Calgary

City Auditor's Office

POSSE - Data Integrity and System Sustainability Audit

March 6, 2017

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Table of Contents

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Executive Summary

The Public One Stop Service (POSSE) system is a business process management tool, used predominately for land management. It is The City of Calgary's (The City's) definitive source of parcel data. Although Planning & Development (PD) is the primary user, other Business Units (BUs) rely on the integrity of the data. POSSE integrates with 36 different systems. Responsibility for supporting POSSE is split between PD's Business Services and Information Technology's (IT's) Application Support group. In addition, the POSSE vendor provides support and on-site technical resources.

The audit objective was to provide assurance on data integrity and sustainability of the POSSE system. Data integrity testing focused on controls to ensure the accuracy and completeness of key elements of parcel data such as, land use designation, address, title and ownership, transferred from the Provincial Land Titles Office's (LTI) system and the City's Calgary Ownership Online (COOL) system to POSSE. Testing also included controls over the accuracy of address, licensing and permit data transferred from POSSE to the Calgary Integrated Assessment Office (CIAO) system in the Assessment BU to support property tax assessments. Sustainability testing focused on controls to ensure the ongoing ability to support POSSE through interface and customization documentation and effective vendor management, and system availability through PD System Support (PD Helpdesk) and change management processes.

Based on our testing, the majority of controls to ensure the integrity of parcel data are effective. Automated and manual interface controls are operating effectively and sample testing of parcel data did not identify any errors. However, responsibility for resolving ownership data exceptions identified during the transfer of data from COOL to POSSE was assigned to a single IT resource, as opposed to a business user. The responsibility for resolving exceptions should be assigned to the business user closest to the data with the best understanding of the impact of any changes. We recommended the transfer of this responsibility from IT to the Addressing team within Corporate Analytics & Innovation (CAI), which would also mitigate the risk of reliance on a single IT resource, not connected to the business process.

Testing of sustainability controls identified areas in which further improvements should be made to enhance control effectiveness and improve overall process efficiency. Specifically our recommendations focus on improving interface documentation, formalizing processes to manage vendor performance and contract compliance, and improving the effectiveness of existing PD Helpdesk, change management and interface failure monitoring processes.

Although the LTI, COOL and CIAO interfaces were documented, improvements are required to ensure that the documentation is up to date and complete. In addition, we noted a dependency on a single resource for a significant amount of system knowledge

The City has a license agreement with the POSSE vendor to provide software licenses, support and on-site technical resources. Vendor interactions are informal based upon regular meetings and communications between the vendor relationship manager and City staff. We recommended formalizing the process to evaluate vendor performance, manage licensing compliance and ensure the source code is held in escrow to ensure that maximum value is received from support services, avoid legal costs associated with licensing non-compliance, and protect The City in the event the vendor is no longer able to offer support.

Support processes shared between PD and IT are in place to ensure that POSSE is available to users without any unplanned down time. A PD Helpdesk process responds to and resolves user requests and incidents. Change management is in place and operating to support properly testing changes before migration into production. In addition, IT monitors and resolves interface failures in a reasonable timeframe. However certain aspects of these processes should be better defined or/and followed more consistently. For example, the PD System's helpdesk needed to define a process for handling common support requests and a process to report performance to management. Also, within the change management process, risk assessment fields needed to be completed consistently. Recommendations were made that will improve both the efficiency and effectiveness of these support processes.

PD, CAI and IT have agreed to our recommendations, and have indicated in their responses a commitment to implement actions plans by September 30, 2017. The City Auditor's Office will follow up on the implementation of action plans as part of our ongoing follow-up process.

1.0 Background

The Public One Stop Service (POSSE) System is a business process management tool that was implemented in 1999 to efficiently manage diverse and high volume processes within Planning & Development (PD). PD is the primary user of POSSE and in 2015 relied on the system to manage 70 distinct workflows and the approval of over 150,000 issued permits, such as building permits and development permits.

POSSE collects and maintains business data throughout a business process workflow and is predominantly used for land management at The City of Calgary (The City). In addition to workflow management functionality, POSSE acts as a definitive source of parcel information for The City. Other areas of the corporation rely on the integrity of POSSE data. For example, the Assessment Business Unit (BU) uses the data as part of its process for determining property taxes. In total, POSSE interfaces with 36 different systems and Information Technology (IT) applications both internal and external to the corporation. These include PeopleSoft, Calgary Integrated Assessment Office (CIAO), 311 Calgary and Geographic Information Systems (GIS).

Responsibility for supporting POSSE is split between PD's Business Services team and IT's Application Support team. Business Services provide front line support to POSSE users, create reports, respond to data requests, manage user access, provide end-user training and develop workflows. IT has responsibility for interfaces with other applications, configuration of core objects[1] and the underlying infrastructure. In addition, The City has a license and support agreement with the POSSE vendor, who provides support and consulting on a case by case basis.

An audit of the POSSE system was included in the 2016 Annual Audit Plan. POSSE is a critical system that PD and others rely on to manage workflows and provide key data, such as parcel information, to support business operations.

2.0 Audit Objectives, Scope and Approach

2.1 Audit Objective

The objective of this risk-based audit was to provide assurance on the data integrity and sustainability of the POSSE system. The objective was achieved by assessing the design and effectiveness of controls in place to mitigate the following six risks:

Data integrity risks:

1. Parcel data is incomplete or inaccurate. Key data includes land use designation (zoning), relationships with building objects, address, location and title.
2. Incomplete or inaccurate address, licensing and permit data is transferred to the Assessment BU.

Sustainability risks:

3. Customer facing or internal systems are not available for an unplanned period.

[1] Core objects represent that part of POSSE where key data is stored such as customer and parcel data.

4. POSSE vendor suffers financial difficulties and is unable to continue to develop /support the product.
5. POSSE licensing and support contracts do not meet the needs of The City.
6. Developers that have written custom code (outside the vendor supplied Stage tool) are no longer available to provide support.

2.2 Audit Scope

Our audit scope focused on transactions that occurred and controls performed during the period March 1, 2016 – August 30, 2016, and master data in the system as of the date of testing.

The following items were determined to be outside of the audit scope:

1. Controls to ensure the accuracy of processing in systems that send data to POSSE, such as the corporate land titles database;
2. PD's online services portfolio (e-services); and
3. Effectiveness and efficiency of the design of POSSE's business workflows.

2.3 Audit Approach

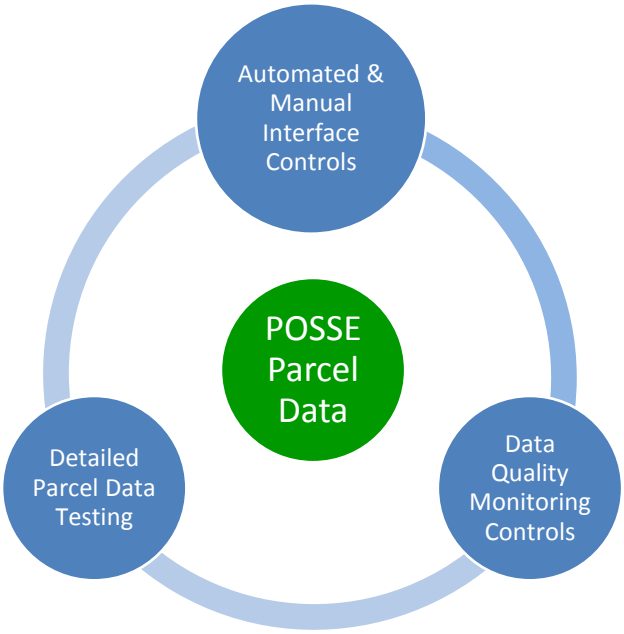
Our audit approach included conducting interviews with management to understand processes and testing the controls identified in Appendix A. We also conducted detailed testing on a sample of parcel and assessment data in POSSE and CIAO.

3.0 Results

3.1 Data Integrity

Testing related to the accuracy and completeness of POSSE parcel data focused on automated and manual interface controls to process data, including controls to resolve exceptions for data transferred within these key areas:

- From the Provincial Land Titles Information (LTI) system to POSSE;
- From the Calgary Ownership Online (COOL) system to POSSE; and
- Permit data transferred from POSSE to the Assessment BU's CIAO system.



In addition, we tested a monitoring control in place to ensure the ongoing quality of parcel data. Finally, we conducted detailed testing of a sample of parcel data for accuracy of key data in both POSSE and CIAO to provide additional assurance over the integrity of the data.

In general, controls are designed and operating effectively to mitigate the risk that parcel data was incomplete and inaccurate and detailed testing did not identify any errors. We did note that responsibility for resolving COOL interface data exceptions was assigned to IT rather than the data owner. Specific details are outlined below.

Automated and Manual Interface Controls

An interface can be thought of as bridge between two systems. Controls are required to ensure the completeness and accuracy of the transfer of information. Automated controls include programmed logic to ensure completeness of data transferred through record counts or other mechanisms and accuracy of data through a comparison of data relationships. Information received across an interface that cannot be processed automatically is written to an exception report for manual resolution.

<u>LTI and COOL to POSSE</u>

Parcel data related to land titles and ownership information is transferred nightly through an external interface from the LTI and COOL systems. We tested the LTI and COOL nightly interfaces and determined automated interface controls are designed and operating effectively to ensure complete and accurate transfers. Furthermore, exceptions requiring manual resolution are appropriately identified.

LTI exception reports are received on a daily basis and are processed by the Corporate Analytics & Innovation (CAI) Addressing team. We selected a sample of 41 daily reports out of the 127 days within our audit period. We tested one item from each report sampled and noted all exceptions were appropriately processed.

COOL exceptions are processed by a single Technical Analyst within IT. However, as the data owner, business staff should resolve these exceptions since they have the best understanding of the data and the impact of any changes. We tested 53 out of the 487 exceptions (11%) identified by the COOL to POSSE interface during the audit period to ensure appropriate manual processing. Ownership information for two exceptions did not match between the two systems. Accurate ownership data is a key component in application processing. For example, validating ownership for homeowner permits, mailing out safety information and notifying adjacent landowners of land use designations. We recommended moving the process to CAI to improve the integrity of POSSE ownership data and decrease reliance on one IT resource in Section 4.1.

POSSE to CIAO

Information from POSSE is transferred to the Assessment BU through an outbound interface to CIAO. Data transferred includes information on permits issued and changes to key pieces of parcel data. Testing focused on ensuring key information successfully transferred to CIAO. We, traced a sample of 70 new permits from POSSE to CIAO, and determined if the interface would identify failure conditions. These tests confirmed that controls were operating effectively to provide assurance of complete and accurate transfers to the Assessment BU.

Detective Monitoring Controls

Other parcel information, such as land use description, community and ward, is manually assigned within POSSE. Furthermore, building relationships are manually assigned in the Building Repository system, which flows in real time to POSSE. The Addressing team within CAI is responsible for both these manual updates.

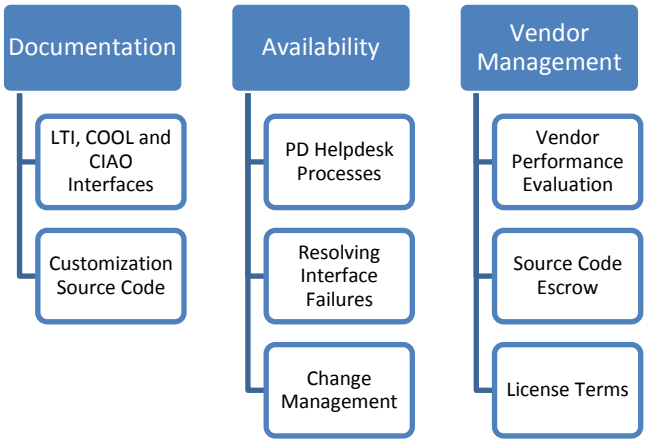
To ensure the quality of data on an ongoing basis the Addressing team generates cumulative quality reports that identify data inaccuracies such as buildings without titled parcels. We tested all 45 items identified in six different quality assurance reports and noted that each item was appropriately resolved.

Detailed Testing

There were no errors noted in our testing of a statistical sample of 60 land parcels, selected at random from a population of 359,287 parcels. Testing examined land use description, ownership information, land title number, legal description, owners and building relationships.

3.2 System Sustainability

Sustainability testing focused on controls that mitigated the risk of loss of organizational knowledge related to inadequate documentation, the risk that the POSSE system is unavailable for unplanned periods, and the risk the vendor contract does not meet City needs and support requirements.



Interface and Source Code Documentation

Interfaces and source code for customizations should be adequately documented to ensure that the POSSE system can continue to be maintained and supported should key IT resources leave The City. Documentation also assists with the identification of impacts to system functionality of proposed system changes. We reviewed the overall interface documentation that was specific to the LTI, COOL and CIAO interfaces. Improvements are required to ensure the documentation is up to date and includes the risk/criticality of each interface, and complete details of tables and processes (Section 4.2).

We inspected the source code for a sample of 11 (25%) system customizations during the audit period under review to assess whether the customizations were explained in plain language. In all cases the purpose and nature of the customizations was included in comments throughout the source code, and described appropriately in plain language.

Availability

The POSSE system is supported by dedicated staff in PD Business Services and IT Application Support. We tested significant controls in PD System Support (Helpdesk) and change management processes, and IT's interface failure monitoring and resolution processes.

<u>PD Helpdesk Processes</u>

The PD Helpdesk responds to requests to resolve POSSE operational and workflow related issues. The PD Helpdesk reorganized in September 2016 and created a Quality Assurance Analyst (QAA) role, to support senior Application Analysts (AAs). The QAA receives POSSE support requests via email or phone and records them in a POSSE workflow. The QA is responsible for prioritizing and escalating requests for resolution to staff in Business Services or Application Support. The AAs are available for consultation on more complex issues.

We observed the new process and recommended control improvements to ensure that the most urgent requests are resolved first and QAAs have established guidelines to resolve common issues, which will increase the effectiveness and efficiency of POSSE support processes (Section 4.8).

PD Helpdesk performance is reported on new automated dashboards that replaced manual excel spreadsheets. We recommended a defined reporting process and improvements to the

dashboards to provide insight on the effectiveness of request resolution and resource allocation in Section 4.9.

Change Management Processes

We reviewed a sample of 50 POSSE change requests, out of a total population of 300 during the audit period to ensure that changes followed a formal change management process. There was a defined change management workflow that supported testing changes and migrating them into production as part of scheduled releases. However, as recommended in Section 4.7, there was a need to define the level of approval, risk assessment and prioritization steps to ensure that only authorized changes are made and that changes are scheduled according to risk and priority.

Interface Failure Processes

We examined IT's controls for monitoring and following up on interface failures and confirmed that Application Support monitors interfaces daily through an automatically generated email and escalates failures to appropriate staff for resolution. Although interface failures during the audit period were resolved, IT did not track and record failures as a POSSE support request or an IT request. We recommended tracking of interface failures to assist in root cause analysis to prevent future occurrences and support analysis of resource requirements (Section 4.6).

Vendor Management

Management has an established relationship with the POSSE vendor and advised that they were very satisfied with the vendor based upon interactions and regular meetings with the relationship manager. We recommended formalizing processes with respect to vendor performance evaluations, licensed user reconciliations and holding the source code in escrow to ensure that contract terms are meeting City needs.

Formal Performance Evaluation

In Section 4.5 we recommended formalizing the process to evaluate vendor performance to ensure maximum value is achieved from the relationship and the appropriate internal and external resource mix is used.

Source Code Escrow

The City did not exercise the option to hold a copy of the software source code in escrow, which would allow POSSE to be maintained should the vendor encounter financial difficulties and be unable to provide support. We recommended in Section 4.4 that a current and complete version of the source code be held in escrow, along with a validation mechanism.

Licensing Terms

License fees paid to the vendor are determined based on the number of active users. Practices agreed between The City and the vendor, for reconciling licenses and active users, were not consistent with contract terms, which could result in additional licensing costs and non-compliance penalties. As a result, we recommended in Section 4.3 revising contract terms to match current practice and the maintenance of documentation to support the number of active users should the vendor exercise a right to audit.

We would like to thank staff in PD Business Services, IT Application Support, and CAI Addressing for their support and cooperation during this audit

4.0 Observations and Recommendations

4.1 Responsibility for Resolving COOL to POSSE Interface Exceptions

Ownership change exceptions, generated by the COOL to POSSE interface, are resolved by a single IT resource. As the data owner, CAI staff should resolve these exceptions since they have the best understanding of the data and the impact of any changes. As a result, POSSE ownership data may be incorrect.

COOL is The City's application that maintains ownership data for all parcels within the City. Accurate ownership data is a key component in application processing. For example, validating ownership for homeowner permits, mailing out safety information and notifying adjacent landowners of land use designations. Most ownership changes are processed automatically by the interface. However, exceptions related to situations where the interface logic identifies multiple title changes are processed manually by IT. We tested exceptions identified by the COOL to POSSE interface to ensure appropriate manual processing. Ownership information for two out the 53 exceptions did not match between COOL and POSSE. Our inquiries with contacts in both the Addressing team and IT were unable to provide an explanation for this difference.

We noted that the process for interface exceptions was created by IT for their own use. Where responsibility for processing exceptions moves to the data owner (CAI), the process should be reviewed to confirm that it meets business requirements, including logic used to identify exceptions and the user interface to resolve them.

Recommendation 1

The Manager of Asset Information and Mapping transfer COOL exception processing from Information Technology's Application Support team to the data owner within the Corporate Analytics & Innovation Business Unit.

Management Response

Action Plan	Responsibility
Agreed. CAI/AIM will work with IT/Application Support to transition the responsibility of COOL exception processing from IT to CAI until a longer term sustainment solution can be made as part of the ongoing business process of addressing.	Lead: Leader – Land, Corp Analytics and Innovation Support: Manager, Application Support Commitment Date: May 01, 2017

Recommendation 2

The Information Technology Application Support Manager:

a) Review the COOL to POSSE interface with the relevant Corporate Analytics & Innovation team to confirm that it meets the business requirements in the following areas:
   - Exceptions identified by logic used are appropriate and should be manually resolved; and
   - Interface used to resolve exceptions and integration with existing addressing work flow processes; and
b) Implement changes as appropriate.

Management Response

Action Plan	Responsibility
Agreed. After the transition to relevant Corporate Analytics & Innovation (CAI) team, Application Support will meet with CAI to review the interface and confirm it meets their business needs and make adjustments as necessary.	Lead: Manager, Application Support Support: Leader – Land, Corp Analytics and Innovation Commitment Date: September 30, 2017

4.2 Interface Documentation

Interface documentation was not maintained in sufficient detail and included outdated elements. Documentation should include detail to enable rebuilding of the interfaces and their ongoing support. There is currently one very experienced IT resource supporting POSSE interfaces. Without adequate interface documentation, there is a risk of knowledge loss, which will make it more difficult to adapt the system to changing business requirements and troubleshoot support incidents.

Audit reviewed the interface documentation and observed:

1. An up-to-date application context diagram was not maintained. A context diagram shows the entities a system interacts with in its environment.
2. The criticality/risk associated with each interface was not formally assessed and documented.
3. COOL documentation did not capture the staging tables used by the interface, objects impacted, or at a high level describe the logic used to determine whether to automatically process an ownership change.
4. CIAO interface documentation did not identify the types of processes and objects that have triggers established. Triggers capture changes in data and relationships between different pieces of data.
5. One step in the LTI interface document was outdated. The document did indicate that this step would eventually not be required.

In addition, it is good practice to ensure that documentation has the author and last time reviewed.

Recommendation 3

The Information Technology Application Support Manager review and update interface documentation and implement a process to ensure it is updated. The review and update should include:

- Assessment and documentation of the risk/criticality associated with each interface based upon defined criteria, in consultation with the business area;
- Implementation of a process to ensure documentation, such as the context diagram, is updated when changes in the environment occur;
- Review of interface documentation for completeness, including tables, objects and processes utilized and impacted by the interface, and a high level description of any logic used; and
- Documentation of the author and last time reviewed.

Management Response

Action Plan	**Responsibility**
Agreed. • Maintain context diagram quarterly. The current diagram is now up to date • Working with business partners to identify criticality/risk of interfaces in the context diagram. • Update COOL documentation. • Update CIAO triggers and relationships documentation. • Update land titles interface document. • Update the XCR workflow to ensure interface documentation is updated when needed.	Lead: Manager, Application Support Support: Manager, Business Services Commitment Date: June 30, 2017

4.3 License Agreement- Reconciliations of POSSE Licenses and Active Users

The process for reconciling the number of users to number of licenses is conducted on an annual basis and not quarterly, as specified in the license agreement. This could result in additional licensing costs and non-compliance penalties should the vendor exercise the right to audit clause,

Management advised the current annual practice is a relatively informal process that has been accepted by the vendor. The annual reconciliation process should be embedded in the terms of the new license agreement currently being negotiated.

Although e-mails confirming that the license costs reconciled to the number of users were retained, formal documentation detailing the total number of users was not retained in case the vendor exercised their right to audit. User account clean up should be done in advance of reconciliations, since licensing is based upon number of active accounts and be automatically scheduled to increase efficiency.

Recommendation 4

The Manager of Business Services:

a) Ensure the new license agreement contract terms reflect the annual practice for reconciling number of users to number of licenses; and
b) Maintain documentation of active user listings to support license counts and communication with the vendor.

Management Response

Action Plan	Responsibility
Agreed. • Complete the system enhancement which will automate the POSSE account reconciliation process. Work is currently in progress. • Perform reconciliations which will meet the license agreement requirements. • Keep records/formal documentation of each reconciliation.	Lead: Manager, Business Services Support: Manager, Application Support Commitment Date: June 30, 2017

4.4 License Agreement- POSSE Source Code in Escrow

Management did not exercise the option to hold the POSSE source code in escrow as outlined under the terms of the license agreement with the vendor. An escrow agreement provides access to the source code in the event the vendor becomes insolvent or is otherwise unable to support the product and ensures that The City could continue to use and maintain the product.

Under the terms of the current license agreement, the source code could be held in escrow at The City's cost. Management advised that a new license agreement is currently under negotiation, which is expected to require that the source code be held in escrow at the vendor's expense. However, it has not been determined how The City will validate that a current and complete version of the source code is held.

Recommendation 5

The Manager of Business Services ensure a current and complete version of the source code is held in escrow by the vendor under the terms of the new agreement along with a mechanism to validate that this is occurring.

Management Response

Action Plan	Responsibility
Agreed. • Set up a mechanism with the third party who will hold the POSSE code in escrow, to inform Business Services when the code has been refreshed twice a year and save these confirmations. • Confirm with the vendor that a process exists to certify source code deposits are complete.	Lead: Manager, Business Services Support: N/A Commitment Date: June 30, 2017

4.5 Evaluating Vendor Performance

Vendor performance in delivering POSSE support services was not evaluated through a formal process. Performance should be assessed against defined objectives, occur periodically and be documented. Without these assessments there is a risk that The City does not gain maximum value from vendor support services and the support model does not have the right resource mix between vendor and in-house support.

There is a POSSE Support Services agreement that primarily provides for telephone technical support and access to new releases. Additionally, a separate professional services agreement exists for two full time onsite contractors. Support services spend across the two agreements averages approximately $675,000 per year. Management advised the performance under both contracts is informally evaluated based upon interactions between City staff and the vendor. Contracts do specify deliverables and services to be provided but don't establish performance metrics.

Recommendation 6

The IT Application Support Manager implement a formal process to evaluate vendor performance on a consistent periodic basis. This includes assessing performance against objective criteria that relate back to services provided in the agreement.

Management Response

Action Plan	Responsibility
Agreed. • Meet internally to set up objectives for vendor. • Application Support and Business Service's TPW (Technology Process and Workflow) team will meet with vendor account manager, yearly to discuss whether or not they have met the set goal.	Lead: Manager, Application Support Support: Manager, Business Services Commitment Date: June 30, 2017

4.6 Tracking Interface Failures

Although Application Support monitor interface failures daily, failure incidents are not logged as an IT Remedy ticket or as a POSSE Support Job, unless code changes are required. Interface failures should be tracked to ensure resolution. Tracking failures can identify repeat issues, which may assist with resolving the underlying cause. In addition, tracking time to resolve failures, may support an analysis of IT resource requirements to monitor interfaces.

The LTI to POSSE interface required manual intervention by IT on six out of the 48 dates tested in our sample. We confirmed that these failures were resolved within one working day but were not logged or tracked. IT staff indicated that these were typically due to data quality issues.

Recommendation 7

The IT Application Support Manager develop and implement a process to track interface failures and identify the underlying cause of common problems for potential resolution and insight into future management decision.

Management Response

Action Plan	Responsibility
Agreed. For each interface failure a POSSE Support job and a Remedy ticket will be opened. This data will be reviewed on a quarterly basis using a dashboard to identify trends, areas of improvement etc.	Lead: Manager, Application Support Support: N/A Commitment Date: June 30, 2017

4.7 Change Management Process

Processes for approving, risk assessing and prioritizing POSSE change requests were not well defined and consistently followed. POSSE change request processes should be well defined and changes authorized and prioritized to ensure POSSE system stability and integrity of information.

A change request (XCR) job in the POSSE workflow is used to manage the process of making any changes to POSSE. Change approval criteria and the appropriate approver are not defined and documented in change request procedures. We reviewed a sample of 50 change requests and noted that access to approve changes is provided to 32 users. Ten of the 50 changes tested were approved by the person that requested the change. Defining approval criteria will allow the automatic approval of certain lower risk standard changes and ensure that higher risk complex changes are subject to the appropriate level of review.

Risk impact criteria are defined in the change request job but prioritization ("urgency") criteria are not. Out of the 50 changes tested 15 lacked an impact assessment and 14 were not prioritized. Additionally, 23 changes did not include documentation reflecting the part of the suite affected by the change (e.g. development permit suite). Change requests should include

an impact assessment and prioritization to ensure the level of testing is appropriate and migrations into the production environment are appropriately scheduled.

Recommendation 8

The Manager of Business Services:

a) Define and document approval criteria, approvers, and prioritization criteria for POSSE change requests. Approval criteria should reflect the risk associated with the change to ensure the process is efficient. System access should reflect the defined approvers.
b) Communicate the expectation that impact and prioritization assessments are completed for each change and modify the workflow to ensure that these are required fields.

Management Response

Action Plan	**Responsibility**
Agreed. • Review the XCR approval process to determine what an appropriate level of review is, taking scope, risk etc. into consideration and identify specified approvers. • Restrict the XCR approval process to only be completed by the specified approvers. • Define the urgency criteria. • Make the Risk Assessment, urgency and impacted suite details mandatory.	Lead: Manager, Business Services Support: N/A Commitment Date: June 30, 2017

4.8 PD Helpdesk Process

The PD Helpdesk does not have defined processes for handling common POSSE service requests and prioritizing or escalating requests. These processes would increase effectiveness by ensuring that the most urgent requests are resolved first and increase efficiency by providing guidelines to the Quality Assurance Analysts (QAAs) to resolve common issues without needing to consult a more experienced Application Analyst.

During the audit, the PD Helpdesk process evolved from a process where Business Analysts would receive POSSE service requests to a new process, where they were received by a QAA. We observed the operation of the new process and reviewed associated POSSE documentation. We noted that procedures for handling common support requests had not been updated recently, and were not used by QAAs.

Although the priority of each request observed was categorized, there were no definitions of each level of priority to ensure consistent application. Finally, the process for escalating incidents was not documented, such as who to contact for incidents that require immediate attention.

Recommendation 9

The Manager of Business Services, develop a process to:

a) Handle common service requests by a Quality Assurance Analysts (QAA), including a documented knowledgebase.
b) Prioritize and escalate requests, including documented criteria.

Management Response

Action Plan	Responsibility
Agreed. • Refine the existing Business Process Model to reduce/eliminate ambiguity when handling support requests. • Document common support requests and keep current. • Define the POSSE Support job prioritization criteria for "Urgency". • Define and implement an escalation process for unresolved support tickets.	Lead: Manager, Business Services Support: Manager, Application Support Commitment Date: June 30, 2017

4.9 Reporting PD Helpdesk Performance

Although there are dashboards reporting PD Helpdesk performance, criteria regarding frequency of reporting to senior management and information required in the reports has not been defined. Delivery to senior management would provide insights into the effectiveness of PD Helpdesk in resolving service requests and the appropriateness of resource allocation. Information on the age of tickets and request classification is not included in current reports. Age of tickets ensures tickets do not remain unresolved due to lack of follow up. Request classification captures the origin of support tickets and can identify efficiency improvements through root cause analysis.

In relation to age of tickets, five POSSE support jobs existed that were aged over 180 days. Follow up with management identified three had been resolved and should be closed, one was ongoing and one required further investigation. Dashboard reporting on age of tickets would have identified these outliers for follow up.

Until July 2016, metrics were manually prepared in Excel and reported to the Director of Building Services on a monthly basis. To improve efficiency the PD Helpdesk transitioned to automated dashboards. Following this transition the frequency and method of reporting to senior management has not been defined. Also, information on "Request Classification" that was captured under the former process is no longer included on the dashboards.

Recommendation 10

The Manager of Business Services:

a) Update dashboards to include reporting on the age of tickets and capture classification; and
b) Define the information and frequency that is reportable to senior management to measure the performance of the Planning & Development Systems Support group.

Management Response

Action Plan	**Responsibility**
Agreed. • Include the metrics for unresolved POSSE Support tickets in support dashboards. • Include type of requests in the support dashboards. • The support team (QAA's) will perform monthly reviews on the unresolved support tickets and follow up to ensure resolution. • Identify and implement a process by which senior management is reviewing metrics and frequency.	Lead: Manager, Business Services Support: N/A Commitment Date: June 30, 2017

5.0 Appendix A: Risk and Control Matrix

Risk	Description of Risk Impact	Risk Before Controls	Control
Parcel data is incomplete or inaccurate. Key data includes land use designation (zoning), relationships with building objects, address, location and title.	Planning & Development decisions are made that do not comply with the municipal government act (MGA) and land use bylaws.	H	Daily integration (EAI): Daily LTI system feed -> POSSE (Land Title). Record counts are used to ensure the completeness of transfers. Relationship tests ensure accuracy.
			Daily integration (EAI): Daily COOL -> POSSE (Owner). Record counts are used to ensure the completeness of transfers. Accuracy is ensured by program logic that tests the ability to perform updates on owners associated multiple land titles.
			To ensure accuracy of parcel data addressing resolve exceptions identified on the following quality reports: a. Superseded parcels to be end dated b. Current Titled Parcels Without Land Title and Tentative Plan c. Titled Parcels without LUD d. Current Building Suites without Building e. Current Buildings without Titled Parcels f. Entryways Without Buildings In addition, quality meetings are held where addressing team members peer review work.
Incomplete or inaccurate address, licensing and permit data is transferred to the assessment business unit.	Customers are not billed for the correct amount of property taxes resulting in a loss of revenue to the City.	H	Integration (point to point): POSSE > CIAO. Transfer is a database copy of a staging table that is populated based upon defined triggers.
Customer facing or internal systems are not available	Damage to the reputation of The City.	H	On a daily basis Application Support monitor for failed interfaces and follow up to correct.
			All changes follow a formal change management process.

Risk	Description of Risk Impact	Risk Before Controls	Control
for an unplanned period, such as e-services websites.			POSSE service requests and incidents are responded to through a defined process that classifies requests based upon business impact, has procedures for handling common requests and has escalation procedures for major incidents. Incidents and requests are tracked and reported for continual improvement.
POSSE vendor suffers financial difficulties and is unable to continue to develop / support the product.	Product will not be maintained with current technological infrastructure at The City and replacement could be costly.	M	POSSE source code is maintained in escrow in case the vendor becomes insolvent or otherwise unable to offer support.
POSSE licensing and support contracts do not meet the needs of The City.	Legal liability for non-compliance with licensing terms, cost of licenses and potentially inadequate support.	M	Contracts with the vendor are managed to ensure compliance with licensing terms and adequate support.
Developers that have written custom code (outside the vendor supplied Stage tool) are no longer available to provide support.	Impacts of system changes on customizations are not identified resulting in broken functionality and / or longer upgrade timeframes.	H	Interfaces are documented in sufficient detail to allow rebuilding. Documentation should include the source, destination, protocols used for the transfer and field names.
			Customizations are explained in plain language comments within the source code.