TORONTO STAFF REPORT

April 4, 2003

To: Audit Committee

From: Auditor General

Subject: SAP Financial and Human Resources/Payroll Information Systems –
Post Implementation Review

Purpose:

This report addresses one of the projects in the Auditor General's Annual Work Plan, approved by City Council. This particular project includes a review of the implementation of SAP Canada Inc.'s financial and human resources/payroll information system with particular emphasis on the costs of implementation and the relationship of these costs with Council approved expenditure limits. In addition, this report also responds to the request of City Council that the Auditor General "ascertain the extent to which the financial management needs of the different City programs are adequately met by the City's SAP system".

Financial Implications and Impact Statement:

There are no immediate financial implications resulting from the adoption of this report. It is possible that certain expenditures previously incurred may be recoverable. In addition, any additional expenditures, which may be required as a result of the implementation of certain recommendations, should be offset by future savings, efficiencies and improved business processes.

Recommendations:

It is recommended that:

(1)   the Chief Financial Officer and Treasurer, and the Commissioner of Corporate Services, report back to the July 2003 Audit Committee on the steps taken to implement the recommendations contained in this report;

(2)   the Chief Financial Officer and Treasurer report further on the final costs to implement SAP, as previously reported in the "SAP Implementation Final Report" dated December 4, 2001. Such report to take into account the correct approved capital budget amounts, as well as the additional salary costs charged to departmental operating budgets as identified in this report;

(3)   the Chief Administrative Officer amend the City policy relating to the preparation of detailed business cases supporting all major capital projects. The amended policy include the requirement that projected internal staff costs, relating to those staff with significant involvement in capital projects, be identified and accounted for in all business cases. Such information be provided even if staff costs are not charged to the capital project;

(4)   the Commissioner of Corporate Services, in consultation with the City Solicitor, ensure that all future system development agreements are structured in such a way that payments for the software license acquisition component are made on an as needed or the most cost effective basis. Where possible, agreements be structured to take into account provisions for the return of licenses which may be surplus to requirements;

(5)   the Commissioner of Corporate Services, in consultation with the City Solicitor, ensure that, where possible, all future system development agreements are structured in such a way that software maintenance payments are based on the number of software licenses in use and not on the number of licenses acquired;

(6)   the Commissioner of Corporate Services, in consultation with the City Solicitor, review the possibility of recovering both software license costs and maintenance fees previously paid to SAP Canada Inc. in relation to the surplus software licenses not in use;

(7)   the Commissioner of Corporate Services assume responsibility for the management and control of all SAP licenses. In addition, a policy be developed to ensure that business cases supporting all software acquisitions clearly identify and justify the type of users planned. The Chief Financial Officer and Treasurer retain responsibility for controlling Corporate access to the SAP system for internal control and financial integration purposes;

(8)   the Chief Administrative Officer amend the City policies to ensure that business cases presented in support of major systems development and software acquisitions include the estimated costs to acquire and implement software upgrades over the average life of major software implementations;

(9)   the Commissioner of Corporate Services, in consultation with the Chief Financial Officer and Treasurer, continue to investigate and negotiate with SAP Canada Inc. and Oracle Corporation Canada Inc. the opportunities available for the recovery of excess license fees paid and for the reduction of the annual maintenance costs incurred related to the Oracle run time licenses;

(10)   the Commissioner of Corporate Services and the Chief Financial Officer and Treasurer, determine what steps are required to analyse and identify best practices and business process improvements that will maximize the efficiencies and savings potential of SAP. This analysis should include the quantification of the associated costs and benefits to be attained for each area of improvement identified;

(11)   the Chief Administrative Officer continue to require that all requests for new management information systems from City Departments, Agencies, Boards and Commissions be reviewed and approved or recommended by the Executive Director of Information and Technology. Such requests to include a detailed business case and justification analysis and include complete financial evaluations comparing SAP functionality with any other system being proposed. Unless there are compelling financial and operational reasons for selecting non-SAP systems, all new developments be restricted to SAP;

(12)   the Chief Administrative Officer, in consultation with other City Commissioners, ensure that the implementation of new information systems are not initiated until Privacy Assessment Impact evaluations are completed. The requirement for a Privacy Impact Assessment be mandatory in all business cases supporting systems development where personal information is involved and the costs relating thereto be an integral part of the project implementation costs;

(13)   the Commissioner of Corporate Services, in consultation with the Chief Financial Officer and Treasurer, review the costs and benefits of providing SAP document imaging within the confines of the current SAP functionality. This review be conducted in concert with the document management project currently underway under the direction of the Executive Director of Information and Technology; and

(14)   the Commissioner of Corporate Services and the Chief Financial Officer and Treasurer, be required to develop a long-term City-wide strategic plan relating to the future direction of the SAP information system. This long term strategic plan recognise the principles contained in the eCity vision. The major objectives of such a plan be to investigate ways to maximise the return on the City's investment in SAP. Such a plan to include the appropriate staffing of a centrally administered Competency Centre along with a process to address the need to:

-       work with departments to identify and prioritise the roll out of SAP modules available to City operating departments;

-       work with departments to coordinate the implementation and integration of major information systems;

-       work with departments to identify and prioritize management information needs;

-       identify best practices to improve the level of SAP information systems functionality;

- enforce the corporate standards established for SAP information systems development, maintenance and use; and

- assist Agencies, Boards and Commissions in the roll out of SAP information systems.

Background:

At the time of amalgamation, the newly formed City of Toronto was operating with seven separate and independent financial information systems. One of the priorities of the City in early 1998 was the need to consolidate all of the individual systems into one financial information system, which could serve the needs of the newly formed City. The requirement to consolidate the seven financial information systems was concurrent with the need to ensure that all systems and hardware were Year 2000 (Y2K) compliant by December 31, 1999.

In late 1997, two separate "Requests for Information" were issued for a Financial Information System and a Human Resource/Payroll System. We have been advised that the Requests for Information were initiated by two staff teams which consisted of senior finance and human resources staff from the amalgamating municipalities under the direction of the Chief Financial Officer and Treasurer. In response to the Requests for Information, an evaluation of key financial and human resources/payroll information systems was conducted by a team of City staff from the Finance Department, Human Resources, Payroll, and Information and Technology under the direction of a Project Steering Committee comprised of the former Chief Financial Officer and Treasurer as Chairperson of the Committee, the former Commissioner of Corporate Services, the former Executive Director of Human Resources and the former Executive Director of Information and Technology. In addition, LGS Group Inc., an independent consulting firm, was selected, pursuant to a March 1998 RFQ process, to assist the evaluation team with advice, research and analysis to ensure the staff recommendations were the best solution for the City.

In identifying a financial information system for the City, two approaches were considered. The first was the "best of breed" strategy which separately identified the best available system for each of the finance and payroll components regardless of supplier. Such a solution could result in a financial information system and human resources/payroll system being acquired from different vendors. This strategy would require the design and building of interfaces between the two systems to ensure effective data transmission. The alternative to "best of breed," the integrated solution, results in the financial information systems and human resources/payroll systems provided by the same vendor with data shared seamlessly between modules without a need for interfaces.

In July 1998, the Project Steering Committee presented to Council a report containing a business case for a new financial and human resources/payroll information system. The report outlined the anticipated costs and projected benefits of several options but stressed the need to select an integrated solution. The business case made it clear that the integrated solution could provide the maximum efficiencies from amalgamation. It also indicated that the system from the recommended supplier, SAP Canada Inc. had the most favourable financial return over seven years.

In addition, it was projected that efficiency gains resulting from the implementation of SAP would produce cost savings in the first three years that would exceed the initial investment in the system. Furthermore, the implementation could be completed in the short time frame necessitated by the Year 2000 problem.

LGS Group Inc. indicated in an attachment to the July 1998 report to Council that, "we strongly recommend that the City pursue the integrated alternative as the target solution for the City's administrative system. This path will help the City maximize the benefits of amalgamation, transform its administrative operations and provide the City with a solution flexible to sustain future business improvements and technology advances."

SAP is what is termed an Enterprise Resource Planning software. Its major feature is to provide a common platform within a single computer system that can serve the majority of processing and functionality requirements of City Departments. An effective Enterprise Resource Planning software system runs off a single database and enables departments across a corporation to process transactions and share financial information seamlessly.

The 1998 business case presented to Council outlined the cash flow requirements of $26.3 million in capital costs from 1998 to 2001. In addition, it estimated total operating costs to 2005 of $10.7 million. The business case also indicated that the total benefits to be realized to 2005 through the implementation of SAP were $89 million for a net savings amount of $52 million. This was calculated as follows:

Original investment	$26.3 million
Operating costs to 2005	10.7 million
	37.0 million
Estimated benefits	89.0 million
Estimated net savings	$52.0 million

At the request of Budget Committee, a second independent consultant, Brian Dunk Consulting Services Limited, was engaged to analyze the business case for this project. In his four page report, dated July 27, 1998, to the former Executive Director of Information and Technology, the consultant reported that, "Our overall general assessment is that the evaluation and selection process leading up to the recommended FIS/HR/Payroll solution is sound. The evaluation team:

- followed a logical, phased selection process to achieve its recommended solution;

- consulted respected, independent sources such as Gartner Group and the Software Engineering Institute when unbiased benchmarks were required to assist in the evaluation;

- made generally reasonable assumptions regarding costs and benefits;

- completed a reasonable financial evaluation of the alternatives; and

- took the necessary steps to mitigate project risks as much as possible."

The report of Brian Dunk Consulting Services Limited was also forwarded to Council at its July 1998 meeting.

In July 1998, Council approved in principle the staff recommendation to proceed with the $26.3 million capital investment to implement SAP. Subsequent additions to the implementation budget were approved by Council in December 1999 for $1 million and in January 2000 for $7 million. Consequently, the total budget was increased to $34.3 million.

The decision to proceed with SAP was based on the business case analysis that the system provided the greatest functionality, best cost/benefit analysis and greatest opportunity for expanding to other City entities. Primarily, SAP was selected as the solution for a consolidated Financial Information System as it offered full integration with the Human Resource/Payroll System for the newly amalgamated City. In addition, the system could be implemented aggressively to satisfy the added pressure of the Y2K deadline. The Y2K timeline was extremely tight and inflexible as the new system had to be in place by mid 1999 to provide adequate time to assess Y2K compliance.

Following the July 1998 Council approval, staff undertook a "scoping" and planning exercise to define detailed project implementation timelines and resources required for implementation. At the same time, staff also entered into extensive contract negotiations with SAP Canada Inc.

Council gave final approval for City staff to enter an agreement with SAP Canada Inc. in December 1998. At that time, Council reviewed a confidential report that outlined terms and conditions of the proposed contract including milestones, duties and functionality associated with the implementation. The agreement with SAP Canada Inc. was also reviewed with outside legal advisors, Davies, Ward & Beck. Council was provided with the comments of Davies, Ward & Beck on the agreement, as well as the responses to these comments by City staff. The December 1998 report also recommended that Council be provided with "a reporting every three months on implementing the system including whether the project is on track and has achieved the expected savings".

The only revision to the scope of the project relative to the business case, presented to Council in July 1998, was the exclusion of the conversion to SAP of the Payroll Time Entry System, a significant component of payroll processing for the former Metro employees. It was determined by City staff that the Time Entry System, because of its requirement to interface with a significant number of applications, was too risky to proceed with in the short time frame available.

Given the magnitude of the new City of Toronto implementation project and the Y2K timeline, it was necessary to fast track the implementation of SAP. The former City of Etobicoke, prior to amalgamation, operated a functional SAP Financial Information System without the human resources/payroll component. Although the implementation of SAP in the new City was far more complex, the Project Steering Committee determined that the Etobicoke configuration could be used as a base, or template, in implementing SAP in the new City. By adopting the functionality and processes of the Etobicoke system, with minor system and master data changes, the new City could achieve an accelerated implementation of the financial component of SAP.

In effect, in order to meet the tight timelines, the initial implementation was only planned to provide a base level of critical functionality. It was determined that other less critical modules available in the SAP system, purchased by the City, would be implemented at a future date.

The resources available for the implementation of SAP included a number of groups each of whom played a different role. The Project Steering Committee provided strategic direction and approved project scope and financial expenditures. Directors from each key business area of Finance, Payroll, Human Resources, Purchasing and Information and Technology, as well as the Project Director and SAP representatives formed an Advisory Committee that provided guidance and decision-making on a day-to-day basis. To effectively manage the project a Project Director led a team comprised of external consultants and dedicated business unit staff appointed or seconded to the project. As the implementation progressed, user concerns resulted in the formation of a Financial Information System (FIS) Users Group, with representation from each City department, to address and prioritize issues identified by operating department users.

Even though the SAP system was a City-wide Enterprise Resource Planning software system, the SAP implementation project was essentially managed and controlled by the City Finance Department. In addition, the budget for the project was administered by Finance.

The implementation of the SAP Financial Information System and Human Resources/Payroll system for the City took place from January 1999 to February 2001. Although enhancements, upgrades and refinements to the SAP system are ongoing, it was during this period that the basic functionality was implemented in accordance with project plans and based on terms and conditions of the contract with SAP Canada Inc.

The basic implementation of SAP was completed within the timelines imposed by Y2K and set in place a foundation for an integrated financial, human resources and payroll management information system for the City. The implementation of SAP, during a period when the City was dealing with post-amalgamation issues, as well as the Y2K deadline, included the following:

- the consolidation of the general ledgers that existed prior to amalgamation;

- the consolidation of payroll processing of approximately $98 million per month;

- the consolidation of payroll and human resource information for approximately 52,500 City employees (including part-time, casual, temporary, and retirees);

- the consolidation of human resources information on 1,300 organizational units, and 5,000 job categories;

- the administration and processing of payroll and human resource information pertaining to over 56 collective agreements;

- the establishment of a centralized accounts payable and purchasing system;

- the training of over 2,100 staff who operate various SAP modules;

- the establishment of 33,900 cost centers to track program expenditures; and

- the setting up of information on over 64,000 individual vendors to the system.

A report entitled "SAP Implementation Final Report", prepared by the Chief Administrative Officer and Acting Chief Financial Officer and the Acting Treasurer and Director of Accounting Services, dated November 22, 2001, was submitted to City Council on February 13, 2002, and considered and approved by Council on May 21, 22, and 23, 2002.

The report provided an overview of the project and summarized SAP total project direct implementation costs at $34.06 million (99.45 per cent of the reported approved budget of $34.25 million resulting in a budget surplus of $190,000). The report indicated that certain costs incurred as part of the SAP implementation, such as new desktop computers, were charged to the Y2K project, as approved by Council, because they would have been necessary even without the implementation of a new system. The report also outlined the partnering and City shared costs of the implementation of SAP for the Toronto Police Service. The City contributed $1.65 million from the SAP project budget to the total estimated implementation costs of $4.4 million for the Toronto Police Service.

In July of 2000, Council requested the City Auditor to ". . . ascertain the extent to which the financial management reporting needs of different City Programs are adequately met by the City's SAP financial system and report thereon to the Policy and Finance Committee". The City Auditor included this project in his 2001 Audit Workplan. In addition, the City Auditor included in his work plan an evaluation as to whether or not the implementation of the SAP system was completed within approved expenditure levels.

The commencement of this particular review was deferred pending completion of the implementation including the subsequent upgrade of the SAP software to version 4.6 in late 2001.

Objectives of the Audit

This review has two primary objectives. First, to review the implementation of the SAP system to determine that it was completed in a manner consistent with Council's approval of the project, particularly in terms of its approved costs and its expected benefits and, secondly, to assess the current reporting functionality of the SAP Financial Information System against the management information needs of the various City Departments.

Our review was focussed on the above two objectives and did not include a review of the process relating to the selection of SAP, nor the circumstances relating to the engagement of the independent consultants retained by the Project Steering Committee.

Our work included a review of various Council reports, interviews with staff and outside experts including the legal representative who advised the City on the final agreement with SAP Canada Inc., the examination of various documents including contracts, discussions with other

municipalities who operate an SAP system and an online intranet survey of City of Toronto SAP users.

To assess whether the project was implemented within approved expenditure limits we:

- obtained detailed financial information itemizing significant costs incurred on the project and compared them with final SAP reports submitted to Council;

- reviewed a sample of invoices charged to the SAP project capital account;

- tested for the potential misclassification of SAP related expenditures to other accounts including those accounts related to Y2K expenditures;

- analyzed costs charged to the SAP implementation project relating to internal staff time;

- reviewed change orders and reports supporting approved budget amendments; and

- performed a detailed analysis of budget to actual expenditures.

In addition, the procedures listed below were performed to evaluate the extent to which SAP is meeting the financial information requirements of City Departments.

Interviews were conducted with:

- key Senior Managers from a number of City Departments;
- the two Project Directors who were responsible for the SAP Implementation Project;
- the Chair of the FIS User group;
- Senior Managers from the Payroll and Human Resources Divisions;
- Senior Managers from the Information and Technology Division;
- Senior Managers from the Finance Department;
- account representatives from SAP Canada Inc.; and
- an Information Technology specialist from the City's external auditor, Ernst & Young.

We also attended a number of FIS User group meetings. In addition, we convened a focus group meeting, which was attended by several managers of a large department to discuss issues of concern related to both the implementation of SAP, as well as concerns relating to management reporting requirements. Finally, we designed and circulated a questionnaire to a randomly selected sample of the City's SAP users to solicit user views concerning SAP's ability to meet their information needs.

Comment

Confidentiality Provisions in the Agreement Between the City and SAP Canada Inc.

The content of this report has been reviewed with the City Legal Division for the purpose of ensuring that information provided in the report does not contravene any confidentiality

provisions of the agreement with SAP Canada Inc. The City Legal Division has advised that there are broad confidentiality provisions in the agreement which preclude the public disclosure of certain specific information. Accordingly, we have had discussions with SAP Canada Inc. concerning their consent to the disclosure publicly of the specific information relating to licenses. The response from SAP Canada Inc. was as follows:

"As you have rightly pointed out, the existing contract between the City of Toronto and SAP does include reference to matters of confidentiality. In our industry, details related to business application functionality, implementation strategy and specific usage of the software solution have a material impact on our business. Moreover, specific information focused on solution pricing and the number and type of users can and will adversely affect SAP's competitive position in what has become a highly competitive market. In addition, disclosure of certain competitive information may significantly prejudice or interfere significantly with the economic and contractual interests of SAP.

SAP understands, however, that the City of Toronto as a public sector institution has an obligation to be accountable to its constituents with respect to its operations and expenditures. On that basis, we want to be reasonable in assisting the City to evaluate the expenditures specific to the SAP Software . We have reviewed your attached mail and consent to allowing the City to release the following information:

- 		Total dollars spent on SAP Software under the license agreement.
- 		Total dollars spent on SAP maintenance under the license agreement.

In order to protect SAP's competitive interests, we would request that the City maintain confidentiality around all other aspects of our legal and license agreements. In particular, we request that the City not release details regarding the number and types of users included in the license agreement."

In view of the above, this report has been prepared on the basis that the specific number and type of license purchased by the City from SAP Canada Inc. has not been disclosed. However, we have prepared an In Camera attachment, Appendix 3, which does provide this information.

A summary of the major issues identified during our review is included in the following Summary of Significant Audit Observations. Further details relating to each one of these observations, along with our recommendations, is provided in the body of the report.

Summary of Significant Audit Observations

- 		One of the reasons for implementing SAP was to consolidate the management information systems of the amalgamating municipalities into one City-wide system. In addition due to the need to address Y2K concerns, SAP was aggressively implemented and focussed on base or critical functionality only. These objectives were met.

- The total costs reported to Council in November 2001 to implement SAP was $34.063 million compared with a reported approved budget of $34.25 million (the approved budget in fact was $34.3 million). However, the actual costs to implement SAP were $1,145,000 in excess of the costs reported. These additional costs represented staff salary costs which were charged to the operations of various departments instead of to the SAP implementation costs. Consequently, the SAP implementation costs were understated by $1,145,000 resulting in an over expenditure of $955,000 (3 per cent) on a reported budget of $34.25 million ($905,000 compared to the approved budget).

- As reported to Council, internal staff costs were only charged to the SAP implementation project in circumstances where departments required temporary staff to replace those assigned to SAP. The salary costs charged to SAP in these circumstances were $855,000. Additional salary costs of approximately $10 million incurred from January 1, 1999 to February 2001, in relation to the implementation of SAP, were charged to various departments. While this practice was reported to City Council, Council was not made aware of the amount in question. An estimate of the complete costs of implementation including salary costs should have been included in the business cases presented to Council. If Council had been aware of this, it might have impacted their decision to proceed with SAP. In addition, this amount should also have been reported out in the final report to Council entitled "SAP Implementation Final Report".

- In January 1999, the City acquired a number of software licenses from SAP Canada Inc. for a cost of $9,531,000 (including taxes). At the same time, the City retained the SAP licenses previously owned by the former City of Etobicoke. In December 1999, the City acquired additional licenses at a cost of $1,790,000 (including taxes). Consequently, as of December 31, 1999 the City had spent $11,321,000 on a specific number of licenses. The licenses acquired were for different categories of users at varying costs. In addition, the agreement with SAP Canada Inc. indicated that these licenses were acquired at a discount from the list price of SAP Canada Inc. At the present time, based on information provided by the Director, Information and Application Services, Information and Technology Division, Corporate Services Department, the City is using only approximately 38 per cent of the licenses acquired. Consequently by December 31, 1999 the City had expended a total of $11,321,000 on software licenses, 62 per cent of which are not being used at the current time. Depending on the type of license in use, the value of the unused licenses purchased could be anywhere between $4.5 million and $8.4 million. We have provided this range due to the fact that management has been unable to determine which category of license is presently being used. Depending on the future implementation of other SAP modules, as well as the roll out of SAP to other Agencies, Boards and Commissions, it is possible that the excess licenses will be used in the future.

- Software maintenance fees charged by SAP Canada Inc. are contractually based on the number and value of licenses acquired. Consequently, maintenance fees paid to SAP Canada Inc. include a significant amount relating to licenses, which are not in use. Since January 1 1999 and up to December 31, 2003, (maintenance for 2003 has been paid in advance) the City has paid $6,851,000 in maintenance fees. If the fees were based on the licenses in use, the payment to SAP would have been between $1.8 million and $4.3

million. These amounts represent excess maintenance paid by the City of between $2.5 million and $5 million.

- The licenses purchased from SAP Canada Inc. were acquired at a negotiated discount. In this context the discount provided by SAP, to some extent, has offset the increased maintenance costs, the interest component on the increased maintenance costs as well as the additional interest on the funds required to pay for the licenses prior to them being needed. We have reviewed this matter and have determined that the financial impact to the City, depending on the types of licenses in use, would be somewhere between an additional cost of $3 million and $4.6 million. In actual fact assuming all unused licenses will ultimately be used this is the net financial impact to the City.

- There is no documentation or business case available to support the savings projected relating to the implementation of SAP. Total savings to 2005 projected from the implementation of SAP as reported to Council in July 1998 were estimated to be in the range of $89 million. Savings net of the implementation costs including operating costs to 2005 were approximately $52 million. It was reported that these savings were for the most part reductions in salary costs. After Council approved budget increases of $8 million the net savings were presumably reduced to $44 million, although Council was not specifically advised of this. Although we have been informed by management that it was previously reported to Council through the budget process that administration savings in the amount of $38.6 million had been achieved between 1998 and 2000 as a result of amalgamation, some of which may have been SAP related, we have not been able to determine the extent to which these savings may be attributable to the implementation of SAP.

- Projected costs to operate and maintain SAP up to 2005 were estimated to be $10.7 million. This amount was factored into the net savings calculation to be derived from the implementation of SAP. These projected operating costs to 2005 were understated and include maintenance costs only. These projections do not include the costs related to software upgrades, full time maintenance staff and training costs. We have not determined the extent of the understatement.

- Our intranet survey of City staff who use SAP on a regular basis indicated an overall level of satisfaction with the data processing, data retrieval and data access capabilities of SAP. Respondents to the survey were essentially front line staff responsible for transactional processing, retrieval and access of data.

- Our interviews with management staff indicated concerns relating to access to information in SAP and the adequacy of management information available from the system as it is currently configured. Basic financial information such as payroll exception reporting has only recently been made available from the system. There is a fundamental need to identify and prioritise reporting requirements for all Departments.

-       As a result of deficiencies in the availability of management information and reports provided by SAP, departments are maintaining certain supplemental records to produce their own reports. These activities are an inefficient use of staff time and resources. In many cases, reports produced by departments can not be reconciled to SAP.

-       At the direction of the Chief Administrative Officer, any requests by Departments, Agencies Boards or Commissions for the acquisition of non-SAP management information systems are being directed to the Information and Technology Division of the Corporate Services Department for review, analysis, evaluation and approval. These requests include a requirement that business cases must contain detailed justification analyses. The Chief Administrative Officer has directed that staff be required to follow a "SAP First" policy, unless there are compelling reasons to do otherwise.

-       In order to maximize the City's investment in SAP there is a need to develop a City-wide governance structure in order to address issues which include the following:

    -       the need to identify and prioritize management reporting requirements;

    -       the need to identify and implement best practices in processing financial transactions in SAP;

    -       the need to improve SAP functionality;

    -       the need to restore and instil confidence in SAP users in order to ensure that the proliferation of supplementary management information systems are eliminated where possible;

    -       the roll out of other SAP modules to departments; and

    -       the potential roll out of SAP to other Agencies, Boards and Commissions.

Our detailed comments in relation to our Summary of Significant Audit Observations are contained in the following paragraphs:

This report contains a significant number of recommendations and, in this context, it is suggested that a timetable be determined for the reporting back by management of the steps taken to address each of the recommendations.

Recommendation:

1.   The Chief Financial Officer and Treasurer, and the Commissioner of Corporate Services, report back to the July 2003 Audit Committee on the steps taken to implement the recommendations contained in this report.

SAP Project Budget

In July 1998, Council approved an initial budget of $26.3 million. Subsequent changes approved by Council increased the total budget to $34.3 million as follows:

July 1998	Approval of initial budget	$26.3 million
December 1999	Additional approval	1.0 million
January 2000	Additional approval	7.0 million
Total budget		$34.3 million

The additional $1 million was approved for "payment of specially priced software fees under the City's existing contract for the implementation of SAP financials for the Toronto Police Service".

The further $7 million was approved to cover higher than anticipated costs for changes from the original plan, to provide for additional SAP consulting expertise to sustain the systems and facilitate knowledge transfer to staff and provide for unanticipated contract resources to replace certain staff assigned to the Project Team.

Reported Costs to Implement SAP

The "SAP Implementation Final Report" considered by Council in February 2002, from the Chief Administrative Officer and Acting Chief Financial Officer and the Acting Treasurer and Director of Accounting Services itemized the actual expenditures of the SAP project at $34.06 million (Appendix 1) compared to the $34.25 million project budget approved by Council. (A budget of $34.25 million was used in the SAP Implementation Final Report even though the approved budget was $34.3 million, a difference of $50,000). The report concluded that the project met its implementation target dates, and achieved the required deliverables with a positive budget variance of $190,000 ($240,000 if the correct approved budget figures are used).

We reviewed the costs associated with the SAP project in order to determine that project expenditures were appropriately recorded in the accounting system and were accurately reported to City Council.

Our review included:

- an examination of a sample of invoices charged to the SAP project to determine that they were appropriately accounted for;

- the identification of key SAP project suppliers and verification on a test basis that invoices for these suppliers were charged to appropriate SAP or non-SAP accounts; and

- a review of all Y2K business cases which had some relationship to the FIS implementation to ensure SAP costs had not been inappropriately charged to the Y2K project.

Based on our audit sample, we have concluded that the third-party costs charged to the SAP implementation project were appropriate. From an audit perspective, it is extremely difficult to determine if costs, which may have been charged elsewhere in the Corporation should have been charged to the SAP project. The verification of this would require a review of all accounts in the City.

<u>Staff Costs Charged to SAP</u>

The business case presented to Council supporting the selection of SAP indicated that although internal staff would be used extensively to implement SAP these costs would not be charged to the project unless the original staff assigned to the project were temporarily replaced by other employees/resources.

In a report dated January 7, 2000, from the Project Steering Committee, Council approved a request for an increase of $7 million in the project budget.

The requested additional $7 million in project funding outlined in the report consisted of the following:

	Actual to Dec 31, 1999 (million)	Total Projected (million)	Budget (million)	Variance (million)
Staff backfills	$2.0	$3.4	$0.0	$3.4
Sustainment	0.4	2.1	0.0	2.1
Change requests	2.0	4.0	2.5	1.5
Total	$4.4	$9.5	$2.5	$7.0

Of the $7 million budget request, $2 million was reported as having already been expended on staff to the end of 1999. It was projected that an additional $1.4 million would be required to complete the project, resulting in a total staff backfill budget of $3.4 million.

The staff costs listed in the SAP Implementation Final Report as "Salaries" total only $855,000. Consequently, even if additional funds had not been expended beyond December 31, 1999, there is a discrepancy in the final report of $1,145,000 ($2 million less $855,000).

Staff of the Finance Department have indicated that the $1,145,000 discrepancy pertaining to staff costs is a result of these costs being charged to operating Departments instead of the SAP project. The additional $1.4 million in approved additional funding for staff backfill was subsequently expended to retain consulting resources in support of the project as internal staff resources were not available.

Consequently, based on our review and the information available, the costs reported to City Council as representing the final costs of the SAP project are incorrect and have been understated by $1,145,000. If these additional costs are taken into account, the SAP implementation costs are over budget by $955,000. ($905,000 if correct approved budget amounts are used)

Staff Costs Not Charged to the SAP Implementation Project

In addition to the staff costs noted above, there were a significant number of other City staff assigned to the Project Team. During the period from January 1999 through to February 2001, the SAP Project Director maintained detailed records of City staff who were seconded to the project. Although this listing did not include all re-deployed staff, we have estimated that the total internal salary cost including benefits for staff on the SAP project amounted to approximately $10 million during this time period.

Council was previously made aware that every effort would be made to use City staff during the implementation and the project business case indicated that internal staff costs would not be charged to the project unless original staff assigned to the project were temporarily replaced by other employees. Having said that, however, the business case supporting the selection of SAP Canada Inc. as the preferred proponent made no reference to the extent of the estimated staff resources required. While this was in keeping with City policy and practice at that time, it is recommended that in future such costs be included in business cases to ensure the best possible financial information is available. In order to ensure that Council was fully informed, these amounts should have been included in the business cases presented to Council.

Other SAP Implementation Costs – Toronto Police Service

The Toronto Police Service's approved budget for the implementation of SAP amounted to $2,750,000. In addition, City Council approved a further contribution to be paid out of the SAP implementation budget to finance the Toronto Police Service SAP 4.6 upgrade in the amount of $550,000.

The City also acquired software licenses for the Toronto Police Service totalling $1,101,000. The total cost of the SAP implementation for the Toronto Police Service was $4.4 million, of which $1,651,000 was charged to the City's SAP budget.

Recommendations:

2.   The Chief Financial Officer and Treasurer report further on the final costs to implement SAP, as previously reported in the "SAP Implementation Final Report" dated December 4, 2001. Such report to take into account the correct approved capital budget amounts, as well as the additional salary costs charged to departmental operating budgets as identified in this report.

3.   The Chief Administrative Officer amend the City policy relating to the preparation of detailed business cases supporting all major capital projects. The amended policy include the requirement that projected internal staff costs, relating to those staff with significant involvement in capital projects, be identified and accounted for in all business cases. Such information be provided even if staff costs are not charged to the capital project.

Software Licenses and Related Issues

During the course of our review of the expenditures related to the implementation of SAP, we identified a number of significant issues relating to the acquisition of the software licenses from SAP Canada Inc. by the City.

(a)   Acquisition of SAP Software Licenses

This section of the report, along with further details of the number of licenses acquired, has been reproduced as Appendix 3. The number of licenses is confidential information, and accordingly, Appendix 3 is reproduced as an In Camera document. However, the following information is sufficiently detailed to demonstrate the various issues identified during our review.

On signing the agreement with SAP Canada Inc. in December of 1998, the City acquired an initial block of SAP software licences for $9.5 million, including taxes. These licenses were acquired at a negotiated discount from SAP's list price and consisted of varying types of licenses, each with different costs. At that time, the City also retained a small number of licenses which had been acquired with the SAP system at the former City of Etobicoke.

We were advised by the Finance Department that the justification for the purchase of the $9.5 million worth of licenses was based on the Finance Department's experience with the former Cities of Etobicoke, North York and Scarborough. While this may have been the case, there is no documentation or business case available to support the number of licenses acquired.

Twelve months after the original acquisition, in December 1999, an "activity inventory" of all licenses was taken by Finance Department staff to determine the number of licenses in use at that time. Of the licenses acquired in December 1998, it was determined that only 29 per cent were being used by December 1999. Concurrent with the inventory conducted, the Finance Department requested all other City Departments to provide an estimate of future projected license requirements.

Projected software license requirements provided by Departments were in excess of the unused licenses at that time. No analysis was conducted by Finance Division staff to determine whether or not the projections were reasonable. In any event, as a result of these projections, an additional block of licenses was purchased in December 1999, even though only 29 per cent of the original acquisition were being used. These licenses were purchased for approximately $1.8 million at the same discounted cost as the original acquisition. The contract with SAP Canada Inc. allowed the City to purchase additional licenses at the same discounted rate until December 31, 1999.

Based on the licenses in use, as well as the December 1999 projections of licences required in the future, the City had a number of surplus licenses. We have been advised that the excess licenses were purchased due to the fact that they would likely be required for the roll out of SAP to other Agencies Boards and Commissions at the City. However, we have not been able to locate any justification supporting this acquisition.

Management have not been able to determine how many licenses will ultimately be required by the City as this depends on the roll out of other SAP modules and/or the increase in functionality in SAP in the future, as well as the possibility that these licenses would be required for Agencies Boards and Commissions. It is possible that all of the licenses acquired may be used sometime in the future.

Nevertheless, the City by December 1999 had spent a total of $11.3 million on a relatively large number of software licenses, 62 per cent of which are not being used four years later. Management does not have information in relation to the types of licenses not being used. Depending on the type of licenses not being used, the cost of the unused licenses is between $4.5 million and $8.4 million.

(b)   Software Maintenance Fees

The contract with SAP Canada Inc. established that the annual software maintenance fees, escalating over the life of the contract, were to be based on a percentage of the total software license fee. In simple terms the greater the number of licenses acquired the greater would be the maintenance fees.

Maintenance fees are being paid based on the cost of the licenses acquired, when in fact only about 38 per cent of the licenses are currently in use. Cumulative maintenance fees paid to SAP Canada Inc. covering the period up to December 31, 2003 are in the range of $6.8 million. However, if these fees were paid on the licenses currently in use, the maintenance costs would have been in the range of $1.8 million to $4.3 million.

Except for the first year payment of $476,500 all subsequent maintenance cost have been charged to the City's operating budget.

(c)   Estimated Financial Impact

The software licenses acquired from SAP by the City were purchased at a negotiated discount. Offsetting this discount, however, are the issues identified previously in this report such as:

-        the acquisition of the licenses prior to the dates they were required;
-        the interest costs relating to the acquisition of the licenses before they were required;
-        the maintenance costs paid on the licenses not being used; and
-        the interest costs on the maintenance paid on the licenses not being used.

Further complicating the above, however, is the fact that there is some uncertainty as to whether or not the unused licenses will be used sometime in the future. Depending on the future roll out of other SAP modules, as well as the roll out of SAP to other Agencies, Boards and Commissions, it is possible that the licenses presently owned by the City will be used.

In addition, management has not been able to determine which type of licenses are currently being used by the City. Different categories of licenses at different costs for different users were acquired from SAP.

Taking into account the above factors we have estimated the net financial impact to the City, attributable to the acquisition of licenses before they were required, to be in the range of $3 million to $4.6 million.

(d)   Management of the City's Software License Portfolio

One further area of concern identified during our review of the extent of SAP licenses acquired relates to the need for a centralised management function whose responsibility it is to manage and account for software licenses throughout the Corporation. We have been advised that the Information and Technology Division is in the process of establishing a management process to centrally maintain, manage and account for all City software licenses. The objective of this process has been to ensure that:

-       all users of specific software are appropriately licensed;

-       controls are in place to ensure that an appropriate level of licenses are acquired taking in to account current and projected users;

-       acquisition of licenses is scheduled in accordance with the specific times the licenses are required; and

-       licenses are acquired and maintained in accordance with contractual agreements.

The management and control of the SAP licenses are currently the responsibility of the Finance Department. In addition, the Finance Department controls the assignment of the license to the individual business users of the system and ensures that their access is restricted to the appropriate level of authority, access and the business processes that the user should be assigned. This is a key internal control that should be maintained as more of the City's business processes are conducted electronically.

One further requirement of this process is the need to coordinate the acquisition of site licenses for those Agencies, Boards and Commissions over which the City has authority. This was an issue that was identified by the Auditor General in his report entitled "Oracle Database Software Acquisition – Additional Information, dated March 8, 2002. The response to the report by management required that the Commissioner of Corporate Services report back to the Audit Committee by June 30, 2002. We have been advised by the Executive Director of Information and Technology that this report will be forwarded to the July 2003 Audit Committee.

Recommendations:

4.   The Commissioner of Corporate Services, in consultation with the City Solicitor, ensure that all future system development agreements are structured in such a way that payments for the software license acquisition component are made on an as needed or the most cost effective basis. Where possible, agreements be structured to take into account provisions for the return of licenses which may be surplus to requirements.

5.   The Commissioner of Corporate Services, in consultation with the City Solicitor, ensure that, where possible, all future system development agreements are structured in such a way that software maintenance payments are based on the number of software licenses in use and not on the number of licenses acquired.

6.   The Commissioner of Corporate Services, in consultation with the City Solicitor, review the possibility of recovering both software license costs and maintenance fees previously paid to SAP Canada Inc. in relation to the surplus software licenses not in use.

7.   The Commissioner of Corporate Services assume responsibility for the management and control of all SAP licenses. In addition, a policy be developed to ensure that business cases supporting all software acquisitions clearly identify and justify the type of users planned. The Chief Financial Officer and Treasurer retain responsibility for controlling Corporate access to the SAP system for internal control and financial integration purposes.

(e)   Software Upgrades

When purchasing a large computer software application like SAP, it is common practice to anticipate that software upgrades will be required periodically. The upgrades usually improve the functionality of the product. SAP Canada Inc., like most vendors, requires clients to implement the upgrades as a condition for continuing to provide support for the system. In a SAP project update report from the Project Steering Committee to the Administration Committee, dated August 23, 2000, it was reported that upgrade costs could be anticipated every 18 months.

However, none of the initial business cases presented as options for the new Financial Information and Human Resources/ Payroll Systems included the estimated upgrade costs as part of the ongoing operating costs. The total costs for the upgrade to the SAP Version 4.6 in September 2001 for the City's Financial, Payroll and Human Resources/Payroll information systems was $1,737,000. Although the software upgrade did not include any costs relating to the acquisition of new software, it did include costs such as internal salaries, external consulting costs and various hardware components, which were required to accommodate the upgrade.

The extent of software upgrades while difficult to predict should nevertheless provide for "best estimates" in all business cases.

Recommendation:

8.   The Chief Administrative Officer amend the City policies to ensure that business cases presented in support of major systems development and software acquisitions include the estimated costs to acquire and implement software upgrades over the average life of major software implementations.

(f)   Oracle "Run time" Database Software

SAP uses what is known as a "run time" version of the Oracle Database Software. The license fee paid to SAP Canada Inc. by the City includes a fee for this Oracle component. In a report entitled "Interim Report on Oracle Database Software Acquisition" dated February 6, 2002, and submitted to Council at its meeting on February 13, 2002, it was reported that an excess of Oracle licenses were purchased. Discussions were held with Oracle Corporation Canada Inc. and, as part of these discussions, arrangements should have been made to effectively eliminate the amount paid in respect of the Oracle run time licenses required to operate SAP. To date, this has not been done and the City has effectively paid twice for the Oracle component of the SAP license fee.

The Executive Director of Information and Technology has confirmed the double payments and has had preliminary discussions with Oracle and SAP in regard to resolving this problem.

Recommendation:

9.   The Commissioner of Corporate Services, in consultation with the Chief Financial Officer and Treasurer, continue to investigate and negotiate with SAP Canada Inc. and Oracle Corporation Canada Inc. the opportunities available for the recovery of excess license fees paid and for the reduction of the annual maintenance costs incurred related to the Oracle run time licenses.

Benefits Realized from the Implementation of SAP

While the costs relating to the implementation of SAP are important, of further significance in the business case submitted to Council in July 1998 was the identification and realization of savings projected by the implementation of SAP.

SAP provided the City with a solution for its immediate financial and human resources information needs and the flexibility to sustain future business improvements and technology advancements. Significant financial benefits were projected in the business case approved by Council to support the implementation of SAP as a fully integrated software package.

It was reported that these benefits represented cost savings that would arise from the increased functionality of SAP, from the implementation of best business practices and from the availability of improved information processing and better management information.

It was also reported to Council that the total savings identified would be realized at two levels within the corporation. First, there would be efficiencies in the core administration areas of Finance, Human Resources, and Payroll, through the reduction of 80 staff as a result of implementing a new information system across the organization. Secondly, additional savings would be realized in choosing the integrated solution over the "best of breed" solution. These additional savings were projected as a 15 per cent reduction in the administrative staff of operating departments. The projected staff savings were the equivalent of 90 positions out of a

total of 600. In total, staff savings would approximate 170 full time staff over the seven-year period to 2005.

The estimated gross savings as a result of the implementation of SAP were projected to be $89 million for the seven-year period ending 2005. The net savings identified after an initial capital investment of $26.3 million and operating costs through to 2005 of $10.7 million were estimated to be $52 million. These savings would have presumably been reduced by the increased budgeted costs of $8 million to $44 million although this was not specifically reported to Council.

Input to the extent of the projected savings was provided by external consultants. The external consultants also indicated that the City "made generally reasonable assumptions regarding costs and benefits and completed a reasonable financial evaluation of the alternatives".

Council, at its meeting of July 29, 30, and 31, 1998, requested that information on achieving the expected cost savings from the SAP implementation be provided in regular three-month project reports from the Project Steering Committee. These update reports were prepared as follows:

-        January to April 1999
-        May to October 1999, and
-        November 1999 to August 2000

These reports did not provide any quantifiable measures of benefits achieved and did not identify any cost savings or productivity improvements arising from the implementation of the SAP system.

We have had a number of discussions with senior staff involved in the SAP implementation project in connection with the identification and extent of cost savings, attributable to SAP which have accrued subsequent to implementation. We have been advised that such information is not available. Consequently, we can not determine the level of savings, if any, which the implementation of SAP may have generated as of December 31, 2002. We have been advised by staff that it was previously reported through the budget process to Council that administration savings in the amount of $38.6 million had been achieved between 1998 and 2000 as a result of amalgamation. It is possible that some of these savings may have been SAP related. However, we have not been able to determine the extent to which these savings may be attributable to the implementation of SAP. The determination of savings, however, is complicated by a range of issues, external to SAP, such as provincial downloading, service level harmonization, Y2K resource requirements, etc., which have all had an impact on staff levels.

In addition, we have not been provided with any details relating to the total projected operating costs of $10.7 million for the implementation of SAP. These operating costs were projected to 2005. In our opinion, this amount is understated, as it would appear to include only contracted annual maintenance costs under the SAP agreement. Software upgrade implementation costs, as well as training costs for full time staff dedicated to ongoing maintenance support, are not included.

The savings projected to be generated by SAP were presumably based on the final full implementation of the system. However, in view of the immediacy of the Y2K timeframes it was apparent very early on that full functionality of SAP was not possible and neither were the savings realistic. At that point, it would have been appropriate to advise Council of this issue but this was not done.

The conversion to SAP of the former Metro Payroll Time Entry System was one of the applications which was determined to be a contributory factor to the projected cost savings. This particular application was envisioned as part of the implementation project in the business case but was subsequently excluded during final negotiations with SAP Canada Inc. due mainly to the risks involved in implementing this application in the short time frame available. Although this represented a change in project scope, no adjustments were made to amend either the budget or the benefits projected in the initial business case that supported Council's decision to select SAP Canada Inc.

Further functionality available in SAP, which was intended to save staff time and costs, related to a business process referred to as "three-way match". This process involves the electronic matching of data contained in an invoice, a purchase order and a goods received report in order to automatically initiate payment to a supplier. Three-way match is a key component of payment processing in SAP and, in fact, is recognised as a best practice in payables processing. The Finance Department had originally included three-way match as part of its SAP implementation. However, a number of City departments had expressed concerns that the three-way match would necessitate additional resources due to the increased data entry requirements. Consequently, three-way match was not implemented as initially planned.

The City continues to release payment of invoices by the manual approval of invoices, purchase orders and goods received reports. This manual process is one of several factors impacting the ability of the City to pay its accounts in a timely manner. Since the implementation of the three-way match is only now being phased in, the efficiency gains originally projected have not been realized.

Of more significance in the attainment of cost savings, however, has been the lack of a "best practices" business review as part of the SAP implementation. Municipalities such as Vancouver, for instance, have implemented SAP systems and have realized savings from its implementation. Subsequent to implementation, Vancouver conducted an independent "benefits realization" study to ensure that best practices contained in SAP were built into their business processes and that maximum efficiencies and savings were being realized whenever possible. The study found that projected benefits had been achieved and, in fact, identified additional savings, which could be realized with further revisions to business processes.

It is important to note that SAP was implemented on a "base functionality" model basis in order to meet the deadline imposed by Y2K. A simultaneous re-engineering of business processes at that time was determined not to be possible generally because of time constraints. However, the demands of Y2K are now over and SAP has essentially been fully implemented with respect to base functionality. As a result, it is now appropriate to revisit business processes in order to maximize the efficiency benefits available.

Recommendation:

10.   The Commissioner of Corporate Services and the Chief Financial Officer and Treasurer, determine what steps are required to analyse and identify best practices and business process improvements that will maximize the efficiencies and savings potential of SAP. This analysis should include the quantification of the associated costs and benefits to be attained for each area of improvement identified.

Availability of Additional SAP Functionality/Modules

The acquisition of SAP included the purchase of certain modules, which have not yet been implemented. These modules, among others, include Facility and Equipment Management, Fleet Management and Property Management.

The evaluation of each of these modules by appropriate staff is an initiative, which should receive priority, particularly in terms of generating efficiencies and savings and providing the appropriate level of financial and other management information to senior staff. For example, both Fleet Services and Facilities and Real Estate Divisions of the Corporate Services Department have expressed an interest in different SAP modules. Both Divisions are of the view that these modules will provide them with appropriate levels of management information beneficial to their operating needs. A process needs to be put in place to prioritise such demands and ensure that appropriate SAP modules are implemented.

Of equal concern however is the possibility that SAP may not have the capability of addressing the reporting/analysis needs of certain Departments. Our discussions with Budget Division staff from the Finance Department, for example, indicated that the Salary Cost Planning Module as it is currently configured in SAP may not have sufficient functionality to provide both qualitative and quantitative aspects required for financial planning within the operating budget process. Consequently, much of the analysis during the recent budget cycle was completed using non-SAP electronically prepared spreadsheets.

In order to address the apparent deficiencies inherent in the SAP budget module City staff have initiated an evaluation process comparing the budgeting capabilities of SAP with those of other financial information systems. A viable alternative to this would appear to be a process, which involves the re- configuration of the functionality of SAP to accommodate the requirements of the Budget Division. Having spent over $34 million on an information system it is imperative that whenever possible, an "SAP First" option be considered.

We have had discussions with the Chief Administrative Officer in regards to the need to formulate an "SAP First" policy. The Chief Administrative Officer has made it very clear to all Commissioners that proposed information systems which are non-SAP will not be supported or approved unless there are compelling reasons to do so.

Recommendation:

11.   The Chief Administrative Officer continue to require that all requests for new management information systems from City Departments, Agencies, Boards and Commissions be reviewed and approved or recommended by the Executive Director of Information and Technology. Such requests to include a detailed business case and justification analysis and include complete financial evaluations comparing SAP functionality with any other system being proposed. Unless there are compelling financial and operational reasons for selecting non-SAP systems, all new developments be restricted to SAP.

Management Reporting Needs

City Council requested that the Auditor General "ascertain the extent to which the financial management reporting needs of the different City programs are adequately met by the City's SAP financial system".

In order to assess user satisfaction with SAP throughout the City, we conducted a staff survey with specific questions relating to the various modules implemented. The circulation and collection of responses to the survey was facilitated on-line using the City's Intranet. Participation in the survey was voluntary and anonymous if the respondent so chose. From a list of 1,539 registered SAP users, an audit sample of 439 (29 per cent) users were selected by the Auditor General's Office. A total of 82 staff members responded.

In addition to the user survey, we also interviewed management staff in order to determine whether or not they had concerns in relation to management information provided by SAP.

(a)   Survey Results

In order to evaluate user satisfaction with regard to the information provided by the SAP system we asked users to rate the system as "good, adequate, inadequate or poor" based on the following criteria:

1.   Accuracy: information in SAP is correct and consistent.
2.   Completeness: contains adequate detailed information.
3.   Timeliness: the data in the system is current.
4.   Access: computers to access the system are readily available.
5.   Ease of Use: after the appropriate training, it is easy to navigate.
6.   Reliability: system downtime does not impede processing.
7.   Electronic Processing: initiation and approval of on-line financial transactions.

Respondents to the survey were mainly front line staff who have specific pre defined responsibilities in relation to the SAP system. The majority of these responsibilities relate to duties such as data input, data access and data retrieval. For the most part respondents were satisfied with the capabilities of SAP in each of the criteria contained in the survey.

Confidence in SAP Data
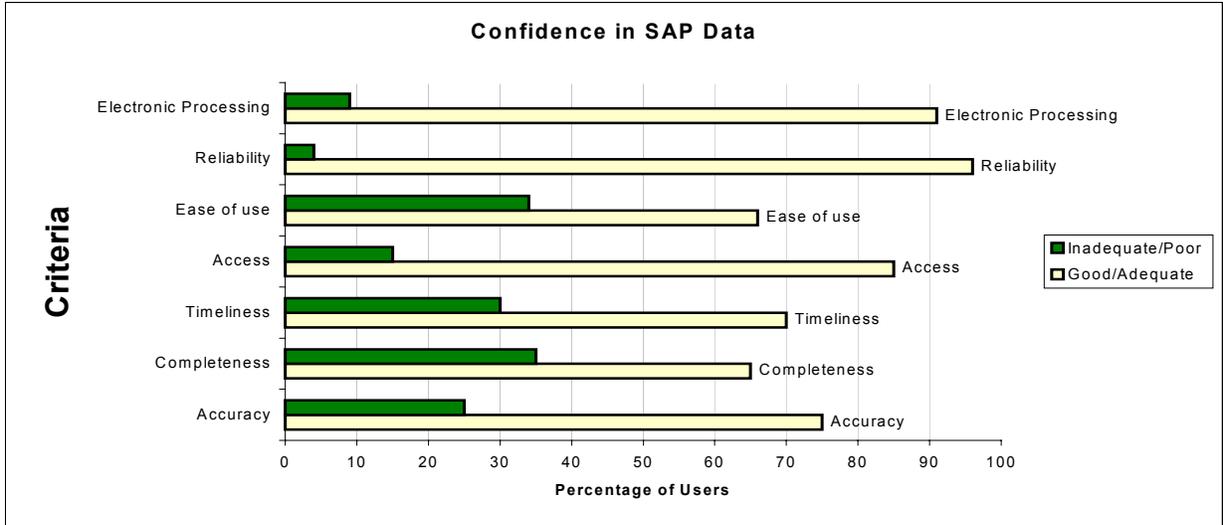
(b)   Management Interviews

In addition to the specific survey, interviews were conducted with a wide range of management staff. The requirements of front line staff and management staff in relation to SAP are different. Front line staff, for the most part, are involved in detail transactional work while management staff require final management reports and analyses generated from the input of data by front line staff.

Many management staff have expressed concerns with the current reporting capabilities of SAP. In many cases, in the view of management, their reporting requirements are not being met.

One of the key reasons for the selection of SAP was its full integration capabilities between the finance, payroll and human resource modules. The City has not yet been able to make full use of this functionality. In addition, a number of operating departments have not been able to obtain certain management information either because of restricted access to the SAP system, the functionality does not exist or has not been designed into the system, or reports are not available. In some cases, there is also a general lack of awareness that certain reporting capabilities available from the system exist.

Access to certain information in the SAP system has been restricted generally by the Finance Department and the Human Resources Division of Corporate Services because of privacy legislation concerns. We have been advised by Departments that specific information access restrictions have contributed to the difficulties which staff have had in being able to efficiently and effectively manage their respective operations. While the concerns of the Finance Department and the Human Resources Division may be valid, there is a need to ensure that access restrictions are appropriate and are not an impediment to staff being able to avail themselves of the appropriate level and detail in management reports. This matter should have formally been addressed during the early stages of implementation and not subsequent to implementation.

The reconfiguration of certain modules to accommodate privacy and access concerns may involve the expenditure of additional funds if conducted after implementation. In the case of the SAP implementation, a Privacy Impact Assessment should have been conducted in the early stages of system design. However, this assessment was not submitted until August 2002 after the implementation of the system and is now the subject of further evaluation by the Corporate Access and Privacy Office. It is imperative that the issue of information access is resolved as soon as possible in order to ensure that staff have available to them the appropriate level of management information. If access continues to be a problem, then there will be a need to further configure the system so that privacy legislation is not compromised.

Our review also indicated that certain departments have resorted to maintaining certain supplemental records to support specific departmental reporting needs that have not been met by SAP. In some cases, these various reports are required because users cannot access the appropriate level of information in SAP. For example, one department is using separate electronic spreadsheets to prepare monthly financial reports, which SAP should be able to provide. In other cases, users lack specific details in terms of what is available from SAP.

It is also apparent that the level of management exception reporting currently available in the SAP system is inadequate. In particular, until recently, management reporting was not available to identify routine payroll exceptions. For example, over the past number of months we have conducted a number of reviews regarding exceptional overtime hours worked by certain staff. These reviews highlighted the fact that management did not have specific reports available to them, which would identify unusual levels of staff salaries and overtime being earned. In response to this matter, many supervisors maintain manual records or electronic spreadsheets of hours worked to identify and manage the levels of overtime paid to staff. As a result of this, the Finance and Administration Co-ordinating Team (FACT) has established a Payroll Sub-Committee to evaluate payroll user reporting needs. Several payroll reports, including overtime exceptions, were recently introduced to users.

Certain managers have also indicated that they are not able to access an appropriate level of information from SAP screens in order to perform routine expenditure analysis. One example of this particular issue relates to the access of information from supplier invoices into SAP. Although data from invoices is entered into SAP, the amount of detail is generally insufficient to meet subsequent departmental inquiry needs. To address this deficiency, one department scans and stores images of all their supplier invoices in a separate database external to SAP. In these circumstances, staff are able to view the scanned invoices to assist in performing detailed expenditure analysis.

As part of its functionality, the SAP system accommodates a document imaging facility when linked with available third-party products. The facility to view a scanned invoice when approving payments is, a facility which should be considered at the City.

Recommendations:

12.   The Chief Administrative Officer, in consultation with other City Commissioners, ensure that the implementation of new information systems are not initiated until Privacy Assessment Impact evaluations are completed. The requirement for a Privacy Impact Assessment be mandatory in all business cases supporting systems development where personal information is involved and the costs relating thereto be an integral part of the project implementation costs.

13.   The Commissioner of Corporate Services, in consultation with the Chief Financial Officer and Treasurer, review the costs and benefits of providing SAP document imaging within the confines of the current SAP functionality. This review be conducted in concert with the document management project currently underway under the direction of the Executive Director of Information and Technology.

Maximizing the Return on the SAP Investment

The costs relating to the implementation of SAP were in the range of $34 million. There are of course ongoing maintenance costs in relation to the system, which are in addition to this amount. This report has focussed on the costs of implementation and except for the software upgrade costs incurred in September 2001 these additional costs have not been subject to review. The City has a significant and ongoing investment in the SAP system and it is imperative that the returns on this investment are maximized.

SAP is a multi-module corporate-wide financial, human resources and payroll application software system. One of the objectives of the system is to assist the City to effectively manage a wide range of activities throughout the City, including financial and human resource accounting requirements, asset management, service planning, purchasing and inventory management, the ability to interact with suppliers, and improving customer service and managing workflow. While SAP is a diverse and powerful information system, its capabilities for the most part have been limited to the implementation of core functionality in the areas of Finance, Human Resources and Payroll. In this context, while it is clear that core functionality currently exists in the Finance Department area, many other areas of the City require additional focus in terms of system development, the roll out of other SAP modules and additional or changed functionality of existing modules.

In May of 2000, according to the minutes of a Project Steering Committee meeting, the Committee was presented with a proposal from SAP Canada Inc. entitled "Value SAP". The proposal from SAP was to "conduct an analysis of the current implementation, and based on the City's most pressing needs, to identify and prioritize the additional functionality to be implemented". We understand that this avenue has not yet been pursued. While we are not specifically advocating that this study should be conducted by SAP Canada Inc., in the context of a long-term plan, such a proposal should be revisited.

While the Finance Department has had carriage of the SAP system since its inception, it is not a Finance Department system and, as such, the ongoing management and administration of the system should reflect this. Other Departments have a vested interest in ensuring that the City is positioned to take advantage of the improved reporting requirements available, as well as the efficiencies and cost savings which the SAP system should be able to provide.

It is apparent that any increase in SAP functionality at the departmental level will place an additional burden on the current level of resources and training required to maintain the system. We have discussed this matter with senior staff particularly in terms of developing a governance model which addresses City-wide requirements. There are of course wider issues relating to the further development of SAP to the Agencies Boards and Commissions which require attention in the longer term particularly the potential applicability of SAP to those larger entities like the Toronto Transit Commission.

SAP represents a significant investment and the development of a strategy to maximize this investment is a basic requirement. There must be a process to ensure that there are coordinated efforts among internal staff groups responsible for supporting the software, optimising system usage, training end users, and the need to address priorities in a wide range of areas. These coordinated groups with representatives from all City Departments are often referred to as Competency Centres or Centres of Excellence. One of the objectives of the Centre is to ensure there is a consistent corporate focus in any strategy developed to support SAP in the City, as well as to identify, develop and harness cross-functional processes, knowledge and expertise across the City. In general terms the operating principles of Competency Centres should be to encourage business change and develop, advance and promote best practices, as well as the development and building of relationships in the information and technology areas in each division across the City.

Senior Management is currently reviewing this issue and the development of a Competency Centre is an initiative that is being actively contemplated. This should include a comparison to similar size Enterprise Resource Planning systems to ensure that support levels are appropriate to maximize the potential of SAP. The issue of a City-wide corporate governance structure for SAP is a major component of this review. We strongly support this initiative.

In October 2002, a discussion paper was released by Corporate Services Information and Technology Division entitled "Building an Information and Technology Vision for Toronto". This paper identified core principles and strategic goals regarding the direction of Information and Technology in the City. The discussion paper outlined an eCity model, a suggested governance structure and a process for moving the initiative forward.

While we recognise the importance of eCity, the long term strategic plans of eCity should be contemplated in tandem with those of the SAP system as well as other information systems throughout the City. In this regard, the information and technology strategy has identified as priorities the need to maximize the existing investment in systems such as SAP, as well as the development of transition strategies to deal with the end of the SAP software maintenance period.

Recommendation:

14.   The Commissioner of Corporate Services and the Chief Financial Officer and Treasurer, be required to develop a long-term City-wide strategic plan relating to the future direction of the SAP information system. This long term strategic plan recognise the principles contained in the eCity vision. The major objectives of such a plan be to investigate ways to maximise the return on the City's investment in SAP. Such a plan to include the appropriate staffing of a centrally administered Competency Centre along with a process to address the need to:

-       work with departments to identify and prioritise the roll out of SAP modules available to City operating departments;

-       work with departments to coordinate the implementation and integration of major information systems;

-       work with departments to identify and prioritize management information needs;

-       identify best practices to improve the level of SAP information systems functionality;

-       enforce the corporate standards established for SAP information systems development, maintenance and use; and

-       assist Agencies, Boards and Commissions in the roll out of SAP information systems.

Conclusions:

The initial objective of this review was to assess whether or not the implementation of SAP Canada Inc.'s financial information and human resources system was completed within approved expenditure limits. The total costs previously reported to City Council indicated that the costs to implement SAP was $34.06 million and was within the reported approved budget of $34.25 million. Our calculations indicate that the total costs were $35.2 million which is $905,000 in excess of the actual approved budget of $34.3 million.

City Council also requested the Auditor General to determine whether or not SAP was meeting the reporting needs of management. Our review and interviews with management indicated in a number of cases that managements reporting needs are not being met. The recommendations in this report will assist in ensuring that these reporting deficiencies are addressed.

During our review, we identified a number of issues in relation to the funds expended by the City on software licenses acquired from SAP and the related software maintenance on these licenses. The software maintenance costs, as is common in the industry, are based on the amount paid for the software licenses.

The licenses acquired and the related maintenance fees paid were in accordance with the agreement signed with SAP Canada Inc. in December 1998. Accordingly, many of the issues identified in this report emanate from this contract, along with the reports which were prepared by staff in relation to this contract.

By December 31, 1999, the City had acquired a significant number of SAP software licenses for a cost of approximately $11.3 million. At the present time, four years after acquisition only about 38 per cent of the licenses are being used. Depending on the type of license in use, the value of the unused licenses purchased could be anywhere between $4.5 million and $8.4 million. Management does not have information relating to the type of licenses currently being used. It is possible that these unused licenses may be used in the future depending on the roll out of additional SAP modules and increased SAP functionality.

In addition, software maintenance on the total licenses have also been paid to SAP Canada Inc. Total maintenance, including the payment for the 2003 calendar year is approximately $6,851,000. If maintenance fees had been paid only on the licenses presently being used, the total maintenance fees would have been in the range of $1.8 million to $4.3 million depending on the type of license in use.

The total licenses were acquired from SAP Canada Inc. at a negotiated discount. Consequently, it could be argued that the discount provided by SAP more than offset the additional maintenance costs incurred. However, the additional maintenance incurred along with the interest component related to the excess maintenance, in addition to the interest cost in paying for the licenses prior to them being required are significantly in excess of the discount. This excess is somewhere between $3 million and $4.6 million depending on the types of licenses being used. This in fact is the additional cost to the City.

In view of the significant surplus licenses acquired from SAP as well as the excess maintenance fees relating to these licenses charged to the City it is important that discussions be held with SAP as soon as possible in order to review:

- the possibility of reducing or recovering maintenance fees related to these licenses; and

- the possibility of obtaining concessions from SAP in other areas.

The business case submitted to Council indicated that net administrative savings of $52 million would be realized from the implementation of SAP during the time period from 1998 to 2005. Additional budget requests of $8 million would have presumably reduced the savings to $44 million although this was not reported to Council. The majority of the savings from SAP were projected to be from staff reductions. There is no documentation available to support the extent of savings from the implementation of SAP, if any.

City staff were requested by Council to provide three-month project status reports in regard to the implementation of SAP. These reports were required to include expected cost savings from SAP. These reports did not provide any quantifiable measures of benefits achieved and did not identify any cost savings or productivity improvements arising from the implementation of the

SAP system. We have been advised that Council, through the budget process, was informed that administration savings of $38.6 million had been achieved between 1998 and 2000 as a result of amalgamation, some of which may have been SAP related. However, there is no documentation available to determine the extent to which these savings may be attributable to the implementation of SAP.

The current maintenance agreement with SAP expires on December 31, 2003. Future negotiations with SAP Canada Inc. should be focused on a maintenance provision, which takes into account license usage and not the number of licenses owned. In this context, it is also important that the negotiation process with SAP Canada Inc. recognise the significant funds paid to them as a result of the current agreement. If it is possible to structure the agreement on a license usage basis, the control of the use of the licenses by City staff will be important. We are aware that senior staff are developing policies and controls, which will identify circumstances where licenses allocated to staff, are surplus to requirements. It is critical that this process be enhanced if the City's future SAP operating costs are to be minimized.

In addition to minimising future operating costs, it is also important that the City's investment in SAP is maximized and that the current capabilities of SAP are used wherever possible. In this context, the Chief Administrative Officer has directed that any new systems development in the City should first of all consider both the functionality of SAP, as well as the modules available in SAP. All business cases relating to future system development are required to be reviewed, analysed and approved by the Information and Technology Division of the Corporate Services Department in order to ensure that a "SAP First" policy has been considered. The Chief Administrative Officer has made it very clear to all staff that one of the major objectives of the administration is to maximize the potential and the return on the existing functionality, modules and investment in SAP. In this regard, the Information and Technology vision "eCity" has identified the maximization of the SAP investment as a key component of its strategy for the City.

Out of necessity, the City's implementation of SAP was accelerated because of the Y2K problem. At the present time, SAP's functionality has been, for the most part, directed to the requirements of the Financial Information/Human Resources System, although it is recognized that the City as a whole has benefited from the functionality of the SAP Human Resources/Payroll modules. In order to effectively manage and develop SAP throughout the City, it is important that a governance structure be established that has the authority to make decisions and manage the significant investment in SAP in a manner that benefits the City as a whole. The eventual governance structure and development plans for SAP must be integral components of the long-term vision for information and technology in the City if the City is to maximize its investment in the SAP system.

Contact:

Jerry Shaubel, Director, Auditor General's Office
Tel: (416) 392-8462, Fax: (416) 392-3754
E-Mail: Jshaubel@toronto.ca

Steve Harris, Senior Audit Manager, Auditor General's Office
Tel: (416) 392-8460, Fax: (416) 392-3754
E-Mail: Sharris@toronto.ca

Bruna Corbesi, Audit Project Manager, Auditor General's Office
Tel: (416) 392-8553, Fax: (416) 392-3754
E-Mail: Bcorbesi@toronto.ca

Jeffrey Griffiths
Auditor General

cg/dl
01 FAS 02

Attachments:

Appendix 1:   Schedule 2, SAP Final Report, SAP Implementation Project, SAP Budget
Appendix 2:   Audit Recommendations and Management's Response
Appendix 3:   In Camera - Acquisition of SAP Software Licenses

C:\DATA\audit\2003\Reports\FINANCE\Other\SAP FINAL APRIL 4, 2003.doc

Schedule 2
SAP Final Report
SAP Implementation Project

SAP Budget

December 1998 (1999 Budget)	SAP Project	$26.30 M
January 2000 (2000 Budget)	Additional Costs	7.00 M
Budget Adjustment Required	1999 Transfer of Funds from Finance	0.95 M
Total Budget Available		$34.25 M

Expenditure	$	$
Software License Fees	10,307,688	
FI Milestones	3,346,880	
HRP Milestones	10,991,120	
Change Requests	2,067,838	
Sustainment	2,071,737	
Total SAP Costs		28,785,263
First Year Maintenance		476,534
Project Office Expense		3,568,133
Salaries		854,599
TPS Licenses and Blueprint		1,106,400
GST Rebate		(1,277,949)
Sub-Total		33,512,980
Additional TSP Costs		550,000
Total Project Costs		$34,062,980

Source: SAP Implementation Final Report, dated November 21, 2001, from the Chief Administrative Officer, the Acting Chief Financial Officer, the Acting Treasurer and the Director of Accounting Services.

Audit Recommendations and Management's Response

	Audit Recommendations	Management's Response
(1)	the Chief Financial Officer and Treasurer, and the Commissioner of Corporate Services, report back to the July 2003 Audit Committee on the steps taken to implement the recommendations contained in this report.	The Chief Financial Officer and Treasurer and the Commissioner of Corporate Services will report back to the July 2003 Audit Committee on the workplan and on any steps taken by that time.

	Audit Recommendations	Management's Response
(2)	the Chief Financial Officer and Treasurer report further on the final costs to implement SAP, as previously reported in the "SAP Implementation Final Report" dated December 4, 2001. Such report to take into account the correct approved capital budget amounts, as well as the additional salary costs charged to departmental operating budgets as identified in this report.	A further report on the costs of the implementation of SAP will be submitted by the Chief Financial Officer to the Policy & Finance Committee for its meeting of June 12, 2003. The costs reported in the report will include the salaries charged to operational budgets.

	Audit Recommendations	Management's Response
(3)	the Chief Administrative Officer amend the City policy relating to the preparation of detailed business cases supporting all major capital projects. The amended policy include the requirement that projected internal staff costs, relating to those staff with significant involvement in capital projects, be identified and accounted for in all business cases. Such information be provided even if staff costs are not charged to the capital project;	Agreed. While it was in keeping with City Policy and practice at the time of implementing SAP to not include such costs, future detailed business cases will include the cost of staff with full time involvement in the project. A review will be undertaken to determine the definition of significant staff time, the extent to which staff salaries should be charged to capital projects and which salaries should continue to be charged to the operating budget.

	Audit Recommendations	Management's Response
(4)	the Commissioner of Corporate Services, in consultation with the City Solicitor, ensure that all future system development agreements are structured in such a way that payments for the software license acquisition component are made on an as needed or the most cost effective basis. Where possible, agreements be structured to take into account provisions for the return of licenses which may be surplus to requirements;	Agreed. Staff will consider the benefits and risks of acquiring software through a number of options: site licenses, user licenses purchases as needed and user licenses purchased in bulk blocks.

	Audit Recommendations	Management's Response
(5)	the Commissioner of Corporate Services, in consultation with the City Solicitor, ensure that, where possible, all future system development agreements are structured in such a way that software maintenance payments are based on the number of software licenses in use and not on the number of licenses acquired;	As it is the standard industry practice to set software maintenance fees as percentage of the original purchase price, regardless of the licensing arrangement, it is highly unlikely that this recommendation can be implemented.

	Audit Recommendations	Management's Response
(6)	the Commissioner of Corporate Services, in consultation with the City Solicitor, review the possibility of recovering both software license costs and maintenance fees previously paid to SAP Canada Inc. in relation to the surplus software licenses not in use;	Agreed. A review will be done to determine the potential of license fee recovery and/or the provision of additional development services from SAP.

	Audit Recommendations	Management's Response
(7)	the Commissioner of Corporate Services assume responsibility for the management and control of all SAP licenses. In addition, a policy be developed to ensure that business cases supporting all software acquisitions clearly identify and justify the type of users planned. The Chief Financial Officer and Treasurer retain responsibility for controlling Corporate access to the SAP system for internal control and financial integration purposes;	Corporate Services Information and Technology Division is creating a software license asset management function to serve the City and ultimately ABCs. As the SAP user profile determines the extent of the user's financial approvals and access, the Finance Department approves access to the system, monitors and periodically audits all user profiles to ensure access and approval levels are appropriate.

	Audit Recommendations	Management's Response
(8)	the Chief Administrative Officer amend the City policies to ensure that business cases presented in support of major systems development and software acquisitions include the estimated costs to acquire and implement software upgrades over the average life of major software implementations;	Agreed. Software upgrades are dependent upon a number of factors and as a result are difficult to predict. However, staff do agree that the estimated average annual cost to support major software acquisition be presented in the business case and incorporated in the annual operating budget. In addition, estimating the hardware costs associated with future year software upgrades is very difficult. However, long term budget planning at the initiation of major software acquisition and on an on-going basis should take best efforts to anticipate upgrade costs.

	Audit Recommendations	Management's Response
(9)	the Commissioner of Corporate Services, in consultation with the Chief Financial Officer and Treasurer, continue to investigate and negotiate with SAP Canada Inc. and Oracle Corporation Canada Inc. the opportunities available for the recovery of excess license fees paid and for the reduction of the annual maintenance costs incurred related to the Oracle run time licenses;	Management initiated discussions with respect to this issue in late 2002 and are continuing to do so.

	Audit Recommendations	Management's Response
(10)	the Commissioner of Corporate Services and the Chief Financial Officer and Treasurer, determine what steps are required to analyse and identify best practices and business process improvements that will maximize the efficiencies and savings potential of SAP. This analysis should include the quantification of the associated costs and benefits to be attained for each area of improvement identified;	Staff will continue to review best practices and business improvement processes for the SAP system as it is currently installed. This review will be aligned with the larger strategic information plan outlined in the management response to recommendation #14.

	Audit Recommendations	Management's Response
(11)	the Chief Administrative Officer continue to require that all requests for new management information systems from City Departments, Agencies, Boards and Commissions be reviewed and approved or recommended by the Executive Director of Information and Technology. Such requests to include a detailed business case and justification analysis and include complete financial evaluations comparing SAP functionality with any other system being proposed. Unless there are compelling financial and operational reasons for selecting non-SAP systems, all new developments be restricted to SAP;	Agreed. This recommendation will be incorporated within the actions contained in the management response to recommendation # 14. With respect to the ABCs, the 2003-2012 Capital Budget includes funding for SAP projects for various ABCs including the Toronto Public Library and the Toronto Zoo.

	Audit Recommendations	Management's Response
(12)	the Chief Administrative Officer, in consultation with other City Commissioners, ensure that the implementation of new information systems are not initiated until Privacy Assessment Impact evaluations are completed. The requirement for a Privacy Impact Assessment be mandatory in all business cases supporting systems development where personal information is involved and the costs relating thereto be an integral part of the project implementation costs;	Agreed.

	Audit Recommendations	Management's Response
(13)	the Commissioner of Corporate Services, in consultation with the Chief Financial Officer and Treasurer, review the costs and benefits of providing SAP document imaging within the confines of the current SAP functionality. This review be conducted in concert with the document management project currently underway under the direction of the Executive Director of Information and Technology; and	Funds are identified in the 2003-2007 Capital Budget for imaging of SAP documents. The expenditure of these funds will be coordinated with the document management project currently underway under the direction of the Executive Director of Information Technology.

	Audit Recommendations	Management's Response
(14)	the Commissioner of Corporate Services and the Chief Financial Officer and Treasurer, be required to develop a long-term City-wide strategic plan relating to the future direction of the SAP information system. This long term strategic plan recognise the principles contained in the eCity vision. The major objectives of such a plan be to investigate ways to maximise the return on the City's investment in SAP. Such a plan to include the appropriate staffing of a centrally administered Competency Centre along with a process to address the need to: - work with departments to identify and prioritise the roll out of SAP modules available to City operating departments; - work with departments to coordinate the implementation and integration of major information systems; - work with departments to identify and prioritize management information needs; - identify best practices to improve the level of SAP information systems functionality; - enforce the corporate standards established for SAP information systems development, maintenance and use; and - assist Agencies, Boards and Commissions in the roll out of SAP information systems.	Working with the I&T Sub-Committee of the Administration Committee, staff intend to incorporate this recommendation within the development of a broader long-term City-wide strategic plan relating to the future direction of the City's information systems. A team of senior managers has recently been created to lead this planning process. This plan will define the City's strategic information systems, establish corporate standards for the development, maintenance and use of the information systems components and identify SAP modules that should be incorporated into the City's information system in order to maximize the City's investment in SAP. The City's SAP Steering Committee agreed in principle to the creation of a competency centre in 2002. Work is now underway to identify the roles and responsibilities for such a centre.