering Director Hydro Infrastructure</p> <p><b>Due Date</b> October 2016</p>	
<p><b>Implication</b> By not providing these details in work orders, it increases the probability of inconsistent processes being carried out for similar work, thus preventing the most effective, efficient and economical approach from being carried out. Furthermore, as the current workforce begins to retire, Enwin is at risk of knowledge loss and may not be able to call on past experience with the work being carried out.</p> <p>By not tracking variance analysis at an individual work order level, this could prevent an opportunity to learn causes for the variance at a micro level which could be applied to other work orders in a more rapid manner, allowing for earlier efficiency gains.</p>	<p><b>Likelihood</b> Likely</p>	
<p><b>Root Cause</b> To date, the training provided around this function has not considered the need to provide more detailed work instructions.</p>		

<sup>6</sup> See Appendix A for Basis of Finding Rating and Report Classification  
PricewaterhouseCoopers LLP

Finding	Rating <sup>7</sup>	Recommendation & Action Plan
<b>7. O&amp;M Activities Scheduling Horizon</b>		
<p><b>Observation</b>            Operation &amp; Maintenance activities are planned one week at a time, providing a list of scheduled activities to the crews. While the plan needs to be adjusted due to unforeseen and unpredictable equipment failures, as many O&amp;M projects are less than one week in length, one week of scheduling creates constraints in terms of scheduling their staff and ensuring they have appropriate supplies on hand when they are needed.</p>	<p><b>Overall</b>            Moderate</p>	<p><b>Recommendation</b>            Management should consider implementing the SAP system components needed to gain visibility into workforce availability by craft and plan work to the level of detail of hours by craft needed to consider a longer scheduling horizon. Management should focus on having the same crews focus on similar projects in near geographic proximities to allow for more efficient and economical project completion. By doing so, management could provide a 3 month projected work load for its crews, with a one-week commitment plan.</p>
<p><b>Implication</b>            By using such a short horizon, Enwin is less capable to realize potential efficiency gains and would be less capable to provide projects with the right staff at the right time.</p>	<p><b>Impact</b>            Medium</p>	<p><b>Management Action Plan</b>            Management agrees with the finding. Cost/benefit analysis will be completed and analyzed to determine next steps.</p>
<p><b>Root Cause</b>            The current system visibility into available workforce does not consider activities beyond the current week. A further limitation is caused by the visibility into work order loading by craft from the backlog.</p>	<p><b>Likelihood</b>            Likely</p>	<p><b>Responsibility</b>            Director Hydro Operations            Director Hydro Infrastructure</p> <p><b>Due Date</b>            October 2016</p>

<sup>7</sup> See Appendix A for Basis of Finding Rating and Report Classification  
 PricewaterhouseCoopers LLP



Finding	Rating <sup>8</sup>	Recommendation & Action Plan
<b>8. Work Order Results Review</b>		
<p><b>Observation</b> Upon closing a work order, there was little evidence of reporting back on what specifically was done, how it was done, why it was done and that information being used to improve upon the work in the future, i.e. for time based repetitive work orders.</p>	<p><b>Overall</b> Low</p>	<p><b>Recommendation</b> Following the closure of a work order, a report should be completed within SAP which outlines the work performed, the cause for the work to be carried out, and what can be done in the future to improve on the process to allow Enwin to realize potential efficiencies. These efficiencies should be considered to update standard procedures provided in work order details in conjunction with observation #6.</p>
<p><b>Implication</b> When information is not reviewed from the execution of time based maintenance activities, there are lost opportunities to develop more efficient and effective practices when similar work is later planned, preventing the knowledge from being shared with the organization.</p>	<p><b>Impact</b> Low</p>	<p><b>Management Action Plan</b> Management agrees with the finding. Costs are typically reviewed compared to budget. For capital work orders, opportunities for improvements will be emphasized in the standardized cost variance procedure (finding #1). Cost/benefit analysis will be completed and analyzed to determine next steps.</p>
<p><b>Root Cause</b> Failure codes and improvement processes from failure and reporting are not in place.</p>	<p><b>Likelihood</b> Likely</p>	<p><b>Responsibility</b> Director Hydro Operations</p> <p><b>Due Date</b> October 2016</p>

<sup>8</sup> See Appendix A for Basis of Finding Rating and Report Classification  
PricewaterhouseCoopers LLP

Finding	Rating <sup>9</sup>	Recommendation & Action Plan
<b>9. Root Cause Analysis Methodology</b>		
<p><b>Observation</b> PwC noted that Corrective Preventive Action Forms are in effect to analyze circumstances of significant outages at Enwin Utilities. While some exploration into actual root causes is carried out, a formalized methodology is not in place.</p> <p>Samples of Corrective Preventive Action Forms were reviewed and hydro does analyse circumstances of significant outages on the hydro side. They do suggest root causes of failures but do not seem to follow a root cause methodology, for example: a “5 Why” method, a Fishbone method, TapRoot method, Apollo method or other similar methodologies.</p>	<p><b>Overall</b> Moderate</p> <hr/> <p><b>Impact</b> Medium</p> <hr/> <p><b>Likelihood</b> Likely</p>	<p><b>Recommendation</b> Management should review various root cause analysis methodologies, such as the “5 Why” method, the Fishbone method, TapRoot, or Apollo method, as examples. Upon deciding which is most appropriate for its business needs, this should be implemented followed by training to appropriate staff members to provide a consistent means to identify potential improvements.</p>
<p><b>Implication</b> Without an approved methodology to uncover the root cause of asset failures, inconsistent approaches may be used, which could ignore industry practice or more current techniques. This in turn could lead to inappropriate or incomplete root cause conclusions, preventing Enwin from fully learning from past mistakes.</p>		<p><b>Management Action Plan</b> Management agrees with the finding. Management will review various root cause analysis methodologies and will select one to be used throughout the organization. Procedures will be updated and training provided.</p> <p><b>Responsibility</b>  Director Hydro Operations</p>
<p><b>Root Cause</b> Root cause analysis methodologies have not been reviewed and taught to staff.</p>		<p><b>Due Date</b> September 2016</p>

<sup>9</sup> See Appendix A for Basis of Finding Rating and Report Classification  
PricewaterhouseCoopers LLP

Finding	Rating <sup>10</sup>	Recommendation & Action Plan
<b>10. Incomplete Work Order Forms</b>		
<p><b>Observation</b> During the data analysis of capital project work orders, it was noted that in some cases, the Planned Cost (original budget amount) and Estimated Cost (and revised engineering estimate) fields are used inconsistently in SAP. While these costs are always determined ahead of the execution of work, they are not always stored in a consistent field in SAP.</p>	<p><b>Overall</b> Low</p>	<p><b>Recommendation</b> Further training should be provided to stakeholders and work order preparers in regards to the recording of the various Estimated and Planned cost element fields within SAP. A further emphasis should be provided on explaining the importance of recording these values.</p> <p>Upon the creation of any work orders, it should be required that these fields be populated prior to approval.</p>
<p><b>Implication</b> Standard reporting will not always be correct as standard reports pull from specific fields. This will make the comparison of Planned vs. Actual costs incorrect in some cases and perhaps even generate a variance report without true cause.</p>	<p><b>Impact</b> Low</p>	<p><b>Management Action Plan</b> Management agrees with the finding. Management will prepare training for appropriate staff to ensure the proper use of planned/estimated costs for all capital projects. Management will review the cost/benefit of utilizing the Investment Module within SAP in conjunction with corporate priorities and projects.</p> <p><b>Responsibility</b> Director Information Technology</p> <p><b>Due Date</b> September 2016</p>
<p><b>Root Cause</b> Planned and estimate costs have not always been allocated to the right fields in SAP.</p>	<p><b>Likelihood</b> Likely</p>	

<sup>10</sup> See Appendix A for Basis of Finding Rating and Report Classification  
PricewaterhouseCoopers LLP

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## ***Considerations for Improvement***

There was one additional considerations for improvement noted as follows:

**1. Mobile tablet usage for work execution support.**

Mobile tablets are used in a limited way to gather information in the field. These tablets have the potential to lessen the amount of paperwork involved and provide field employees with direct access to various information related to their work. These tablets can also enable data collection for reporting of work, allocation of hours related to the work, selecting the failure codes, getting geographical information, and more.

It is highly recommended that Enwin continue with the wider implementation of these mobile tablets as they can increase efficiency and quality of information to the work in the field as well as the reporting of work and data collection.

# Appendix A: 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	<ul style="list-style-type: none"> <li>History of regular occurrence of the event.</li> <li>The event is expected to occur in most circumstances.</li> </ul>
Likely	<ul style="list-style-type: none"> <li>History of occasional occurrence of the event.</li> <li>The event could occur at some time.</li> </ul>
Unlikely	<ul style="list-style-type: none"> <li>History of no or seldom occurrence of the event.</li> <li>The event may occur only in exceptional circumstances.</li> </ul>

## Impact Consideration

Rating	Basis	Description
HIGH	Dollar Value <sup>11</sup>	Financial impact likely to exceed \$250,000 in terms of direct loss or opportunity cost.
	Judgemental Assessment	<p><b>Internal Control</b> Significant control weaknesses, which would lead to financial or fraud loss.</p> <p><b>An issue that requires a significant amount of senior management/Board effort to manage such as:</b></p> <ul style="list-style-type: none"> <li>• Failure to meet key strategic objectives/major impact on strategy and objectives.</li> <li>• Loss of ability to sustain ongoing operations: <ul style="list-style-type: none"> <li>- Loss of key competitive advantage / opportunity</li> <li>- Loss of supply of key process inputs</li> </ul> </li> <li>• A major reputational sensitivity e.g., Market share, earnings per share, credibility with stakeholders and brand name/reputation building.</li> </ul> <p><b>Legal / Regulatory</b> 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.
	Judgemental Assessment	<p><b>Internal Control</b> Control weaknesses, which could result in potential loss resulting from inefficiencies, wastage, and cumbersome workflow procedures.</p> <p><b>An issue that requires some amount of senior management/Board effort to manage such as:</b></p> <ul style="list-style-type: none"> <li>• No material or moderate impact on strategy and objectives.</li> <li>• Disruption to normal operation with a limited effect on achievement of corporate strategy and objectives</li> <li>• Moderate reputational sensitivity.</li> </ul> <p><b>Legal / Regulatory</b> 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.
	Judgemental Assessment	<p><b>Internal Control</b> Control weaknesses, which could result in potential insignificant loss resulting from workflow and operational inefficiencies.</p> <p><b>An issue that requires no or minimal amount of senior management/Board effort to manage such as:</b></p> <ul style="list-style-type: none"> <li>• Minimal impact on strategy</li> <li>• Disruption to normal operations with no effect on achievement of corporate strategy and objectives</li> <li>• Minimal reputational sensitivity.</li> </ul> <p><b>Legal / Regulatory</b> Regulatory breach with minimal consequences.</p>

<sup>11</sup> Dollar value amounts are agreed with the client prior to execution of fieldwork.

## **Audit Report Classification**

<b>Report Classification</b>	<b>The internal audit identified one or more of the following:</b>
Cause for considerable concern	<ul style="list-style-type: none"> <li>• Significant control design improvements identified to ensure that risk of material loss is minimized and functional objectives are met.</li> <li>• 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.</li> <li>• Material losses have occurred as a result of control environment deficiencies.</li> <li>• Instances of fraud or significant contravention of corporate policy detected.</li> <li>• No action taken on previous significant audit findings to resolve the item on a timely basis.</li> </ul>
Cause for concern	<ul style="list-style-type: none"> <li>• Control design improvements identified to ensure that risk of material loss is minimized and functional objectives are met.</li> <li>• A number of significant controls identified as not operating for which sufficient mitigating back-up controls could not be identified.</li> <li>• Losses have occurred as a result of control environment deficiencies.</li> <li>• Little action taken on previous significant audit findings to resolve the item on a timely basis.</li> </ul>
No major concerns noted	<ul style="list-style-type: none"> <li>• Control design improvements identified, however, the risk of loss is immaterial.</li> <li>• Isolated or “one-off” significant controls identified as not operating for which sufficient mitigating back-up controls could not be identified.</li> <li>• Numerous instances of minor controls not operating for which sufficient mitigating back-up controls could not be identified.</li> <li>• Some previous significant audit action items have not been resolved on a timely basis.</li> </ul>
No or limited scope for improvement	<ul style="list-style-type: none"> <li>• No control design improvements identified.</li> <li>• Only minor instances of controls identified as not operating which have mitigating back-up controls, or the risk of loss is immaterial.</li> <li>• All previous significant audit action items have been closed.</li> </ul>

## Appendix B: Outage Analysis

### Outage report analysis – Enwin Utilities

The outage report was reviewed and analysed with a focus on if outages could have been prevented with predictive measures, such as monitoring of loading trends, thermal analysis, etc.

It should be noted that predictive measures, even if identified below, are not a guarantee for preventing failures. For that to occur, the predictive measures need to be applied in the right way at the right time. For example if a thermal analysis is made once per year and the failure develops over a shorter time period than a year, it might go undetected.

Below are two tables. The first table shows the count of outages in the scope period at Enwin. It is classified below on the vertical axis by what, if anything, could be done to prevent the outage. The horizontal axis classifies if it is possibly preventable, or not, etc. The second table shows the hours of outages from the same perspective as the first table.

Count of Type	Inconclusive	Bypass feed	Not known	Locate	Load trend	Inspection	Un preventable	N / A	Thermal	Training	Grand Total
Not known											129
Planned								371			371
Preventable						35					35
Possibly Preventable	228	4		1	4	4	81		30	7	359
Uncontrollable by Enwin	15					2	159				176
<b>Grand Total #</b>	<b>316</b>	<b>6</b>	<b>31</b>	<b>1</b>	<b>19</b>	<b>46</b>	<b>243</b>	<b>371</b>	<b>30</b>	<b>7</b>	<b>1070</b>
<b>Grand Total %</b>	<b>30%</b>	<b>1%</b>	<b>3%</b>	<b>0%</b>	<b>2%</b>	<b>4%</b>	<b>23%</b>	<b>35%</b>	<b>3%</b>	<b>1%</b>	<b>100%</b>



Customer hours lost	Inconclusive	Bypass feed	Not known	Locate	Load trend	Inspection	Un preventable	N / A	Thermal	Training	Grand Total
<b>Not known</b>											2,249.9
<b>Planned</b>								22,484.3			22,484.3
<b>Preventable</b>						5,601.8					5,601.7
<b>Possibly Preventable</b>	16,668.1	104.0		1.4	25.6	787.5	14,271.7		525.6	3,290.8	35,674.7
<b>Uncontrollable by Enwin</b>	476.87					88.2	14,905.5		119.0		15,589.6
<b>Grand Total hrs</b>	<b>18,758.1</b>	<b>196.9</b>	<b>-</b>	<b>1.4</b>	<b>525.4</b>	<b>6,521.4</b>	<b>29,177.2</b>	<b>22,484.3</b>	<b>644.6</b>	<b>3,290.8</b>	<b>81,600.3</b>
<b>Grand Total %</b>	23%	0%	0%	0%	1%	8%	36%	28%	1%	4%	100%

From the analysis above, looking at customer hours lost, the un-preventable category is the highest. The second category are the planned outages. The third, at 23%, was inconclusive from the description if it was preventable or not, this is primarily because the descriptions did not focus on the “why”. The “why” of outages are very important from a continual improvement perspective to understand what can be implemented to prevent another outage of that type.

The conclusion of this analysis suggests that implementing a failure code definition as well as a structured root cause analysis approach, for example the “5 Why’s”, would help Enwin to improve in this area.

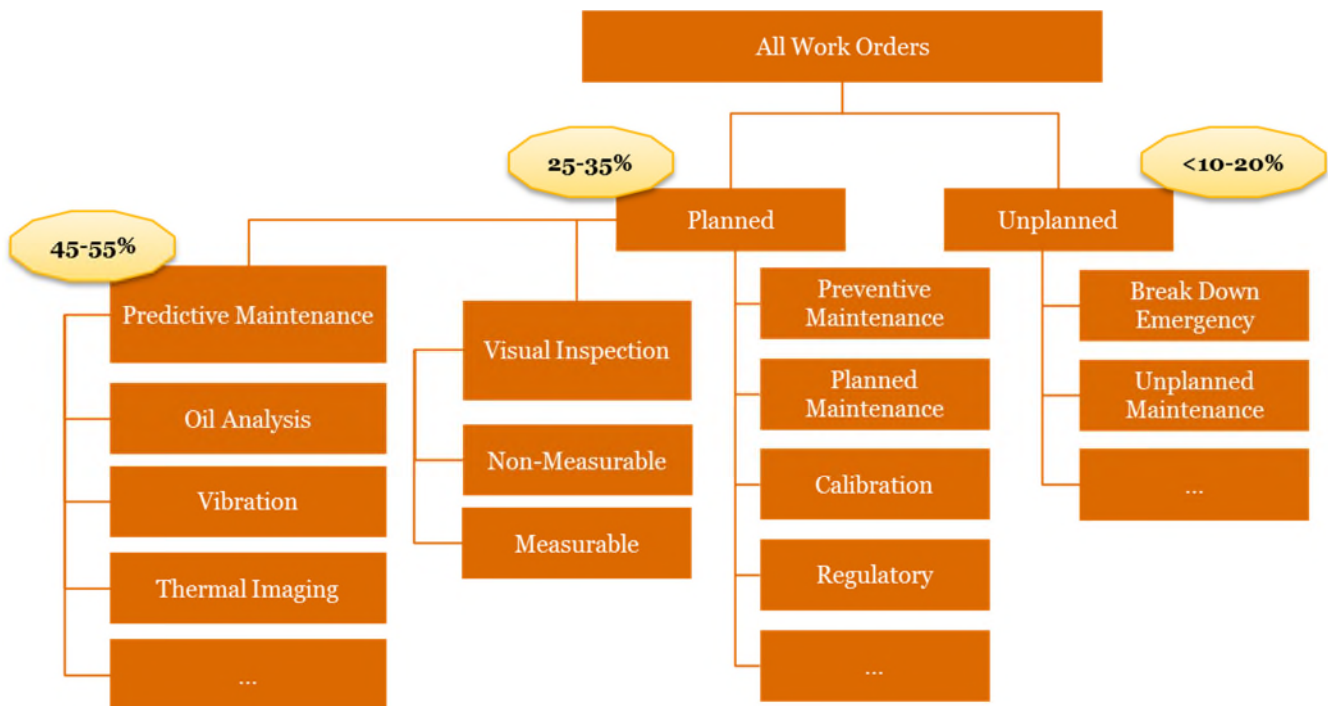
# Appendix C: Work Type Analysis

## Work type analysis from a cost and count perspective

Below there is a categorization of 1. All work types (hydro and water), 2. Hydro work types, and 3. Water work types.

Work types are typically at the highest level broken down into Planned Work and Un-Planned work. Work types below that are broken down in various ways across different industries but the typical work types are shown here below with the leading benchmark indicators.

### Leading Benchmark Indicator



**Enwin Utilities**

