SUBJECT: Annual information technology services update

TO: Audit Committee

FROM: Information Technology Services

Report Number: IT-02-19

Wards Affected: All

File Numbers: 430-01

Date to Committee: September 11, 2019

Date to Council: September 23, 2019

Recommendation:

Receive and file information technology services department report IT-02-19 providing an annual information technology assurance update.

Purpose:

The Audit Committee is responsible to obtain reasonable assurance on an annual basis that the information technology (IT) systems are reliable and secure and the systems of internal controls are properly designed and effectively implemented. This report provides an annual update based on a control framework previously presented and used in the management of City IT systems.

The annual assurance reporting process supports Burlington's Strategic Plan goal of:

An Engaging City
- Good Governance

Background and Discussion:

Annual IT assurance reports were presented to the Audit Committee starting in 2017 and were based on COBIT, a framework used in the governance and management of enterprise IT. Although the City has not formally adopted COBIT it is considered a useful reference point to guide the annual reporting process. For consistency, the COBIT model will continue to be used and, as in previous reports, will include an update in the following five components of the IT management and governance framework:

- IT Strategy & Governance
- IT Infrastructure & Operations
- Applications & Data
- Projects and Portfolio Mgmt.
- IT Security & Risk Mgmt.

This report provides a summary of the key controls in each of the above components and will highlight areas of focus including updates and improvements that have occurred since the last report.

The 2018 update report IT-03-18 (June 14, 2018 Audit Committee) and the 2017 presentation A-01-17 (May 31 2017 Audit Committee) can be accessed on the City's web site.

Strategy/process

IT Strategy & Governance

IT Strategy ensures that the business value of IT and IT initiatives align with organizational strategies and goals.

The latest corporate IT Strategy, adopted in 2016, was developed with a vision of delivering "Innovative City Services powered by tech savvy people, modernized technology and meaningful information". Within the 5-year plan are five key themes developed to support the vision:

- Build a tech savvy corporate culture
- Treat information as an asset
- Pursue a technology modernization agenda
- Tackle IT service modernization
- Implement or renew core Enterprise Systems

The strategy, which set out an ambitious action plan, has seen some positive progress.

Key accomplishments include the implementation of modernized technologies such as updated desktop software (Office365), staff WiFi, and new remote access technologies enabling mobile workers. Most recently, the City has initiated projects that will renew and enhance our core Enterprise Systems including a new Customer Relationship Management (CRM) system, Enterprise Resource Planning (ERP), Enterprise Asset

Management system (EAMS), and an upgrade to our corporate case management application (AMANDA). A process to update the IT strategy will be initiated in 2021.

The IT Service Business Plan provides an overview of the service and identifies emerging opportunities and risks. This document and the service performance measures are updated on an annual basis. The 2019 IT Service Business Plan is attached as Appendix A.

IT Governance is an enabling framework for strategic IT decisions. It provides a platform for collaboration, consistency, and transparency in decision making and prioritization of initiatives. It is also a critical component to ensuring business value from IT investment.

The City continues to operate under an IT governance structure that includes oversight from the Burlington Leadership Team (BLT). The established IT governance ensures involvement of leadership across the organization and establishes decision-making authority and accountability. The structure consists of a group of standing committees and has evolved to ensure that appropriate oversight of major IT initiatives is also in place. Most recently, an Enterprise Software Steering Committee was created to provide leadership and strategic direction for two corporate software replacement projects: Enterprise Resource Planning (“ERP”) and Enterprise Asset Management System (“EAMS”). Committee membership includes a subset of BLT. A Customer Service Steering Committee responsible for customer service strategy oversees the CRM project. Additionally, an IT Steering Committee consisting of department management staff are responsible for assessing and preparing an annual work plan of IT projects. Application-based steering committees exist to advise and guide decisions on the on-going use and enhancement of key enterprise applications. An Information Governance committee forms part of the IT governance framework and is responsible for setting strategic directions and oversight of corporate information and data management. Included in Appendix B is a diagram of the current IT governance structure.

The following table summarizes the key controls, areas of focus, and recent changes that have occurred in IT Strategy & Governance.

Key Controls in Place	Areas of Focus	Changes/Improvements
• Corporate IT Strategy • IT Governance • IT Service Business Plan	• Enterprise System Replacements • Business Intelligence implementation • IT strategy execution	• Enhanced IT Governance • Modernized technology

IT Infrastructure & Operations

The IT Services department has adopted ITIL (Information Technology Information Library) as a framework for IT Service Management. The ITIL framework is a set of standard processes and practices to enable effective management of IT. A Change Advisory Board (CAB) consisting of ITS management and technical staff continues to meet on a weekly basis. All changes for the following week are discussed.

Dependencies, risks, and contingency plans are thoroughly considered before a change is approved to proceed. Changes planned for upcoming weeks are discussed but not approved until the week prior to the scheduled change. Each change request identifies any downtime anticipated and the stakeholders who are impacted. Emphasis is placed on effectively communicating any impacts to the public and internal staff. Where possible, changes are implemented outside of normal hours of operation to minimize impacts on business and City customers.

An asset management plan for information technology identifies the total value of IT assets, the annual cost to maintain those assets over their life-cycle, and timeframes for significant upgrades and asset replacement.

Backup and recovery services provide historical data recovery options (point in time) as well as system recovery capabilities that are based on the Recovery Time Objectives (RTOs) and Recovery Point Objectives (RPOs) required by the business.

The following table summarizes the key controls, areas of focus, and recent changes that have occurred in IT Infrastructure & Operations.

Key Controls in Place	Areas of Focus	Changes/Improvements
• Incident Management • Transition to operations process • Change Advisory Board (CAB) • After-hours support • Major incident notification • Critical Infrastructure monitoring/mgmt. • Service performance measures (e.g. uptime) • Annual access reviews	• Data Backup and Recovery Objectives • Incident Detection and Response • Problem management • High Availability Architecture • Life Cycle Management • End-user Training	• Redundant Internet • Improved Operation Support Guides • Enhanced Infrastructure Monitoring Tools • Enhanced Incident Response Collaboration Protocols / Tools

Applications & Data

This component encapsulates application lifecycle management, application integration, access management, information and data management. The City operates a highly integrated and complex application environment that consists of approx. 150 individual applications.

Information is one of the most vital strategic assets that the City possesses and relies on to deliver services. In 2019, the Information Governance committee began the development of an information management roadmap with the intent of positioning the organization to effectively manage data as a vital corporate asset.

The Business Intelligence (BI) program is making some early progress in this regard. By implementing a full stack platform for end to end data analysis, BI has enabled the completion of data quality assessments, scoring and profiling. By connecting live system data with BI analytical tools, data quality issues can also be made visible in new ways. The process of developing BI solutions for multiple service areas has impelled new discussions about the quality, consistency and underlying structures of source data. The BI program has also started work in partnership with Information Builders professional services to create a Master Data Management roadmap for the

organization. BI has formed a close partnership with the City's GIS team and a group of cross-functional subject matter experts who are uniquely passionate about using data in their work along with the development and documentation of clear, consistent data standards for the organization.

In managing data transfer between applications, IT Services are now developing these integrations using tools that allow for improved data evaluation and transformation prior to transfer and enables better capture and tracking of data inconsistencies.

The following table summarizes the key controls, areas of focus, and recent changes that have occurred in Applications & Data.

Key Controls in Place	Areas of Focus	Changes/Improvements
• Annual user access review • Change control • Peer review • Monitoring/alerts • Cloud policy & framework • Application management procedures • Information Governance committee	• Standardized integration tools and methods • Cloud policy review • Data management standards and practices	• Adoption of BI solution integration tool • Business Intelligence dashboards • Information Management Roadmap

<u>Project & Portfolio Management</u>

This component involves the selection, prioritization, and management of projects. It ensures the effective allocation of resources to projects by assigning the right resources to the right projects at the right time. It ensures projects are prioritized based on key business drivers, satisfy business needs, and are effectively managed from initiation through to post-implementation.

IT Services has adopted and follows the project management standards and terminology set within the Project Management Body of Knowledge (PMBOK).

The City's annual IT project work plan continues to be established by the IT Steering Committee. A project portfolio management tool is used by IT staff to assess staff capacity and to monitor the progress and health of projects.

Further, on July 15th Council approved the 2018-2022 Burlington's Plan: From Vision to Focus (V2F) which details the strategic goals, priority initiatives and key performance indicators which will be the strategic focus over this term of council. A number of corporate technology projects have been identified as key actions contributing to greater organizational effectiveness and technology transformation. A key performance indicator target has been set that "annually 90% of project outcomes will be on schedule and within budget".

The Customer Relationship Management (CRM) and the Enterprise Asset Management System (EAMS) are 2 projects being led by the Corporate Strategy and Projects Office. As members of those project teams, IT Services staff assist with gathering business requirements, technology research, procurement, vendor management, IT security, and other important matters related to the implementation of the technology. Subject matter experts advise on business processes and identify opportunities for service delivery improvements. Change management is vital to achieving acceptance and adoption of new solutions and is addressed as a fundamental component of project delivery.

The following table summarizes the key controls, areas of focus, and recent changes that have occurred in Project & Portfolio Management.

Key Controls in Place	Areas of Focus	Changes/Improvements
• Project submission and review • Project prioritization/alignment • Project monitoring • Resource management • Project artifacts • Transition to operations • Procurement by-law • Vendor contracts • Project governance	• Benefits realization • Project tracking and reporting • Change management • Alignment with V2F Term of Council Plan	• Business case template • Agile techniques • Defined targets and key performance indicators in V2F Plan

IT Security & Risk Management

The purpose of the City's IT Security program is to maintain confidentiality, integrity and availability of corporate information assets. IT Security has been identified as a key enterprise risk and has become an integral part of IT operations.

Technical changes occur every day through project and maintenance activities and every change goes through a risk assessment process. The rigor and formality of the assessment and the amount of staff involved in oversight and decision-making depends on the level of risk. All changes go through a Change Advisory Board review and approval process and major changes go through a formal corporate risk assessment process. Third-party vulnerability assessments and penetration tests are performed on hosted applications and public on-line services prior to going into production.

The City takes a defensive and in-depth approach to security by layering multiple controls to mitigate threats before they do harm. Threats are managed 24/7 by assessing vulnerabilities, detecting intrusions, and applying preventive safeguards. Multiple firewalls sit between the internet and other systems to detect and prevent intrusions. Anti-virus software is install on all computers, servers, firewalls, and other systems to provide multilayer protection. Network traffic is constantly monitored for intrusions.

An Information Security Manager position reports to the Director of IT Services. The position directs the planning and implementation of enterprise IT system defenses and is responsible for the delivery of a comprehensive, proactive information security program.

In 2019, the City completed the development of an information security framework (ISF) with the goal of improving the security posture of the City by further protecting its information assets, improving our ability to respond to cyber threats, and to enable City staff to innovate within a secure environment. The framework includes a roadmap that identifies short-term and long-term actions to occur over a 3-5 year period. Priority items include delivery of mandatory security awareness training to City staff, updating the City's Information Security Policies, developing a corporate incident response plan, and improvements to mobile device and remote access configurations.

The V2F Plan includes a new strategic goal to "Increase corporate resilience to cyber-security threats through effective and proactive IT security management practices" as part of Focus Area 5 "Delivery Customer Centric Services with a Focus on Efficiency

and Technology Transformation". A key performance indicator (KPI) has been incorporated in the plan with a target of "100% of City staff have successfully completed security awareness training" by 2020.

The following table summarizes the key controls, areas of focus, and recent changes that have occurred in IT Security & Risk Management.

Key Controls in Place	Areas of Focus	Changes/Improvements
• Annual inherent risk assessment • Annual audit of IT general controls • Operational risk assessments • Disaster recovery & business continuity • Security updates/patches • Management and monitoring practices • Auditable incident and event management • Standard web encryption	• Mobility and cloud • Single sign-on • Security awareness training • Incident response plan • Security policy review	• Information Security Framework (ISF) • V2F strategic goal and key performance indicators (KPI's)

Options considered

Not applicable.

Financial Matters:

Not applicable.

Other Resource Impacts

Not applicable.

Connections:

The IT Service collaborates and partners with all City services identifying how information technology will support their strategic goals and ensuring operational needs are met.

The goal of the IT Service is to be strongly aligned with Burlington's Plan: From Vision to Focus.

Public Engagement Matters:

Not applicable

Conclusion:

The annual IT management report provides an update on internal controls applied in each of five management areas and includes a summary of key controls, areas of focus, changes and improvements applied in the last 12 months, and outlines areas of focus for the upcoming year.

Respectfully submitted,

Christine Swenor

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Appendices:

A. IT Service Business Plan

B. IT Governance Diagram

Report Approval:

All reports are reviewed and/or approved by Department Director, Director of Finance and Director of Legal. Final approval is by the City Manager.