

TECHNOLOGY SERVICES DIVISION – NOT FULLY IMPLEMENTED AUDIT RECOMMENDATIONS

As of October 1, 2021

INDEX OF RECOMMENDATIONS

Report Title: Disaster Recovery Planning for City Computer Facilities	2
Report Title: IT Service Desk Unit - Opportunities for Improving Service and Cost - Effectiveness	4
Report Title: Controls Over Telecommunication Expenses Need Improvement.....	5
Report Title: Software Licenses - Managing the Asset and Related Risks.....	6
Report Title: IT Infrastructure and IT Asset Management Review: Phase 1	8
Report Title: Information Technology Infrastructure and Asset Management Review: Phase 2: Establishing Processes for Improved Due Diligence, Monitoring and Reporting for Effective IT Projects and Asset Management.....	10
Report Title: Improvement Needed in Managing the City's Wireless Telecommunication Contracts	11
Report Title: Investigation into Allegations of Reprisal: Reprisal Not Found, But Lessons Learned (Forensic Report).....	12
Report Title: IT Projects Implementation: Information Privacy and Cybersecurity Review	13

Report Title: Disaster Recovery Planning for City Computer Facilities**Report Date: 3/3/2008**

No.	Recommendation	Management Comments as of Oct 1, 2021	Target Due Date & Reason for delay
2	The City Manager implement a disaster recovery and business continuity program that includes divisional roles and responsibilities, resource and training requirements, and simulation and plan maintenance schedules.	<p>Technology Services Division has established a Data Centre Modernization Program that includes a Disaster Recovery (DR) component with an assigned Project Director and there is a Business Continuity Program (BCP) that is managed by the office of CISO. A Disaster Recovery project manager and a BCP Specialist (consultant) are in place. The development of the BCP plan and the DR plan are in process with (5%) development undertaken. The testing of critical applications recovery based on the current state is at (25%) progress.</p> <p>The Tiffield Data Center construction was completed in March 2020, as well as the Data Centre Reference Architecture (signed off in June 2020), along with the budgetary estimates to support the operationalization. High level design workshops, pertaining to the network, security, compute & storage, are in progress and will be completed by the mid Q1 2021, which will be an input to start the procurement of required hardware/software components.</p>	<p>Jun 30, 2022</p> <p>Renewed Divisional Focus and Organization</p>
6	The City Manager, in consultation with the Chief Information Officer, direct divisions to test information technology disaster recovery plans on a regular basis.	The testing of technology disaster recovery plans are dependent on the completion of the Disaster Recovery Strategy Standard document. Once this is finalized, a Memo from the City Manager will be published to direct divisions to test information technology disaster recovery plans on a regular basis based on DR Standard including frequency of testing.	<p>June 30, 2022</p> <p>Renewed Divisional Focus and Organization</p>
7	The Chief Information Officer develop disaster recovery testing guidelines and provide training necessary to ensure cross-divisional consistency.	In planning phase, preparing a Project Charter that includes the audit items as part of the scope and Disaster Recovery (DR) Strategy Standard document. Stakeholder engagements are underway to gather information requirements for the	<p>Sep 30, 2022</p> <p>Renewed Divisional Focus and Organization</p>

No.	Recommendation	Management Comments as of Oct 1, 2021	Target Due Date & Reason for delay
		<p>Standards. The DR Standards will include disaster recovery testing guidelines and provide training necessary to ensure cross-divisional consistency.</p> <p>The DR strategy is 50% complete and a shortlist of applications prioritized into scope will be used to determine the divisional roles and responsibilities required. The outcome of the strategy is the plan which will determine not only the simulations, schedules, it will also drive the divisional R&R. Training and material will be part of the rollout of the DR and available late Q3-Q4 2021. All this work will be time-lined into a schedule for delivery and completion by Q4 2021. The DR is work in progress. The strategy will drive the detailed plan in addition to the prioritized DR application list. The implementation will be collaborative with the impacted divisions as they will be instrumental delivering DR and adoption into their landscape of BCP. This will all be driven by the plan which is the next step after the strategy is completed, reviewed and signed off.</p>	

Report Title: IT Service Desk Unit - Opportunities for Improving Service and Cost - Effectiveness

Report Date: 9/18/2013

No.	Recommendation	Management Comments as of Oct 1, 2021	Target Due Date & Reason for delay
4	<p>City Council request the Chief Information Officer to implement proactive problem management for the IT Service Desk Unit to improve the efficiency and cost-effectiveness in providing information technology support.</p>	<p>A Problem Management Process flow has been developed to demonstrate proactive problem management by TSD Service Desk. The proactive creation of problem tickets based on recurring incident trends, enable root-cause analysis to prevent the trend resulting in improved efficiency and cost-effectiveness in providing information technology support. The following have been completed:</p> <ul style="list-style-type: none"> - A report to identify incident trends and proactively create problem ticket to prevent recurrence; - Process Flow, Reference Guide and Trending Report based on Service, Configuration Item and/or Symptom, which serve as foundational elements for carrying on proactive problem management activities. - On a regular basis, problem tickets are being created proactively for remediation of discovered vulnerabilities and for RCA of major incidents. <p>Socialization of the process, training and stabilization of the process execution coordinated by Service Desk and Problem Lead is planned by Q4/2021</p> <p>Note: Better tooling (ServiceNow) is planned for 2022 that will reduce time spent on data analytics. Data in original tooling (HP Service Manager) will not be migrated in ServiceNow except for any outstanding Problem Records.</p>	<p>Dec 31, 2021</p> <p>Renewed Divisional Focus and Organization</p>

Report Title: Controls Over Telecommunication Expenses Need Improvement
Report Date: 6/10/2014

No.	Recommendation	Management Comments as of Oct 1, 2021	Target Due Date & Reason for delay
11	<p>City Council request the Deputy City Manager and Chief Financial Officer to review the existing process of manually updating invoice payment information from SAP to the NetPlus telecommunication system and evaluate whether the process can be automated.</p>	<p>TSD has enhanced the previous process by capturing the Contract number, but the current system is unable to update the amount spent on each Contract. Although this semi-automation has been done, the manual method of updating invoice payment is still in place.</p> <p>In 2019, TSD sought for a more integrated solution that addressed the critical audit findings while garnering more efficiencies and better value. The competitive procurement resulted with a new fully managed, 3-year Telecommunication Expense Services that was awarded on April 15, 2020. Contract negotiations is still under way and has been slow due to the pandemic situation. Current timeline for a full implementation date is targeted for Q2 2021. The new solution intends to meet all the requirements set forth by this audit recommendation.</p>	<p>Dec 31, 2021</p> <p>Enterprise level project</p>
15	<p>City Council request the City Manager to direct divisions to review their respective inventory of telecommunication devices to ensure that it reflects the current status of such devices. Inventories should be adjusted where appropriate and reviews should be performed on a periodic basis.</p>	<p>The wireless cost reporting to divisions includes the device inventory information. Divisions are responsible for submitting inventory updates. Stronger language was added to the covering instructions for the report distributions. TSD is in process to prepare report regarding the actions taken for inventory cancellation, which would be completed in Q4 2021. CTO memo describing actions required from Divisions will also be sent.</p>	<p>Dec 31, 2021</p> <p>Renewed Divisional Focus and Organization</p>
16	<p>City Council request the City Manager to develop exception reporting criteria to assist in evaluating unnecessary telecommunication costs. Criteria identified should include devices and services with no activity, suspended phones beyond</p>	<p>A Usage and Inventory report is issued to All Divisions on a monthly basis since 2019</p> <p>A process and set of associated tools have been developed to guide divisions in their periodic reporting of wireless devices inventory. Updates received from the Divisions based on the usage report are used to process cancellation if needed.</p>	<p>Dec 31, 2021</p> <p>Renewed Divisional Focus and Organization</p>

No.	Recommendation	Management Comments as of Oct 1, 2021	Target Due Date & Reason for delay
	a specified period and phones no longer in use. Devices and services no longer required should be cancelled.	<p>Divisions are responsible for submitting inventory updates. Stronger language was added to the covering instructions for the report distributions.</p> <p>In 2019, TSD sought for a more integrated solution that addressed the critical audit findings while garnering more efficiencies and better value. The competitive procurement resulted with a new fully managed, 3-year Telecommunication Expense Services that was awarded on April 15, 2020. Contract negotiations is still under way and has been slow due to the pandemic situation. Current timeline for a full implementation date is targeted for Q4 2021. The new solution intends to meet all the requirements set forth by this audit.</p>	

Report Title: Software Licenses - Managing the Asset and Related Risks

Report Date: 2/4/2015

No.	Recommendation	Management Comments as of Oct 1, 2021	Target Due Date & Reason for delay
1	City Council request the Chief Information Officer to ensure there is a software owner identified for all software assets and that activities to ensure compliance with software licensing agreements are performed in accordance with the divisional policy.	<p>The ITSM Team has put a process to manage and ensure license compliance of Software Assets. The initial scope of the process has been on Software Assets that have cumulative value of 500K per year. It covers software assets that are managed by either Technology Services Division (TSD) or a Divisional IT.</p> <p>The next phase of the work was stifled due to COVID19. It includes the following activities that is now targeted for Q4 of 2021:</p> <ol style="list-style-type: none"> 1) By early Sep 2021, a CTO Memo will be sent to the Divisions to reinforce the need for the compliance monitoring of the License Agreements while being compliant to the Software Onboarding process. 2) The memo will be followed by activities outlined below: 	<p>Dec 31, 2021</p> <p>Renewed Divisional Focus and Organization</p>

No.	Recommendation	Management Comments as of Oct 1, 2021	Target Due Date & Reason for delay
		<ul style="list-style-type: none"> - Software owners list continued to be maintained - ITAM start to onboard software other than major titles identified - Software asset management procedures/policy document posted on TechWeb reviewed and updated - Process training scheduled - Software exception reports distributed regularly <p>3) By Oct/Nov 2021, bi-weekly compliance review process performed by Asset Governance Team of existing software license agreements, software versioning, and any new/retirement through the list of Software Asset Owners that is centrally published.</p> <p>Note: Better tooling (ServiceNow) is planned for 2022 that will reduce time spent on manual activities to manage the software assets.</p>	
11	<p>City Council request the Chief Information Officer to ensure that the inventory of software is completed as soon as possible and that software usage reports be developed and distributed to software owners for their review. Software owners should report back on license usage to the Chief Information Officer so that proper decisions can be made in relation to City software assets.</p>	<p>The ITSM Team has put a process to manage and ensure license compliance of Software Assets. The initial scope of the process has been on Software Assets that have cumulative value of 500K per year. It covers software assets that are managed by either Technology Services Division (TSD) or a Divisional IT.</p> <p>The next phase of the work was stifled due to COVID19. It includes the following activities that is now targeted for Q4 of 2021:</p> <p>1) By early Sep 2021, a CTO Memo will be sent to the Divisions to reinforce the need for the compliance monitoring of the License Agreements while being compliant to the Software Onboarding process.</p> <p>2) The memo will be followed by activities outlined below:</p> <ul style="list-style-type: none"> - Software owners list continued to be maintained - ITAM start to onboard software other than major titles identified 	<p>Dec 31, 2021</p> <p>Renewed Divisional Focus and Organization</p>

No.	Recommendation	Management Comments as of Oct 1, 2021	Target Due Date & Reason for delay
		<ul style="list-style-type: none"> - Software asset management procedures/policy document posted on TechWeb reviewed and updated - Process training scheduled - Software exception reports distributed regularly <p>3) By Oct/Nov 2021, bi-weekly compliance review process performed by Asset Governance Team of existing software license agreements, software versioning, and any new/retirement through the list of Software Asset Owners that is centrally published.</p> <p>Note: Better tooling (ServiceNow) is planned for 2022 that will reduce time spent on manual activities to manage the software assets.</p>	

Report Title: IT Infrastructure and IT Asset Management Review: Phase 1

Report Date: 1/30/2018

No.	Recommendation	Management Comments as of Oct 1, 2021	Target Due Date & Reason for delay
4	<p>City Council request the Chief Information Officer, in consultation with all relevant divisions, to:</p> <ul style="list-style-type: none"> a. develop a comprehensive list of applications and identify those applications and systems that have the potential to be consolidated and modernized, eliminating the need to procure, implement, and maintain duplicative systems in the future; and b. review existing decentralized Information Technology services and, where possible, consolidate these services with the Information and Technology Division. 	<ul style="list-style-type: none"> a. A comprehensive list of all applications City-Wide not including City Agencies, Boards, and Corporations (ABCs) has been completed in Q1 2020. A roadmap will be developed in collaboration with key City business partners to identify applications that have the potential to be decommissioned, consolidated and/or modernized with a target of Q2 2021. Several key technology platforms have been identified for decommissioning with a target of Q4 2022, pending detailed planning and consultation with application owners. b. TSD is in process of reviewing existing decentralized IT services across Divisions. As a first step, TSD is liaising with various Corporate functions to develop a standard model that supports centralization across the City. The Centralization Working Committee (Corporate Services lead, TSD 	<p>Dec 31, 2022</p> <p>Enterprise level project</p>

No.	Recommendation	Management Comments as of Oct 1, 2021	Target Due Date & Reason for delay
		lead, FPD lead, P&E lead, Internal Audit lead, OC lead) and Governance accountability table are being set up to provide further direction on centralization. Estimated timelines Q4 2022.	
6	City Council request the Chief Information Officer to develop and implement procedures to promote clarity in roles and responsibilities for creating, maintaining, and refreshing the Information Technology infrastructure roadmap.	TSD hired new DCTO for Technology Services Delivery in Sept 2020. Under the new leadership, roles and responsibilities are being developed to create, maintain and refresh the IT infrastructure roadmap. The roles and responsibilities to create, maintain and refresh the IT infrastructure roadmap will be endorsed by the Enterprise Architecture Review Board (EARB) in Q4'2021.	Dec 31, 2021 COVID related operational delay
13	City Council request the Chief Information Officer, in consultation with the City Clerk, the City Solicitor, and where needed, the City's Accountability Officers, to include in the data governance model: a. guidance on the City's enterprise-wide data strategy to provide direction for lifecycle management and classification of data in alignment with the Municipal Code; and b. a special case data retention policy and procedure to address scenarios where archiving specific data is required, such as litigation needs.	To support compliance with the City's information management strategies, digital record keeping standards, governance and consultations were implemented for the inclusion of records management functions and capabilities into enterprise technologies. Also, Enterprise Content management technologies including a virtual record center for archiving of data and content was rolled out, including: <ul style="list-style-type: none"> • Descriptive Metadata Standards • Destruction of Source Records following Digitization • Creating and Managing Digitized Records Standard • Common Data Elements for City Forms Standard • Electronic Signatures (eSignature) Guideline • Records Management Metadata Standard New digital information management standards, policies, and guidelines, will continue to be developed in 2021, including: <ul style="list-style-type: none"> • Complimentary Fact Sheets • Controlled Vocabulary Policy • Privacy Policy (updates) • Information Management Accountability Policy 	Dec 31, 2021 Dependency on other division

**Report Title: Information Technology Infrastructure and Asset Management
 Review: Phase 2: Establishing Processes for Improved Due Diligence, Monitoring
 and Reporting for Effective IT Projects and Asset Management
 Report Date: 6/28/2018**

No.	Recommendation	Management Comments as of Oct 1, 2021	Target Due Date & Reason for delay
2	<p>City Council request the Chief Information Officer to: a. Develop a process for monitoring and reporting of "in stock" assets and their respective costs. Reporting should be made available within the I&T Division and other City divisions to review the availability and age of IT assets for consideration of deployment before making new purchases. b. Ensure that all high-volume purchases of IT assets are supported with an appropriate deployment plan. c. Develop a process for performing a periodic review with City divisions that have IT assets which are not deployed or assigned to users to address any excess inventory.</p>	<p>a. Process for monitoring and reporting of "in stock" assets is in place for Sustainment, but the asset data need to be stabilized to ensure accuracy in reporting for Divisions. Target is expected by Q2, 2021.</p> <p>b. Deployment plans are place to ensure that all high-volume purchases of Information and Technology assets are installed and appropriated expeditiously.</p> <p>c. Process for performing a periodic review with City divisions that have Information and Technology assets which are not deployed or assigned to users to address any excess inventory is still pending due to asset data not stable. Target is expected by Q2, 2022</p>	<p>Jun 30, 2022</p> <p>COVID related operational delay</p>

Report Title: Improvement Needed in Managing the City's Wireless Telecommunication Contracts
Report Date: 6/28/2018

No.	Recommendation	Management Comments as of Oct 1, 2021	Target Due Date & Reason for delay
3	City Council request the Chief Information Officer to evaluate business and administrative feasibility for the introduction of a Bring Your Own Device (BYOD) program for wireless phones at the City. This feasibility and program should be evaluated in consultation with the City Solicitor, the Chief Financial Officer, the Executive Director of Human Resources and any other stakeholder(s).	Under the ModernTO program, the Workplace Modernization Steering Committee (consisting of the Deputy City Manager Corporate Services, Chief Technology Officer, City Clerk, Chief People Officer, Strategic Communications, General Manager Employment & Social Services, General Manager Transportation Services) provided direction to evaluate a Bring Your Own Device Program as part of the Workplace Modernization initiative. Business, policy and technical implications will be assessed for wireless phone usage as part of this directive. A recommendation will be presented to the Workplace Modernization Steering Committee and other stakeholder(s) for evaluation, based on which a direction on adoption by the City and its agencies will be issued. BYOD Policy is targeted for completion by Q4 2021.	Dec 31, 2021 Enterprise level project
5	City Council request the Chief Executive Officers of City Agencies and Corporations to consider and implement the recommendations relevant to their operations included in the following Auditor General's reports: a. Toronto Transit Commission: Managing Telecommunication Contracts and Payments. b. Improvements Needed in Managing City's Wireless Telecommunication Contracts.	Technology Services Division shared the Audit Reports for consideration and implementation by Chief Executive Officers of City Agencies and Corporations through a memorandum in Oct 2020. However, since this recommendation is also directed to Agencies and Corporations, the recommendation is being kept as Not Fully Implemented for tracking purposes so that the Auditor General's Office can follow up on it with the Agencies and Corporations. There is no action item for TSD.	Dec 31, 2021 Dependency on other division

Report Title: Investigation into Allegations of Reprisal: Reprisal Not Found, But Lessons Learned (Forensic Report)

Report Date: 10/7/2019

No.	Recommendation	Management Comments as of Oct 1, 2021	Target Due Date & Reason for Delay
1	City Council request the City Manager to include in performance appraisals of managers and supervisory staff an evaluation of whether they are giving accurate and timely feedback to staff who are not meeting expectations.	Our performance management program has been impacted as a result of COVID and we have not been able to include this requirement or measurement. We are working on the launch of the new performance management program for 2022. The launch of this program will allow us to include these types of measurements.	Dec 31, 2022 Dependency on other Division

Report Title: IT Projects Implementation: Information Privacy and Cybersecurity Review

Report Date: 02/03/2021

No.	Recommendation	Management Comments as of Oct 1, 2021	Target Due Date & Reason for delay
1	<p>City Council request the Chief Technology Officer to enhance the management of cybersecurity and privacy risks, as part of its information technology project governance, by:</p> <p>a. ensuring that cybersecurity and information privacy requirements and related budget are part of the acquisition, development, design, and testing phases of technology projects; and the Office of the Chief Information Security Officer and the City Clerk must review and endorse the requirements and budget allocated for cybersecurity and information privacy for all City technology initiatives, transformations, and procurements;</p> <p>b. ensuring that a process is in place to identify, analyze, and communicate all cybersecurity and information privacy risks to all stakeholders at each project phase through a documented risk mitigation plan; and the identified risks are either mitigated or formally accepted by the division head/project sponsor and communicated to the City's Senior Leadership Team before the system is launched;</p>	<p>The Chief Technology Officer will enhance the management of cybersecurity and privacy risks as part of its IT project governance by: a. Reviewing and updating project governance to ensure that the business case for business and technology projects includes cybersecurity and information privacy requirements and related budget. The appropriate consultation with the Office of the Chief Information Security Officer and the City Clerk will be done through project governance – Q2 2022 b. An updated project governance will be established to ensure that cybersecurity and information privacy risks are proactively identified, documented and communicated to all relevant stakeholders at each project phase through a Risk Mitigation Plan. The identified risks will be either mitigated or formally accepted during project reviews and meetings, by the Division Head/Project Sponsors before the system is launched – Q2 2022 c. Regular project governance will ensure that specified timelines are followed for remediation of open risks in the Risk Mitigation Plan and that risks are either mitigated or formally accepted by the Division Head/Project Sponsors as part of defined Exit Criteria before moving to the next project development stage – Q2 2022 Expected implementation date: Q2 2022</p>	<p>Jun 30, 2022</p> <p>COVID related operational delay</p>

No.	Recommendation	Management Comments as of Oct 1, 2021	Target Due Date & Reason for delay
	<p>c. ensuring that the remediation of open risks is completed within a specified timeline and are signed off by the division head/project sponsor before moving to the next project development stage; and</p> <p>d. identifying new or reallocated resource requirements required by the Office of the Chief Information Security Officer or the City Clerk needed to support the information technology project through its life cycle.</p> <p>City Council request the Chief Technology Officer to extend the actions in Part 1 above to existing in-progress technology projects and all future implementations.</p> <p>(Amended by Audit Committee - part a, b, added part d)</p>		
3	<p>City Council request the Chief Technology Officer to enhance project governance by:</p> <p>a. ensuring that all projects fully comply with the Project Review Team gating approvals; and exceptions relating to cybersecurity and privacy must be reviewed by the Chief Information Security Officer and the City Clerk for a go/no-go decision;</p> <p>b. ensuring that project management gating criteria</p>	<p>The Chief Technology Officer will enhance project governance by: a. Establishing an updated Project Review process with appropriate Gating Model. Project Review Team will ensure mandatory compliance with the Gating Model for all capially funded projects that meet the established criteria. The PRT gating model to include review and sign-off of exceptions relating to cybersecurity and privacy by the Chief Information Security Officer and the City Clerk for a Go/No-go decision. – Q2 2022 b. Ensuring the PRT Gating Model includes a support transition plan from 'project' to 'operations' for all projects at last gate before moving to production stage or from one stage to another, depending on which</p>	<p>Sep 30, 2022</p> <p>COVID related operational delay</p>

No.	Recommendation	Management Comments as of Oct 1, 2021	Target Due Date & Reason for delay
	<p>include a clear support transition plan when projects move from development to operations or from one stage to the next, depending on which project management methodology is used, such as Agile project management; and</p> <p>c. ensuring that project managers are trained in change management methodology.</p> <p>(Amended by Audit Committee)</p>	<p>project management methodology is used, such as Agile project management – Q2 2022 c. Conducting assessment of the change management needs to prepare Change Management training. All Project Managers will be trained in change management methodology – Q3 2022 Expected implementation date: Q3 2022</p>	
4	<p>City Council request the Chief Technology Officer to:</p> <p>a. in coordination with the Chief Information Security Officer and the City Clerk, prioritize and direct resources to develop a training program for project managers and key staff involved in the implementation of technology initiatives to receive cybersecurity and information privacy training focused on managing technology projects; and</p> <p>b. conduct an assessment to determine the feasibility of extending this training program to major agencies and corporations.</p> <p>(Amended by Audit Committee)</p>	<p>The Chief Technology Officer will coordinate with the Chief Information Security Officer for cybersecurity training material and with the City Clerk for information privacy training material to educate project managers and key staff involved in the implementation of technology initiatives– Q4 2022 Expected implementation date for City Divisions and an agreed approach for major agencies and corporations: Q4 2022</p>	<p>Dec 31, 2022</p> <p>COVID related operational delay</p>
5	<p>City Council request the Chief Technology Officer to enhance the project governance and project</p>	<p>The Chief Technology Officer will enhance the project governance and project management framework by: a. Developing a clear RACI matrix for each</p>	<p>Jun 30, 2022</p> <p>COVID related operational delay</p>

No.	Recommendation	Management Comments as of Oct 1, 2021	Target Due Date & Reason for delay
	<p>management framework by ensuring that:</p> <p>a. all stakeholders' roles and responsibilities are clearly defined and key stakeholders are involved from the pre-procurement stage;</p> <p>b. a clear support transition plan when a project is moved from development to operations at Gate 4, the last gate before the system is moved to operations;</p> <p>c. the Chief Information Security Officer and the City Clerk are part of the project steering committee for all key technology initiatives and transformations; and</p> <p>d. criteria are developed to determine projects with high risks that have not been mitigated prior to moving to production be escalated to the Senior Leadership Team; and the developed criteria should be shared with the City Manager for City-wide implementation.</p> <p>(Amended by Audit Committee)</p>	<p>project. It will ensure that stakeholders' roles and responsibilities are clearly defined and there is proper stakeholder representation from the project initiation stage, including the City Clerk and Chief Information Security Officer for privacy and security impacts – Q2 2022 b. Ensuring the PRT Gating Model includes a support transition plan from 'project' to 'operations' for all projects at last gate before moving to production stage – Q2 2022 c. Please refer to response: a. d. Developing criteria to determine projects with high risks that have not been mitigated prior to moving to production and the mechanics for escalating to the Senior Leadership Team (SLT) – Q2 2022 Expected implementation date: Q2 2022.</p>	
6	<p>City Council request the Chief Technology Officer to enhance the project management framework by:</p> <p>a. including a review of internal controls for systems that involve financial transactions; and b. involving the Controller or the Director, Internal Audit in the review of user roles in relation to financial transaction processing to ensure that the appropriate segregation of</p>	<p>The Chief Technology Officer will enhance the project management framework by ensuring that projects that involve financial transactions have a specific review of internal controls including segregation of duties, in consultation with the Controller's Office or Internal Audit – Q2 2022 Expected implementation date: Q2 2022</p>	<p>Jun 30, 2022</p> <p>COVID related operational delay</p>

No.	Recommendation	Management Comments as of Oct 1, 2021	Target Due Date & Reason for delay
	duties is maintained for all user roles.		
7	<p>City Council request the Chief Technology Officer improve the user permissions framework of the Human Resources application, including: a. conducting a cybersecurity and information privacy review of the various roles created in the Human Resources system; b. reviewing the users with a Super Administrator role and limiting the number of users with that role considering the industry's best practices and professional bodies; c. ensuring that user access roles are designed with cybersecurity and information privacy in mind; and access roles should be provided to users on a "need to have" basis; d. defining a process for the approval of access roles for support staff; instead of providing Super Administrator access, support staff should be provided access on a "need to have" basis; and e. eliminating the use of generic and anonymous accounts; if these roles are needed as an exception for operational reasons, detailed monitoring and logging procedures should be developed and implemented for these roles; and, in addition, the review of elevated access roles and the use of generic or anonymous users should be</p>	<p>The Chief Technology Officer will improve the user permissions framework of the Human Resources application by: a. Conducting a cybersecurity and information privacy review and update of all roles created in the HR system, not only those identified in the previous privacy incidents – Q1 2022 b. Conducting a review of accounts with Super Administrator access and limiting the number of users with that role, using least privileged access principles and considering the industry's best practices and respective professional bodies – Q1 2022 c. Ensuring that user roles are designed based on least privileged access principles where possible, and considering the industry's best practices and respective professional bodies – Q2 2022 d. Defining a process for the approval of access roles for support staff based on least privileged access principles where possible, and considering the industry's best practices and respective professional bodies – Q2 2022 e. Eliminating the use of generic and anonymous accounts for operational support where possible. If these roles are needed as an exception for operational reasons, a riskbased approach will be adopted to limit use, considering the industry's best practices and respective professional bodies – Q2 2022 In addition, a review of elevated access roles and use of generic or anonymous users in the SAP enterprise application will be considered, with the intent of adopting a risk-based approach to limit use. Expected implementation date: Q2 2022</p>	<p>Jun 30, 2022</p> <p>COVID related operational delay</p>

No.	Recommendation	Management Comments as of Oct 1, 2021	Target Due Date & Reason for delay
	extended to the SAP enterprise application.		
8	City Council request the Chief Technology Officer to develop standards and minimum criteria for logging user activity details for information technology systems, with steps including, but not limited, to: a. ensuring that user access logs capture account activity for users with elevated access, such as users with Super Administrator or Divisional Administrator roles; and b. implementing a user activity review process for roles with elevated access on a periodic basis to ensure that access is aligned with the roles.	The Chief Technology Officer will develop standards and minimum criteria for logging user activity details for IT systems by: a. This capability does not currently exist in the system. Technology Services Division to request that this capability be added to the system product roadmap – Request to vendor be submitted by Q1 2022 b. Implementing a process to conduct monthly reviews for roles with elevated access to ensure alignment with the role – Q2 2022 Expected implementation date: Q2 2022	Jun 30, 2022 COVID related operational delay
9	City Council request the Chief Technology Officer to implement a process to ensure that comprehensive system testing and user acceptance testing is part of the overall information technology project management methodology, including: a. assigning staff having functional subject matter expertise in the Technology Services Division, cybersecurity subject matter expertise in the Office of the Chief Information Security Officer, and privacy subject matter expertise in the City Clerk's Office to review the test scope, test cases, and test cycle defect management; b. ensuring that user acceptance testing is started	The Chief Technology Officer will implement a process to ensure comprehensive system testing and user acceptance testing is part of the overall IT project management methodology by: a. Ensuring that all projects have a defined test plan aligned with the appropriate expertise in Technology Services Division – Q3 2022 b. Ensuring that all user acceptance testing has Divisional sign-off – Q3 2022 c. Ensuring that the test cycle proceeds through a formal process to meet the assigned security testing – Q3 2022 Expected implementation date: Q3 2022	Sep 30, 2022 COVID related operational delay

No.	Recommendation	Management Comments as of Oct 1, 2021	Target Due Date & Reason for delay
	<p>early in the project stage and performed by respective divisions (users); and, in situations where testing is performed by staff other than the User Division, the test results must be formally approved by the respective Division Lead contact on the project; and</p> <p>c. ensuring that each test cycle goes through a formal approval process and mandatory security and privacy testing prior to commencing the next test cycle.</p> <p>(Amended by Audit Committee)</p>		
10	<p>City Council request the Chief Technology Officer to:</p> <p>a. research options to automate the move of configuration of systems, including cybersecurity and privacy configuration, from testing to the production environment; and</p> <p>b. alternatively, include a peer review (Quality Assurance) to verify post-implementation configuration in the system after it has been moved to the production environment.</p> <p>(Amended by Audit Committee)</p>	<p>The Chief Technology Officer will research options related to the move of configuration of systems from testing to the production environment to improve the migration of configurations into production. Based on the options evaluation, this may be an automated tool or an additional manual post implementation peer review verification step – Q2 2022 Expected implementation date: Q2 2022</p>	<p>Jun 30, 2022</p> <p>COVID related operational delay</p>