CITY OF **VANCOUVER**

ADMINISTRATIVE REPORT

Report Date:	September 15, 2006
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TO: Standing Committee on City Services and Budgets

FROM: General Manager of Engineering Services
General Manager of Corporate Services

SUBJECT: Infrastructure Management Strategy

RECOMMENDATION

A. THAT, subject to Recommendations B to F, Council approve the Infrastructure Management Strategy (IMS) that includes a hybrid systems solution of Autodesk software and services and SAP software, as further described in this Report;

B. THAT funding for this project to be provided as follows:

i) Autodesk Software

Existing project funding approved by Council in December 2004	$5,000,000
Sewer Rate Stabilization Reserve	$910,300
Solid Waste Capital Reserve	$182,100
Water Rate Stabilization Reserve	$546,200
Engineering Capital Budget (as outlined in Appendix II)	$2,002,400
	$8,641,000

ii) SAP Project Systems, Investment Management and Business Intelligence modules

Unallocated SAP Capital (previous close out)	$673,200
Savings from MySAP Implementation	$473,000
2005-6 Unallocated SAP Evolution Funding	$451,800
	$1,598,000

C. THAT, subject to Recommendations B and F, Council approve the award of a contract with Autodesk Canada Inc. for the Autodesk portion of the IMS pursuant to the City's Request for Proposals - *Supply and Installation of an Infrastructure Management System* No. PS05043 as supplemented by Autodesk's RFP Proposal and further supplemented by the

results of the Integration Blueprinting Exercise on a fixed price basis within the project budget; source of funding to be provided from the project budget;

D. THAT, subject to Recommendation F, the General Manager of Engineering Services and the Director of Legal Services be authorized to conclude negotiations of a contract with Autodesk Canada Inc. on terms and conditions generally consistent with the City's RFP and RFP evaluation process to date and otherwise satisfactory to the General Manager of Engineering Services and the Director of Legal Services;

E. THAT, subject to Recommendation F, upon successful conclusion of such negotiations and upon the form of contract being settled with Autodesk Canada Inc. and approved by the General Manager of Engineering Services and Director Legal Services; that the Director of Legal Services be authorized to execute and deliver such contract on behalf of the City;

F. THAT, no legal rights or obligations will arise or be created by Council's adoption of C, D or E above and Autodesk Canada Inc. shall not be permitted to commence performance of any services with respect to the IMS unless and until a contract has been executed and delivered by the Director of Legal Services in accordance with Recommendation E above;

G. THAT, Council authorize the General Manager of Corporate Services to issue a Request for Proposals for consulting services for the implementation of each of the SAP PS/IM/BI modules for the SAP portion of the IMS; and that the results of the RFP, along with staff recommendations, be reported back to Council for consideration and contract approval; source of funding to be provided from the project budget; and

H. THAT, subject to Recommendations E and F, Council approve the sustainment budget for the IMS including the creation of positions, subject to classification by the General Manager of Human Resources, as outlined in Appendix III as follows:

   i) Autodesk of $1,138,700 on an annual basis (phased in as outlined in Appendix III); funding of $512,400 to be added to the utility operating budget and $626,300 to be added to the public work operating budget (as outlined on page 14) without offset; and

   ii) SAP PS/IM/BI of $193,000 on an annual basis (phased in as outlined in Appendix III) with funding to be added to the Corporate Services Operating Budget without offset.

CITY MANAGER'S COMMENTS

The City Manager will provide her comments in a separate memorandum to Council.

GENERAL MANAGER'S COMMENTS

The Infrastructure Management Strategy (IMS) proposed in this report addresses long-standing needs in the City's systems for managing its assets, providing financial accountability, coordinating work on City streets by City forces and outside agencies, and providing excellent customer service. With nearly $8 billion worth of infrastructure assets under its stewardship, the Engineering Services Department needs to provide its employees with much better tools for decision-making and coordination of its work. Better tools will help ensure that efficiencies are identified and captured so that the City is making the best use of dollars

spent on maintaining and replacing infrastructure. More accurate information on the condition of City assets will also help inform critical decisions for setting capital plan priorities.

The IMS addresses corporate needs in the areas of budgeting, financial planning, strategic performance measurement, and financial reporting. The tools provided by the IMS are essential for the City to manage its resources in both short and long term and meet its legislative reporting requirements. Further, the proposed integration between the asset management system delivered by Autodesk and the City's financial system SAP will ensure that operational and financial information are strategically aligned.

COUNCIL POLICY

On December 14, 2004, Council approved an Infrastructure Management Strategy as proposed by the General Manager of Engineering Services, and allocated $5.0 million of existing funding to enable implementation of the strategy.

PURPOSE

The purpose of this report is to seek Council's approval of an Infrastructure Management Strategy that involves the implementation and integration of:

- Autodesk Asset Management System software; and
- SAP Project Systems (PS), Investment Management (IM) and Business Intelligence (BI) modules

BACKGROUND

Like many other municipalities with responsibilities for optimizing life-cycle investment decisions, the City is required to make continuous decisions on when and how to maintain, repair, and renew its assets. These decisions are further complicated by the need to allocate funds among competing yet deserving priorities to satisfy increasing public expectations, minimize the risk of critical infrastructure failure, and plan for the long-term financial stability of the City's public works infrastructure and services.

Recognizing the importance of managing the City's infrastructure, Engineering Services initiated a review of its existing infrastructure management practices, processes, and systems. Through this review, an Engineering Infrastructure Management Strategy was developed.

On December 14, 2004 Council endorsed the Infrastructure Management Strategy intended to help the City achieve excellence in public service delivery and management of public works assets including water, sewer, sidewalk, streets, transportation, and street lighting infrastructure. The strategy involved the implementation of technology solutions in the following areas:

- Customer Service and Work Management
- Right-of-way Management
- Information Repository
- Performance Measurement

To fund the strategy, Council approved a reallocation of funding from existing sources totalling $5.0 million towards this project and authorized staff to issue a Request for Proposals to the vendor community for the provision of solutions detailed in the strategy.

The IMS project approved by Council included corporate financial reporting and capital budget requirements. However, these requirements became more explicit after Council approval due to the following:

- The Public Sector Accounting Board (PSAB), which establishes the generally accepted accounting principles (GAAP) for the public sector, adopted a new standard for the accounting and reporting of tangible capital assets (land, buildings, equipment, computers, and infrastructure). The new standard, effective for fiscal year 2009, will require local governments to report tangible capital assets at amortized historical costs on a functional basis. To support this legislative requirement, the City requires detailed asset management records coupled with a framework for how expenditures (capital, operating, and maintenance) are tracked and attributed to specific assets. The current available systems would restrict the City's ability to meet these financial accounting and reporting requirements.

- In response to an internal audit of the Capital Budget process, a full review of the capital budget process was conducted in 2004. In that review, it became evident that the current system utilized for the City's capital budgeting is very limited. Specifically, the current system is extremely labour intensive, cumbersome, and time consuming and is not conducive to robust performance reporting.

Terms and conditions reflecting these corporate requirements were developed and identified in the Request for Proposals for an Infrastructure Management System, which was issued in May 2005. Of the nine proposals submitted in July 2005, three proponents were shortlisted and invited to the demonstration phase. Two of the proposals were submitted by Autodesk and SAP and were reviewed during week-long vendor demonstration exercises. At the end of this process, the City's evaluation team determined that a single vendor solution would be unable to fulfill all the City's requirements. The team unanimously recommended that the City pursue a hybrid solution involving the use of Autodesk software, which would become the City's platform for managing non-financial infrastructure information (e.g. customer service, asset management, right-of-way management), and SAP, which would remain the City's enterprise-wide platform for managing financial information.

To ensure that this hybrid solution was feasible and met stakeholder and technical requirements, a two-week Integration Blueprinting Exercise was undertaken which included staff representatives from Finance, SAP Business Support, Information Technology, and Engineering. Also included were representatives from Autodesk and SAP Canada. IDEACA Consulting was brought in to facilitate the Integration Blueprinting Exercise and review the feasibility of implementing and integrating the Autodesk software and the SAP PS/IM modules. The consultant determined that the hybrid approach would meet the City's business requirements, and noted that the technical issues involved were not overwhelming. Further assessments were made on how to integrate non-financial performance information within the Autodesk software with financial budget information within SAP. It was determined that SAP BI provides a feasible method to extract key strategic performance information from the two systems that will enable a more comprehensive and complete assessment of capital projects.

To summarize the vision for this hybrid approach is as follows:

Table 1
Infrastructure Management Strategy

Overview of Hybrid Solution

Capital Projects Cost Control	SAP
Asset Accounting	
Capital/Project Budgeting	
Performance Measurement	
Customer Service	Autodesk
Work Management	
Asset Management	
Right of Way Management	
Operational Performance Measurement	

From the Integration Blueprinting Exercise, there were three major principles that are essential for the hybrid solution to succeed. These are:

Integrity of the City's Financial Data Shall Not Be Compromised – One of the risks of integrating two systems is having conflicting or inaccurate financial information. Therefore, the project team agreed that financial information will be created and maintained in the City's SAP Enterprise System. The result is a one-way flow of financial information from SAP to the Autodesk software.

Performance Metrics Need to Be Visible Within the City's Financial System – To ensure that the City's budgeting process includes an assessment of key performance metrics, there needs to be a mechanism to transfer key strategic performance information from the Autodesk software to SAP.

SAP PS/IM and Autodesk Software Configurations Need to be Aligned – To ensure that both financial and non-financial information are integrated and aligned, it was agreed that the "Work Breakdown Structure" (i.e. project hierarchy) with the Autodesk software is to mirror that developed within SAP PS/IM.

Finally, one of the technical assessments that was made during the Integration Blueprinting Exercise was the method of integration. The original approach suggested was "point-to-point" which involves development of separate integration processes between the Autodesk software and SAP, and applicable existing City systems. An alternative approach is to use "middleware", a specialized software that provides a centralized platform to which each City system integrates, eliminating the need for systems to interface directly to each other. IDEACA Consulting, along with Corporate and Engineering Information Technology, felt that the use of a middleware software, that connects two otherwise separate applications, to be more advantageous. However, the City does not yet have a corporate middleware strategy. To facilitate the development of such a strategy without committing to a full scale implementation of middleware prior to a thorough review, it is recommended that the IMS includes a pilot implementation of middleware (via Microsoft BizTalk). Applicable costs of the pilot middleware and integration development have been included in the IMS funding request. An assessment of the pilot would be reported to Council along with a proposed corporate middleware integration strategy.

With regards to the implications to the City as a whole, the IMS will impact departments and Boards through the implementation of SAP PS/IM/BI. In the longer term, an assessment of the Autodesk asset management system will be required to determine if there are any opportunities to expand its use beyond Engineering Services to other departments and Boards.

The discussion below reviews the operational impacts, business case and cost-benefit analysis, financial implications, strategic risks, implementation plan, and personnel implications of the proposed IMS.

DISCUSSION

Operational Issues Addressed By Autodesk Software

I. Customer Service

Business Challenge

Current systems are not adequate to support Engineering Services staff in their efforts to provide excellent customer service. Existing deficiencies relate to shortcomings in process, organization and technology:

Process
- Lack of defined customer service operating procedures i.e. scripts that assist call takers to ask the right questions depending upon the call type.
- Lack of service standards i.e. % call resolution of enquiries on initial contact.
- Lack of formal customer service policies i.e. mandatory feedback on service requests.

Organization
- Information sharing across departments is improving but still limited.
- Formal customer service training exists only in Engineering Call Centre.
- Silo'ed organizational knowledge forces handoffs to other branches.
- Engineering Services has 112 separate listings in the Vancouver Blue Pages. Citizens do not find it easy to determine where they should call to request service or ask for information.

Technology
- Staff hindered by lack of common tools to process customer service.
- Lack of tools to analyze existing data.
- Inability to track transferred calls for resolution.

Vision

Have a customer service culture which is committed to providing responsive service and easy access to resources that exceeds the public expectations. Through an ongoing feedback process to establish and refine customer service standards and performance measures, the organization will continuously improve its service.

Expected Benefits

Process
- Single point of contact (1 phone #) to enable easy access by the public. Web service would also provide additional access and convenience.
- Formal Standard Operating Procedures (SOP). SOP's such as scripts would help customer service staff guide calls so that the right questions are asked and the right data is gathered to identify the caller's needs.

- Customer service level standards as have been already implemented by other cities. Several examples may be:
    - 70-90% call resolution upon initial contact
    - Maximum amount of time to resolve a service request (pothole, traffic signal repair, etc, pickup missed garbage, etc.)
    - Maximum number of seconds to pickup a customer service call

Organization

- Commitment to customer service culture. Engineering will become a more tightly integrated organization to provide a high level of service to the public.
- Comprehensive and continuous customer service training to staff. As Engineering becomes a more customer service focused organization, there will be a commitment to providing resources (funding, time, staff, etc) to keep customer service staff trained to perform at a high level.
- Develop Customer Service Representative (CSR) roles that are high skill, high value positions. CSRs may have subject matter expertise or broad based knowledge of Engineering and/or the City.

Technology

- Consolidated single work order system to unifying service delivery and provide a framework for consistent service levels, performance measures, and standardized reporting.
- Scalability to allow for growth of customer service into a 311 initiative.
- Spatially enabled to assist in creating service requests. GIS will also assist in reporting on service requests by geographic location. This will provide insights on trending and patterns of service requests which will allow Engineering Services to become more proactive.
- Ability to support multiple languages and the hearing impaired.

II. Work Management

Business Challenge

The organization currently supports multiple disparate applications and paper forms to plan, schedule, and record maintenance and capital work.

- Existing work order applications are small scale point solutions which are not scaleable, flexible, or robust enough to meet emerging business needs.
- Coordination of work intra-departmentally, as well as with external agencies and events, is hampered by disparate tools and inconsistent processes for planning and scheduling work. Enterprise tools and processes for planning, and scheduling work and events will improve coordination minimize disruptions.
- Work performance/accomplishments/outcomes are not consistently measured making it difficult to know how well the organization is performing and where improvements are realized or needed.
- Limited ability to relate performance, progress, or accomplishments to costs.

Vision

The organization needs enterprise-class tools and processes for effective work management across organizational boundaries.

Expected Benefits

- Managed asset lifecycles of public works infrastructure, including performance measurement, budgeting, and asset accounting.
- Enhanced planning, designing, scheduling, tracking and reporting of construction, operating and maintenance activities.
- Enhanced coordination of work (projects) for reduced project duration.
- Condition-based or reliability based preventive maintenance.
- Improved coordination with outside agencies for long range planning / cut repairs.
- Improved coordination with outside agencies and service providers / contractors.
- Reduced contractor delays and penalties and changes for changes in scope for unplanned/uncoordinated work.

III. Asset Management

Business Challenge

The organization lacks systematic methods for keeping track of key information, (e.g. cost, location, current condition and expected life) about the infrastructure which is under its stewardship. Decision-making regarding maintenance and capital works rely more heavily on staff experience and judgement than objective data based analysis such as condition assessments and degradation models. This results in lost opportunity to achieve significant expenditure savings over the life of the asset.

Vision

The organization needs a systematic solution to help answer the seven basic questions of asset management:

- What do we own?
- How do we maintain it?
- Where is it?
- When do we replace it?
- What is its condition?
- What do we do first?
- What is its value?

Expected Benefits

- Ability to identify all assets owned and/or maintained by the City, both by type and by location.
- Ability to implement comprehensive condition assessment systems.
- Ability to evaluate maintenance alternatives and implement cost-effective preventative maintenance plans.
- Ability to develop rational and cost-effective replacement plans.
- Ability to prioritize work based on lifecycle analysis.
- Ability to comply with PSAB accounting rules regarding valuation of public works assets.

IV. Right-of-way Management

Business Challenge

Much effort is already being made to coordinate construction work on City streets to minimize impacts of construction on neighbourhoods, businesses and special events. Significant success has already been achieved in coordinating major construction projects to minimize disruption

and the need for repeated pavement repairs. However, the ability to extend this coordination so as to be applied to smaller construction work, such as service connections and general maintenance, is currently limited by lack of tools to identify all work being done spatially.

Vision

A system is required which spatially identifies all proposed and current construction work and street activities. This system must leverage the City's existing GIS resources, and facilitate planning functions such as the placement of construction "holds" in certain areas.

Expected Benefits

- Schedule and coordinate disparate activities on public rights-of-way to minimize neighbourhood and businesses impacts, as well as protect the right-of-way as a public asset and optimize pavement lifecycles.
- Integrated coordination of construction, maintenance and special events in public right-of-way.
- Coordination of major construction crews with enhanced planning and scheduling resulting in reduced traffic delays/closures.

V. Performance Measurement

Business Challenge

A key requirement for management of performance is measurement of accomplishments against cost. Currently, the City provides its operations managers with good systems for keeping track of what costs are been incurred, but there are no enterprise-level systems which keep track of accomplishments. This information on accomplishments – generally referred to as "non-financial" data - is currently being captured in various ad-hoc ways such as spreadsheets and paper charts. None of this information is being recorded and reported in at the enterprise-system level.

Vision

Adequate tools are needed to enable managers to measure performance and achieve efficiencies in their operational areas. A system is required which systematically provides feedback on key performance indicators and asset condition for long-term planning and service improvement i.e. response time, service down-time, capacity monitoring.

Expected Benefits

- Increased transparency of public works management expenditures.
- Key performance measures tracked in the enterprise financial system.
- Consolidate stand alone legacy systems (supporting mainframe sunset strategy.
- Ability to benchmark performance against ourselves, other municipalities, and private sector.
- Ability to search, query, and report on information from a variety of sources in existing and proposed systems and databases.
- Tools for better decision making for dollar invested.
- Historical information on key performance indicators.

Financial and Performance Management Issues Addressed by SAP PS/IM/BI

Business Challenge

The City requires a sound capital program framework that supports long range financial and resource planning and vigilant asset and project management. As of December 2005, the City's capital program amounted to $468.5 million. The City has been using SAP's CO module to manage and report on all capital projects regardless of complexity, size and duration; though CO is designed to handle only simple, one-off projects. As identified in the Capital Fund Internal Audit Report (August 2003) and reiterated in the Capital Budget Process Review (September 2004), the system limitations significantly impede the City's ability to effectively manage the capital program at both corporate and departmental levels. It was strongly recommended that the IMS incorporates system solutions to address project management and reporting shortfalls.

The current system configuration offers very limited capabilities to track and analyze infrastructure asset condition and life cycle details for long range financial and resource planning and allocation. Financial and management reporting of the capital program is also extremely labour intensive, cumbersome, and time consuming. With the rapid escalation of construction costs and ever increasing budget challenges, the City needs a robust system to enable:

- Clear definition and monitoring of the City's infrastructure investments and individual project scope
- Prompt identification and response to project slippage and cost overruns
- Regular evaluation and report on capital project and budget performance
- Long range infrastructure asset needs assessments and resource planning
- Reprioritization and reallocation of budgets and resources at any given time

The fit-gap analysis and the Integration Blueprinting Exercise concluded that the SAP PS/IM/BI modules will augment the deployment of the Autodesk software in providing the City with the much needed functionalities in the areas of financial planning and management; asset and project management; financial reporting; and overall performance evaluation.

Vision

Establish a best-in-class capital program framework that supports the IMS's vision of effective and efficient allocation of resources among competing priorities to build, operate and maintain infrastructure assets and provide municipal services.

Mission

Enhance system capabilities to plan, execute, manage and report on capital projects, and to enforce governance, stewardship, and compliance effectively and efficiently.

Expected Benefits

- All-in capital program (regardless of funding sources) for effective and efficient financial planning and management, and resource allocation; enable timely response to budget challenges at a detailed and/or macro level
- Streamlined capital program management processes (planning, prioritization, resource allocation, execution, management and reporting) for timely, systematic and transparent decision-making
- Consistent application of corporate project management standards and processes to optimize savings and eliminate wastage
- A capital program with clear structures and responsibilities for quality, time and budget

- Regular and timely reporting on capital project and budget performance (from construction to operation to maintenance) with minimal manual intervention and workaround
- Early warning signals on project slippage and cost overruns, and timely and appropriate management response
- Compliance with PSAB financial accounting and reporting requirements

COST-BENEFIT ANALYSIS – AUTODESK & SAP

A cost-benefit analysis was performed to assess one-time capital costs, ongoing sustainment costs, and financial benefits; and determine the net present value (NPV) through 2020.

One-time & Sustainment Costs

Total one-time costs of implementing the IMS are estimated at $13 million (Autodesk - $11.1 million and SAP - $1.9 million): $2.9 million represent existing resources and $10.1 million represent incremental resources. Total annual sustainment costs upon full deployment in 2010 are estimated at $1.4 million (Autodesk - $1.2 million and SAP – $0.2 million): $0.1 million represent existing resources and $1.3 million represent incremental resources. Cost details are as follows:

Total One-time and Annual Sustainment Costs –

	Total	Autodesk	SAP
One-time Costs -			
Hardware	164,900	102,000	62,900
Software	1,091,400	1,091,400	-
Implementation	9,905,100	8,418,800	1,486,300
Training & Travel	897,900	738,500	159,400
Other	241,000	226,700	14,300
Contingency	701,200	528,900	172,300
	13,001,500	11,106,300	1,895,200
Annual Sustainment Costs (upon full deployment in 2010, phased in as outlined in Appendix III)	1,390,200	1,187,400	202,800

Incremental One-time and Annual Sustainment Costs -

	Total	Autodesk	SAP
One-time Costs -			
Hardware	164,900	102,000	62,900
Software	1,091,400	1,091,400	-
Implementation	7,016,700	5,953,400	1,063,300
Training & Travel	897,900	738,500	159,400
Other	241,000	226,700	14,300
Contingency	701,200	528,900	172,300
	10,113,100	8,640,900	1,472,200
Annual Sustainment Costs[1] (upon full deployment in 2010, phased in as outlined in Appendix III)	1,341,500	1,138,700	202,800

[1] Details of sustainment costs and personnel implications outlined in Appendix III.

Financial Benefits

Financial benefits in the form of capital budget savings and cost avoidance have been identified in both Autodesk software and SAP PS/IM/BI as follows:

Autodesk Software (estimated at $5.1 million phased in over 5 years)

- Financial benefits can be grouped into two categories: avoided costs and capital budget savings. The benefits attributable to each type of infrastructure were determined based on the replacement value of each of the assets within each type of infrastructure (e.g. hydrants is a type of asset managed within the Waterworks infrastructure program); life span of the asset; and efficiency gain to the replacement cycle brought on by the implementation of the IMS.
- The implementation of the IMS is expected to extend the life span of each asset, to varying degrees, through improved maintenance routines and better tracking of asset condition.
- In cases where the level of budget is currently sufficient, the increase in life cycle will result in a lower capital budget requirement and hence "capital budget savings". In cases where the level of capital budgeting is not sufficient to sustain a group of infrastructure assets according to their replacement schedules, then the benefit to extending the life span is in the form of "avoided costs". It is assumed that in areas where the capital budget funding does not meet requirements to fully fund life cycle replacement, the funding will gradually be increased over a series of years until the sustainable level of funding is achieved.
- The benefits achieved through both capital budget savings and avoided costs are expected to be realized gradually, over a five-year period, starting three years after the IMS completes implementation.

SAP PS/IM/BI

- Avoid hiring additional staff resources (estimated at $110,600/year) that would have been required in a status quo environment (no system improvements) to:
    - Fulfill the new statutory requirements for the accounting and reporting of tangible capital assets (PSAB)
    - Fulfill the accountability measures identified in the Capital Fund Internal Audit Report and the Capital Budget Process Review
- Improve project efficiencies and reduce cost overruns (estimated at $375,000/year) as a result of better capital budget and project monitoring, and ultimately increase capacity in the annual capital budget that enables the City to better meet its capital investment priorities. The benefits are projected based on past experience and anticipated operational improvements.

Net Present Value (NPV) Calculation

Using a 6% discount rate, the cost-benefit analysis indicates a positive NPV of $15.2 million and a payback in 2015 (6th year after full deployment in 2010).

For the purpose of the NPV calculation, the following assumptions have been made:

- Cost of capital – 6%
- Annual inflation rate - 2.25%
- US/CDN conversion rate – 1.1214
- Annual capital budget - $150MM
- External consultant fees, training and travel costs - pre-tax
- Netweaver production server is required for SAP BI and two other IT projects; hence the one-time cost of $188,700 and any ongoing maintenance (after warranty) and future upgrades are split equally among the projects
- Systems upgrades: hardware – 5-year cycle and software – 6 to 7-year cycle

- No increase in SAP licenses - the PS/IM/BI modules will be used by existing SAP users
- Ongoing SAP PS/IM/BI training to be funded from the existing SAP training budget

FINANCIAL IMPLICATIONS

Incremental one-time costs for implementing the IMS are $10,113,100 (Autodesk - $8,640,900 and SAP - $1,472,200). Incremental annual sustainment costs upon full IMS deployment in 2010 will be $1,341,500 (Autodesk - $1,138,700 and SAP - $202,800). This represents a net increase of $829,100 in the annual operating budget. Details for the sustainment costs are outlined in Appendix III.

The $5 million funding approved in 2004 and the $700,000 identified for sustainment for this project is not sufficient and additional sources of funding are needed. The significant increase in costs can be attributed to the following factors:

- Capital budgeting and performance measurement needs have been more clearly identified since that time and it has been determined that these needs cannot be met by a standalone asset management software.
- The approach to integration which was used for the 2004 cost estimates involved extensive use of manual entry into separate enterprise systems. This approach has been superseded, as a result of the vendors' proposals and the Integration Blueprinting Exercise, by the vision of a software-based approach to integration.
- The proposals which were submitted identified the need for significantly higher levels of consultant involvement in implementation than were originally planned.

Funding sources for one-time and annual sustainment costs are as follows:

Funding of One-time Costs –

	Autodesk	SAP
Approved funding -		
Engineering Capital	1,080,000	-
Utility Reserves	1,920,000	-
Engineering Operating Budget	500,000	-
2003-5 Capital for Corporate Information Systems	1,500,000	-
	5,000,000	-
Additional funding requirements for Council approval -		
Sewer Rate Stabilization Reserve	910,300	-
Solid Waste Capital Reserve	182,100	-
Water Rate Stabilization Reserve	546,200	-
Existing Capital Budget (as outlined in Appendix II)	2,002,400	-
Unallocated SAP Capital (previous close out)	-	673,200
Savings from MySAP Implementation	-	[1]473,000
2005-6 Unallocated SAP Evolution Funding	-	451,800
	3,641,000	*1,598,000*
	8,641,000	[2]1,598,000

[1] MySAP implementation has been completed. The savings will be reported in the City's annual capital budget close-out process.

[2] Netweaver production server at a cost of $188,700 is required for SAP BI and two other IT projects. The cost has been split equally among the 3 projects ($62,900 per project) for the purpose of the cost-benefit analysis. As SAP BI will be the first project to utilize the server, funding is requested for the full cost of the server.

Funding Annual Sustainment Costs -

	2007	2008	2009	2010
Autodesk				
Sewers (49% funded by the Operating Budget without offset)	94,200	103,300	211,100	284,700
Waterworks	56,500	62,000	126,600	170,800
Solid Waste	18,800	20,700	42,200	56,900
Addition to Operating Budget without offset	207,100	227,300	464,300	626,300
	376,600	413,300	844,200	1,138,700
SAP				
Addition to Operating Budget without offset	146,300	193,000	197,800	202,800
Total Increase in Operating Budget	**353,400**	**420,300**	**662,100**	**829,100**

Rate Implications

It is proposed that a portion of the project funding and the sustainment budget for the IMS be attributed to the City's three utilities (sewer, water and solid waste) based upon the benefits they will derive from the project. The source of funding for the water and sewer utilities' share of the project costs is their respective rate stabilization reserves. Use of these reserves towards the IMS project will increase water and sewer rates slightly over the long term, since these reserves would have otherwise been used to reduce utility rates. The sustainment funding borne by each of the utilities will generate small increases in the various utility rates.

The combined effect of these two factors on utility rates is shown in the following table.

Utility	Current Annual Rate ($)	% increase	Increase Required ($)
Waterworks	329	0.23%	0.76
Sewers	162	0.42%	0.68
Solid Waste	159	0.21%	0.33

PERSONNEL IMPLICATIONS

While existing resources will be deployed to the extent possible, some positions will be temporarily backfilled during implementation and nine new positions will be created for ongoing sustainment in Corporate Budget Services, Corporate Financial Services, SAP Business Support, and Engineering Services as outlined in Appendix III.

STRATEGIC RISK ASSESSMENT

Strategic risk assessment is intended to support the overall process of assessing project viability and forms part of the project strategy. It provides a high-level evaluation of the risks associated with a project so that the project management team and decision-makers are able to decide on which risks must be managed to ensure project success.

The project team has assessed the risks associated with the implementation of the IMS and developed mitigating strategies to reduce the risks to an acceptable level. One key risk mitigation strategy is to share the risks in a commercially reasonable manner with Autodesk.

Below are the key strategic risks that are unique to this project and have a risk rating of medium or above. These and other risks and mitigation plans will be monitored as part of the project management task and will be reported to the Steering Committee on a regular basis.

Risk	Mitigation Plan
IMS involves 3 sub-projects: Autodesk, SAP and Middleware. Due to the high level of project dependencies, any slippage in timeline and deliverables in one sub-project may adversely impact the other sub-projects.	– Manage through rigorous project governance – Intense project planning and dependency identification reduces likelihood of change in scope and work effort, hence minimizing schedule slippage risk
IMS will bring large scale organizational and cultural changes in the way the City manages and reports its infrastructure assets, capital projects and budgets, and performance measures. This may cause significant resistance at the operational level, delay in implementation timeline, and additional costs.	– Deploy change and communication management strategy – Designate adequate change and communication management resources to the project – Develop a formal training strategy and allow for sufficient training resources and help centre support for implementation and ongoing sustainment
IMS involves substantial data cleaning, conversion and migration from multiple standalone legacy systems and databases to the new Autodesk environment; and large scale asset valuation to comply with the new PSAB asset accounting and reporting standards within a tight timeline.	– Data migration and conversion plan in place and agreed to by business users – Learn from other cities' experience – Designate appropriate skill set and adequate resources for tasks during implementation and for ongoing sustainment – Apply industry best practices to the data migration process – Keep line of business system running in parallel with IMS environments to provide opportunities to complete the data migration processes and back-out if necessary
The proposed hybrid solution will be used as a test bed for a corporate middleware strategy. Microsoft BizTalk has been selected to integrate Autodesk and SAP and as a Proof of Concept to support the development of a corporate application architecture. The evolution of the corporate application architecture may necessitate selection of a different middleware, resulting in additional costs for rebuilding the integration points and for ongoing sustainment.	– Microsoft BizTalk aligns with the corporate IT environment in terms of existing technology standards – Middleware deployment is a common methodology for integrating applications – If a different middleware software is selected for the corporate strategy, it is technically feasible to use BizTalk for the Autodesk-SAP integration, while maintaining the capability to integrate to other corporate applications
An extended period of time has lapsed since the original RFP requirements were defined in May 2005. User needs may have become obsolete and business processes may have changed.	– Keep strategy and direction consistent and unchanged through project management – Closely involve stakeholders in the requirement and configuration stages of the project plan
Being the first implementer of the system technologies and functionalities (Autodesk, Middleware, BI Netweaver) within the City, there is no prior experience and internal skill set that can be leveraged.	– Install the latest stable version of software – Learn from other site installation experiences (e.g. Cities of Burnaby, Richmond, and North Vancouver) – Apply rigorous testing strategy – Accept alpha/beta releases for test environments only, not production environments – Provide adequate training to project deployment team – Recruit deployment and sustainment staff with appropriate skill set
Customer service functionalities are currently in	– Autodesk is the delivery mechanism for

scope for both IMS and 311. This presents an opportunity for synergy and cost reduction by eliminating potential overlaps. However, it also poses uncertainty in the choice of corporate customer service platform and requirements for potential integration with the 311 technology.	engineering services – It is web-enabled and supports integration with other customer service applications if required – Will coordinate with the 311 project team to capture synergies in cost and schedule in both projects as they pertain to phone service requests

IMPLEMENTATION PLAN

Autodesk

The project is scheduled to start in January 2007 with a 30-month phased implementation across Engineering.

The Autodesk project major work activities will be focused upon:

- Configuration and deployment of the customer service, work order and asset management, and asset valuation functionality.
- Data migration of asset inventory related information from approximately 100+ existing Engineering applications (including GIS attributes) to the Autodesk software.
- Integration of the Autodesk software to the existing GIS applications and SAP modules (Human Resources Time Entry, Materials Management, and the pending deployment of Project Systems and Investment Management).

A detailed project plan, yet to be developed in consultation with Autodesk, will describe the timely deployment of functionality according to business priorities, while minimizing disruption to the City's users. Generally, implementation of the Autodesk software across Engineering will be in two phases to mitigate risks and minimize project resource demands on the organization. The implementation group #1 will consist of: Solid Waste, Departmental Services, Waterworks, Sewers, Streets, and Utilities. The implementation group #2 will consist of the Transportation Division branches: Strategic Transportation Planning, Traffic Management, Neighbourhood Transportation, Parking, and Traffic and Electrical Operations.

Key Project Milestones

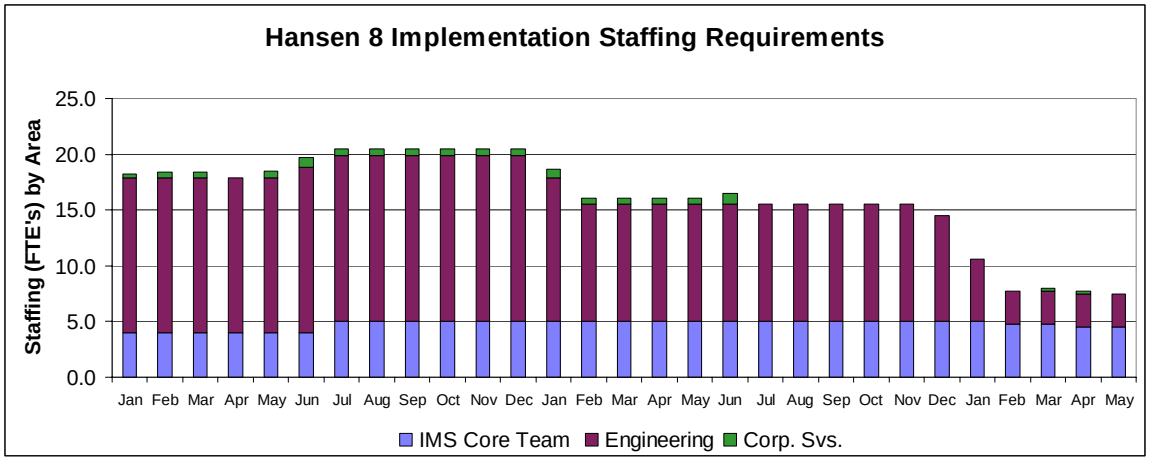
- Q4 2006 → Hardware, software, and implementation services contract with Autodesk settled and executed
- January 2007 → Project launch subject to contract execution

Key Implementation Dates -

	Customer Service	Asset Inventory	Work Mgt	Asset Valuation
Group 1				
Sanitation	Aug 2007	Aug 2007	Jan 2008	May 2008
Departmental Service	Aug 2007	Aug 2007	Jan 2008	May 2008
Streets	Oct 2007	Oct 2007	Mar 2008	Jun 2008
Water	Dec 2007	Dec 2007	Apr 2008	Aug 2008
Sewer	Dec 2007	Dec 2007	Apr 2008	Aug 2008
Utility	Dec 2007	Dec 2007	Apr 2008	Aug 2008
Group 2				
Traffic Management	May 2008	May 2008	Oct 2008	Dec 2008
Traffic & Electrical Operations	Jun 2008	Jun 2008	Nov 2008	Jan 2009
Parking	Aug 2008	Aug 2008	Dec 2008	Apr 2008

The project implementation team will consist of approximately 18 FTE resources drawn from Engineering and Corporate Services. A dedicated core team composed of a project manager, technical team lead, IMS programmer, systems analyst, and an application support specialist will be supported by approximately 5 FTE resources from engineering business and 7 FTE technical subject matter experts (SME's) drawn from approximately 600 professional staff representing the 5 engineering divisions. The project plan also identifies 0.5 FTE resources representing Corporate Budget and Financial Services to support the Autodesk software configuration and integration to the SAP financial, human resource and material management modules over the course of the project.

The project work plan detailing activities and resource requirements has been extensively developed in cooperation with Autodesk in anticipation of Council approval and award of this project in a timely manner with an early project launch in January 2007. The project staffing requirements by month are depicted below.



No new staffing will be hired for the implementation phase and no Autodesk personnel will be permitted to commence services until the contract with Autodesk is settled and executed.

SAP - PS/IM/BI

The SAP PS/IM/BI modules will be implemented in five phases and will take approximately nine months to complete:

Project Preparation

Perform detailed project planning and scoping, and develop project charter and workplan. Establish project team and project strategies.

Business Blueprinting

Document business process requirements and develop initial SAP system design. Identify and document reporting, system integration and data conversion requirements.

Realization

Transform the business process requirements identified in the Business Blueprinting phase into an approved, working SAP system. Develop reports. Rigorously test application. Develop training and documentation materials.

Final Preparation

Establish and test cutover plan to production. Prepare end users.

Go Live and Support

A core development team of 8 resources, including the SAP Business Team, a consulting partner, and representatives from various business units, will be dedicated full time to the project. Additional key staff from the SAP Business Team and various business units will be involved as necessary on a part-time basis to assist with work items such as system design workshops, training and documentation development and delivery, and system testing. The

project will be overseen by a full-time project manager, and a project steering committee made up of senior stakeholders will meet on a regular basis to provide guidance, monitor project progress, and address issues as they arise.

Implementation Schedule for SAP PS/IM/BI -

		Project Preparation	Business Blueprinting	Realization	Final Preparation	Go Live & Support
PS/IM	**Work Effort**	2 weeks	9 weeks	17 weeks	6 weeks	4 weeks
	Timeline	PSAB Preparation – Fall 2006 Rest of Project – April 2007	May – Jul 2007	Jul – Oct 2007	Oct/Nov 2007	Nov 2007
BI	**Work Effort**	1 week	2 weeks	5 weeks	1 week	1 week
	Timeline	Apr 2007	May - Jul 2007	Jul - Oct 2007	SAP - Oct 2007 Autodesk - 2009	SAP - Nov 2007 Autodesk - 2009

PS/IM - The PS/IM implementation schedule has incorporated the budget and year-end timelines and resource commitments by initiating the Business Blueprinting phase in May 2007. Corporate Financial Services will be working with Engineering and Corporate Budget Services in the fall of 2006 to define PSAB requirements in preparation for the Business Blueprinting exercise.

BI – Given the significant time lag between the completion of the PS/IM implementation and the full Autodesk implementation, the BI implementation schedule reflects a phase-approach that accommodates both systems implementation schedules. To ensure consistent reporting from Autodesk and SAP, key performance measures and reporting requirements will be identified during the Business Blueprinting phases of both systems. BI performance reporting will be available in November 2007 for non-Engineering capital projects within the existing SAP modules, and in 2009 for Engineering capital projects when the Autodesk software will be fully functional.

Middleware

Integration of the Autodesk software to SAP PS/IM will be facilitated by a layer of intermediary software, referred to as *middleware*. The implementation of the middleware product and writing of the necessary interfaces between the Autodesk software and SAP will be performed by Autodesk. This work will also constitute a test case or "Proof of Concept" for a broader corporate deployment of middleware within the context of an enterprise application architecture. The Autodesk-SAP integration will provide an opportunity for City staff to assess the viability of middleware to solve integration problems with other line of business applications and understand the contingent issues of staffing, costs, and risks. At the completion of the "Proof of Concept", an administrative report to Council will follow and establish the strategic direction and associated costs for the acquisition, implementation, and sustainment of an enterprise middleware environment at the City.

CONCLUSION

The Infrastructure Management Strategy as proposed in this report will provide the needed tools for managing of the City's infrastructure assets and financial resources. The proposed hybrid solution incorporates the best-in-breed characteristics of the Autodesk software and SAP and at the same time ensures that these systems are well integrated. This leads to a seamless approach to managing the City's resources by providing tools for customer service,

project management, work management, infrastructure lifecycle planning, budgeting, long-range planning, and performance measurement.

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ANALYSIS OF "AS IS" VERSUS "DESIRED STATE"

Autodesk Software –

"As Is"	"Desired State"
Customer Service	
- A lack of an integrated, coordinated multi-branch service response resulting in undocumented and inconsistent service standards with a high potential for customer calls repeatedly being transferred. - Inability to execute customer service requests originating from a 311 initiative in a coordinated fashion	- Ability to create templated service requests o Standardized list of service request types o Ability to associate customer service scripts with service requests o Default customer and asset data into service requests o Filter service requests by business unit, location, request type, infrastructure type, etc o Identify address of person making request versus location of the service request - Ability to identify types of service requests e.g service requests vs. requests for information, complaints, etc - Ability to identify occupants of a household as tenants or registered owners - Ability to record the method that the request was received and how the customer would like to be contacted - Ability to identify/resolve duplicate service requests - Ability to identify/resolve the relationships between service requests and related work orders - Ability to record inspection events on service requests including tasks and accomplishments - Ability to assign due dates for service requests and provide reminders when due dates are approaching - Ability to "log" simple calls like requests for information without creating service requests
Work Management	
- Existing work management practices are small scale, local solutions. - Lack of visibility of work backlogs in the enterprise system - Lack of performance metrics related to response to complaints.	- Ability to forecast, plan, schedule, record, cost, and report all work related to public works services and infrastructure - Ability to plan, coordinate and manage capital projects and maintenance programs related to public works infrastructure - Ability to record, track, and analyse work accomplishments, physical condition, and financial information for performance measurement and lifecycle decision support for all public works infrastructure assets - Ability to collection of asset condition and related costs (labour, equipment, materials)associated to the specific infrastructure asset type - Enterprise class tools for all of ENG to plan, schedule, monitor, record, and report work - Relate work management to customer service - Spatially enabled work orders: - assist users in processing work orders - enhance decision making of work that needs to be performed - Consistent workflow processes - Consistent approach to work management across disparate business units using formalized business processes - Formalized set of activity standards. These standards must be measurable and used to continuously improve level of service provided by ENG - Advanced scheduling capabilities to improve coordination of work by ENG and external agencies

	- Flexible and scalable Asset Management functionality to support decision making and to meet emerging needs and increased sophistication as the organization's practice of asset management matures
Asset Management	
- Less than optimal investment and management of the City's assets with inadequate information for decision making. - Inability to comply with impending PSAB accounting rules	- Ability to create: o asset classes o asset groups e.g. by location, function, condition, etc. o unlimited attributes o status e.g. active, decommissioned - Ability to track event history on a asset including installation, maintenance, rehabilitation, decommission, etc - Ability to record asset condition data including condition indexes. Also be able to track the history of changes in asset condition - Ability to track the movement of an asset from one location to another - Ability to track age/remaining life of an asset - Ability to valuate and maintain a history of valuations of assets e.g. current value, replacement cost, depreciated cost, etc - Ability to create different asset maintenance strategies - Preventative maintenance – ability to define work strategies based upon the frequency of work that needs to be performed e.g. major vs. minor maintenance - Corrective maintenance – ability to define work strategies for asset when they fail - Ability to schedule maintenance activities based upon different metrics e.g. time, meter, usage, etc.
Right-of-way Management	
- - Inability to get the "big picture" on conflicting activities in the right of way. - - Inability to regulate use through permits or other similar measures - - Inability to define and enforce "no construction permitted" zones on streets within x years of paving.	- Ability to create templates to process and approve requests to work on or occupy the public Right-of-Way. o Type, purpose, duration, etc o Applicant and contact information o Ability to identify staff and dates relevant to the permit o Urgency and status o Pre-approval conditions - Ability to reference assets related to the permit application - Ability to reference security (e.g. letter of credit) for a street use permit application - Ability to calculate fees and record revenues for street use permits - Ability to record work estimates e.g. temporary signage, pavement cuts, etc. - Ability to identify the relationships between street use permit applications and related work orders - Ability to access/relate customer service scripts with street use permit applications - Ability to track future development obligations e.g. when a new sidewalk is installed there may be a future obligation by the City to install a traffic signal at the same location - Ability to track warranty periods on assets
Operational Performance Measurement	
- Incomplete or inadequate information to support performance measurement	- increased transparency of public works management expenditures - key performance measures tracked in the enterprise financial system - tools for better decision making - historical information on key performance indicators

SAP PS/IM/BI –

"As Is"	"Desired State"
Financial Planning & Management	
- Once the Capital Plan is established, it is difficult to prioritize projects against each other to optimize global budget allocation - Capital, operating and maintenance projects with different funding sources are evaluated independently for budget consideration - Existing CO configuration offers very limited and inflexible reporting capabilities and makes project evaluation and budget rollups an extremely difficult and time consuming task; hence delaying management response to project slippage and cost overruns	– An integrated approach to planning, approval, management and administration of the global capital budget and individual project budgets at user-defined levels. Such integration enables more regular project evaluations, which lead to timely notice of and response to cost overruns. – Enable long range financial and resource planning and management of capital, operating and maintenance projects (*regardless of funding source)* based on infrastructure asset condition and life cycle details contained in Autodesk or other asset systems. – Facilitate project comparison, prioritization and budget allocation *(and reallocation)* based on user-defined criteria at any given time. – Support cash flow planning and management at both corporate and project levels. – Provide flexibility in defining global and individual project budget hierarchical structures that best meet organizational needs, enabling both bottom-up and top-down budgeting approaches. – Support distribution and rollup of project budgets to user-defined levels within the project structure. – Facilitate management of project budgets via plan/actual comparisons, monitoring of costs over multiple periods, and reporting from the corporate level to the line item level. – Facilitate legislative financial statement year end reporting of budget and actuals.
Asset & Project Management	
- Existing CO configuration is designed to handle simple, one-time projects only; not intended for complex projects - Very limited capabilities for timely and effective project planning, budget allocation, performance management and reporting; extensive manual data intervention required - Inability to plan and manage project cash flows - Inability to interface with other project management tools - inability to combine non-financial performance information with financial information in standard reports	- Clearly defined global infrastructure investments and individual project scope. - Built-in corporate project management standards and processes for planning, execution, performance management and reporting of all capital projects by user-defined structures and processes in a consistent manner. - Integrate and streamline budget submission and project planning processes to eliminate duplicate entries. - More robust system capabilities for cross-functional activity level planning and costing based on detailed project cost estimates (either from within SAP or from Autodesk), and use-defined rollups. - Integration with the City's equipment inventory and HR systems will enable cross-departmental resource planning, scheduling, purchase ordering, and costing; extent of integration may be in phases. - Support 3 levels of reporting: i) structure overview (project phases); ii) hierarchy (drill down); iii) cost element (CO); enable regular and timely plan-vs-actual reporting based on user-defined criteria and management response to project slippage and cost overruns. - Better tracking and management of commitments, progress payments and holdbacks for projects involving third party goods and service providers. - Facilitate project closeout at any given time based on user-defined milestones. - Allow interface with a number of project management tools. - Through the utilization of SAP Business Intelligences (BI), financial

	and non-financial performance information from disparate systems (for example Autodesk and SAP) can be combined to provide better reporting capabilities at both an operational and a strategic level. Combining key project attributes, such as scope and time, with financial information provides a more holistic view of the City's capital program.
Financial Reporting & PSAB Compliance	
- Capital Fund financial statement reporting is cumbersome and labour intensive - Existing SAP - CO configuration offers very limited reporting capabilities to perform financial analysis; significant manual intervention is required, which is time consuming and prone to error.	- Enable both cost and financial accounting of individual projects via different cost accumulation tools, such as Internal Orders, Projects and Maintenance orders. - As part of the project scope, the integration of the Asset Accounting (AA) and the Financial Controlling modules will allow costs to be capitalized or expensed. - Support Capital Fund asset accounting at period-end or at fiscal year closing: i) ability to get timely financial statements and reports; ii) ability to capitalize work-in-progress (WIP) on the balance sheet; ii) ability to apply depreciation calculations to capitalized portion of WIP. - Facilitate capital expenditure analysis of both budgets and actuals by functional area (e.g. Engineering, Library, Parks, etc) - Integration of the AA module with the PS/IM module will facilitate drill down functionality of actual expenditures.

FUNDING CONTRIBUTION FROM ENGINEERING CAPITAL BUDGET (2003-5)

Streets & Transportation		
Arterial Recon	212,500	
Local Recon	120,000	
HZ Streets LI	50,000	
HZ Lanes LI	50,000	
Res St LI	270,400	
Res Lanes LI	50,000	
Arterial Improve	210,000	
Bikeways	50,000	
Beauty & Trees	50,000	
Bus Slabs	100,000	
Neigh Traffic	50,000	
Drainage	50,000	
Grade/Open	50,000	
Pipeline Road (S-Curve)	187,500	
		1,500,400
Bridges		
2006 Major Main	65,000	
2006 Ped & Other St	35,000	
		100,000
Traffic Signals		
2006 New Vehicle Signals		140,000
Street Lighting & Communications		
CB2EB6	80,000	
CCEC1A	90,000	
CCEC1B	10,000	
CCEC1C	20,000	
		200,000
Parking Reserve		62,000
Total		**2,002,400**

ONGOING SUSTAINMENT & PERSONNEL IMPLICATIONS

Autodesk Software –

	2007	2008	2009	2010
Licenses	-	-	25,000	25,400
Maintenance & Support	213,600	217,900	511,600	799,400
Upgrade Software	134,400	137,100	139,800	142,600
Upgrade Man Hours	28,600	58,300	119,000	121,400
Training & Travel	-	-	21,200	21,700
Other	-	-	27,600	28,200
	376,600	413,300	844,200	1,138,700

SAP PS/IM/BI –

	2007	2008	2009	2010
Maintenance & Support	141,200	193,000	197,800	202,800
Other	5,100	-	-	-
	146,300	193,000	197,800	202,800

New Sustainment Positions (FTE) –

	2007		2008		2009		2010	
	Autodesk	SAP	Autodesk	SAP	Autodesk	SAP	Autodesk	SAP
SAP Business Analyst		1		1		1		1
SAP Netweaver Analyst		0.5		1		1		1
IMS Manager CEIII					0.5		1	
IMS Systems Analyst SAII					0.5		1	
IMS Systems Analyst SA1A					0.5		1	
IMS Programmer Analyst					0.5		1	
IMS Application Systems Specialist					0.5		1	
IMS Asset Accountant					0.5		1	
IMS Helpdesk Support					0.5		1	

Annual costs including benefits (in 2006 rate) for each of the new positions are as follows:

	Salary	Benefits	Annual Costs
Corporate Services			
SAP Business Analyst (PB 8)	68,900	13,800	82,700
SAP Netweaver Analyst (PB 8)	68,900	13,800	82,700
Engineering Services			
IMS Manager CEIII (PB 12)	92,800	18,600	111,400
IMS Systems Analyst SAII (PB 8)	68,900	13,800	82,700
IMS Systems Analyst SA1A (PB 7)	59,800	12,000	71,800
IMS Programmer Analyst (PG 26)	57,700	11,500	69,200
IMS Application Systems Specialist (PG 26)	57,700	11,500	69,200
IMS Asset Accountant (PG 26)	57,700	11,500	69,200
IMS Helpdesk Support (PG 24)	53,100	10,600	63,700