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OPTIMIZE WORKS IMPLEMENTATION UPDATE

The Transportation and Works Committee recommends the adoption of the recommendation contained in the following report, January 12, 2006, from the Commissioner of Transportation and Works:

1. RECOMMENDATION

It is recommended that Transportation and Works Committee and Regional Council receive this report for information.

2. PURPOSE

This report provides an update on the implementation activities of the OPTimize Works program and efficiencies recognized from the program. OPTimize Works is the best practices initiative being undertaken by the Water and Wastewater Branch.

3. BACKGROUND

OPTimize Works represents the Water and Wastewater Branch's best practices initiative. This program is one of several programs and projects initiated as part of an overall service improvement program. It involves the redesign and implementation of the branch's organization, practices and technology – and has been tagged as OPTimize Works.

In 2002, the Branch conducted the Operations and Maintenance Service Assessment (OMSA) that identified a number of key objectives to achieve improved operational efficiencies. In 2003, the Branch conducted the redesign phase of the OPTimize Works program (Phase 1) including the Information Systems Master Plan (ISMP). The implementation phase of the program (Phase 2) was awarded late in 2004. The program formally kicked off in January 2005.

The OPTimize Works program plays a critical role in the Water and Wastewater Branch's response to challenges and opportunities being faced such as unprecedented growth, an aging workforce, and the introduction of more stringent water quality regulations. This report outlines the implementation activities that will help the Branch achieve optimal performance from existing and future operational assets, the Branch's skilled staff, and the technology solutions being deployed.

Eight concepts for change formed the foundation and common focus throughout the OPTimize Works program. These were introduced with the initial OMSA and are now

recognized as key components to becoming more efficient and effective with our service delivery. These concepts for change are shown in *Table 1* below.

Table 1
Eight Paradigms of Change

From		To
Operations & Maintenance	—————>	Total Productive Operations
Reactive Work	—————>	Program Driven Work
Attended Facilities	—————>	Less Attended Facilities
Work Separated by Craft	—————>	Work Force Flexibility
Technology as Risky	—————>	Technology as Strategy
Organization as Structure	—————>	Organization as Strategy
Customer as Nuisance	—————>	Customer as Advocate
Assets as Costs	—————>	Assets as Investments

Total Productive Operations (TPO) enables effective achievement of common goals. With TPO distinctions between and among various jobs and tasks are minimized. Teams are organized to maximize productivity and maintain a full workload throughout the day

Program Driven Work (PDW) moves from reactive to proactive maintenance and activities. PDW focuses on problem prevention and helps get the right people, skills, plans, tools and equipment to the right job at the right time.

Less Attended Operations allows businesses to reallocate staff to critical business functions while using technology to automate and simplify time-consuming tasks.

Workforce Flexibility (WFF) maximizes productivity through cross-training and multi-skilling staff. WFF enhances staff career development resulting in improved employee morale and job satisfaction.

Using a *Technology as Strategy* perspective recognizes that the best water and wastewater services operators use technology to provide enterprise-wide information and minimize costs. They collect information so staff can use and share it and together they can modify the way they work.

Adopting an *Organization as Strategy* viewpoint yields a flexible organization that creates empowerment. Removing organization barriers and becoming more team-oriented strengthens the organization and increases accountability.

The *Customer as Advocate* philosophy yields spontaneous and positive public support for public utilities by providing support for infrastructure expansion and innovation, and confirming customer confidence. This philosophy relates to initiatives such ISO where customer feedback is used as an opportunity for continual improvement.

Thinking of *Assets as Investments* encourages municipalities to rethink the way that they invest, maintain, recycle, replace, finance and plan capital expenditures. This perspective embodies a proactive repair and replacement program to extend the life of key assets in the system. Municipalities can move to investing in assets with the lowest life cycle ownership costs that meet service level objectives to maximize long term financial savings and maintenance costs.

This report discusses the implementation phase of the OPTimize Works program and highlights the status of work completed to date.

4. ANALYSIS AND OPTIONS

The OPTimize Works Phase 2 implementation includes the following components:

- Project Management and Integration Services.
- Organization Implementation Services.
- Practices Implementation Services.
- Technology Implementation Services.

4.1 Project Management and Integration Services

Project management and integration services include ensuring the project remains within scope, is delivered according to the schedule, and is delivered within budget. The project management services also include coordination and integration across all teams, functions, and peripheral projects identified in the Branch's overall service improvement program.

Changes to the scope and schedule were required in March 2005 to accommodate the Departmental Realignment of the Transportation and Works Department. Amendments to the scope were made to incorporate workshops for the Capital Delivery division and the Administrative team. These minor scope changes resulted in schedule delays in some of the implementation activities.

4.2 Organization Implementation Services

Activities under these services include confirming the proposed organization structure and associated positions, finalizing and approving all job descriptions, presenting the job descriptions to the Regional job evaluation committee and confirming compensation rates, developing the Branch's strategic planning process and tools, developing a Branch training program, implementing performance measures, and develop a training tracking database.

4.2.1 Organizational Structure

The first activity of this phase required the confirmation of the Branch's organizational structure. Workshops were held with the management team to confirm the functional responsibilities of each division and finalize the organization chart. In March 2005, these activities were put on hold to allow time for the Departmental Realignment to be completed. The outcome of the Realignment brought the Capital Delivery division back into the Water and Wastewater Branch. Workshops were held with representatives of the Capital Delivery team to ensure that the functional responsibilities were rolled into the overall Branch responsibilities matrix.

The resulting organizational structure for the Water and Wastewater Branch includes five divisions: Water and Wastewater Operations, Technical Support, Regulatory Compliance and Policy, Asset Management, and Capital Delivery. The divisions are supported by the Administrative team. The mandate for each of the divisions is provided below.

Water and Wastewater Operations

To operate and maintain the water and wastewater systems in full compliance with applicable regulations.

Technical Support

To provide technical input to master plans, capacity monitoring, and development review, manage and implement Branch-wide business and financial planning, conduct rate studies and set rates, promote the Branch's image, and support Branch-wide programs, training, and initiatives.

Regulatory Compliance and Policy

To maintain expertise in current and future regulatory requirements and assist other divisions in ensuring current compliance and to assist with the planning for future needs. To research and develop policies as required by the Branch.

Asset Management

To optimize the life cycle effectiveness of physical and technology assets and to develop, implement and facilitate asset management practices across the divisions and departments.

Capital Delivery

To provide project management services to deliver the environmental assessment (EA), design, and construction phases of the Water and Wastewater 10-Year and minor capital plans.

4.2.2 Job Descriptions and Compensation

Progress on job descriptions was variable throughout the divisions based primarily on the availability of key management and program level staff. For some divisions, vacancies at the management or program management levels prevented the project team from moving forward with all job descriptions.

The majority of job descriptions are either drafted or signed-off for the positions in the Water and Wastewater Operations and Asset Management divisions. Approximately three quarters of the positions are now drafted for the Technical Support and Regulatory Compliance and Policy divisions. Positions in the Capital Delivery division require minimal changes to reflect the changing reporting relationships and will be updated as needed.

The Compensation activities involve establishing compensation for all new and revised job descriptions in addition to developing a compensation plan for the cross-trained operations positions. Most positions will be evaluated through the job evaluation committee with a resulting compensation rate provided. For the newly created cross-trained operator positions (Operators and Team Leads), a compensation review of industry practices was required. A draft compensation plan was prepared and submitted to the General Manager for review. Following that review, an assessment of the cost to implement the proposal was undertaken by the Human Resource Services Department. This activity is ongoing and expected to be complete early in 2006. Costs for implementing cross-training are expected to be offset by the benefits gained from a more flexible workforce.

4.2.3 Strategic Planning

Strategic planning workshops began early in 2005 to develop the strategic planning framework for the Branch and each division. The management team commenced the workshops by reviewing the Region and Branch visions and missions. Then the management team identified the critical issues facing water and wastewater service delivery for York Region. The issues were grouped into key strategic statements which were then evaluated based on urgency, opportunity, risk, and criticality. The strategic statements were also assessed for the Branch's capacity (availability of in house resources) and capability (availability of in house knowledge) to manage the strategy.

From the strategies and strategic statements, goals and objectives for the Branch were drafted. These goals and objectives formed the basis for subsequent workshops with the divisions to develop the programs and projects that will support the overall Branch strategy. The second round of division level workshops is scheduled for the first week of December 2005. The strategic planning exercise is expected to be completed by the end of December.

The strategic statements guiding the ongoing strategic planning are:

- Infrastructure Stewardship – Ensure long-term adequacy and reliability of the water and wastewater systems.
- Technology – Leverage technology to improve the functions and efficiency of the business.

- Workforce – York is recognized as a preferred employer that attracts, develops and retains a highly qualified flexible workforce.
- Core Service Delivery – Secure adequate long term water and wastewater services.
- Customer as Advocate – Demonstrate to the public and stakeholders that water and wastewater service delivery is based on the principles of sustainability for the benefit of Region residents and stakeholders.
- Financial – Economic – Ensure the availability of sustainable funding to manage the existing and future water and wastewater infrastructure and services.

4.2.4 Training Activities

Developing the Branch training program has focussed first on the annual training needs of the operations and maintenance staff. Shifting to a cross-trained operations environment requires more careful planning of the annual training needs. Changes to the classification of facilities within each operating Hub have further increased the need for planning and monitoring the training needs for staff.

As part of developing the needed training, a skills assessment was conducted with the operations and maintenance staff. The assessment has enabled the identification of skills gaps for which the training can be developed. The next area of focus is to move more staff up in their certification levels to ensure extra coverage in each Hub. Following that, cross-training for operators for the types of certificates needed in their Hub will be implemented. The longer range plans for the training program is to identify and develop leadership training needs and opportunities, and develop career path and succession plans.

The changing regulations around the annual training requirements and the Branch's move to cross-trained operations have created the need for an enhanced training and certification tracking database. The requirements definition for this database is underway with an expected completion in mid 2006.

4.2.5 Performance Measures

Some initial work was initiated on the performance measures early in 2005. The performance measures are tied to the strategic planning work. However, with the organizational changes that occurred in the spring of 2005, the strategic planning work was postponed. The performance measures activities will resume following the completion of the strategic planning.

4.3 Practices Implementation Services

The activities under Practices Implementation Services involve the implementation of the phase 1 recommendations on work management, materials management, asset management, and operations and maintenance practices. Additionally, this track includes establishing the framework for all Branch divisions.

4.3.1 Water and Wastewater Operations and Maintenance Roll Out

A key organizational change for the Water and Wastewater Operations division included the consolidation of operations and maintenance functions into one business unit. Operations teams are being organized into geographic “hubs” for improved response and reduced travel time to the hub facilities (*refer to Attachment 1*). The hub teams will manage all water and wastewater operations as well as routine linear and plant asset maintenance. The WWO division will contain a mix of centralized and decentralized maintenance to support the operations teams. Hubs will have decentralized maintenance staff when a full workload for a specialized maintenance trade has been identified.

As part of the practices implementation, a pilot for the new cross-trained operations was undertaken for Hub 1 – Georgina. Leading up to the pilot, Hub 1 and maintenance staff participated in a series of workshops to orient the team to the new practices. The workshops included an overview of program driven work practices, roles and responsibilities of the various positions (Operator, Maintenance personnel, Team Lead, Superintendent, Manager), and an interactive workshop for maintenance best practices (Maintenance 101). The pilot also consisted of the field pilot for the computerized work management system (CWMS) – Maximo. Training for hub staff in both the new practices and the Maximo software was required in preparation for the Go-Live date.

The pilot ran from April to June 2005. Since then, the Hub continues to operate in the new cross-trained environment. Lessons learned from the Hub 1 pilot have been used to orient the Hub 2 team. Hub 2 (Hwy. 48) rolled out on October 3, 2005 and Hub 5 (Hwy. 27) rolled out on November 28, 2005. The remaining hubs will continue to roll out as follows:

- Hubs 3 and 4 (Central North & Central South) – February 20, 2006
- Hubs 6 and 7 (Steeles West & Steeles East) – May 1, 2006

The roll out for central maintenance has been more gradual. The primary impact to central maintenance is the introduction of the Maximo software to manage the work orders and maintenance requests. Since the software is being rolled out concurrent with each hub, the greater impact to maintenance will occur as we roll out Hubs 3 and 4. In the interim, maintenance staff are working with two systems for work orders: Maximo for the rolled out hubs (Hub 1 and 2), and the existing paper based work order system for the remaining areas.

4.3.2 Practices Roll Out for Other Divisions

The other divisions are rolling out at different rates – again due to some key management vacancies. The Asset Management and Technical Support divisions have commenced initial workshops for orienting the teams to the divisional functions, the interactions with the other divisions, and developing the ongoing plans for their respective programs.

The Capital Delivery division is continuing with capital and minor project delivery with minimal changes to the existing process at present. However, as an add-on to the

OPTimize Works scope, the division will be redesigning the Project Delivery Process in general. This is intended to streamline the process, ensure that the appropriate divisions have input into and sign-off opportunities during the capital project process.

The formal roll out of the Regulatory Compliance and Policy division will occur once the division manager has been hired. This is expected to happen by the end of the year with implementation activities beginning in January 2006.

4.4 Technology Implementation Services

The activities under the Technology Implementation Services include developing data management standards and data model, integration architecture, network architecture, and Geographic Information System (GIS) services.

As an outcome from the Hub 1 pilot, a recommendation was made for pilot testing mobile computing technology to simplify field data collection. As well, with the Departmental Realignment and the reinstatement of the Capital Delivery division into the Branch, the Information Systems Master Plan (ISMP) was identified as needing to be updated.

4.4.1 Data Management Standards and Data Model

With the environment of increasing regulatory compliance reporting requirements and the need manage processes using performance indicators, it is essential to have quality and verifiable data. Therefore, the Data Management Standards and Data Model project has been included in the Technology Implementation Services. The objectives of this project are to:

- Document standards for core business data that is necessary to support regulatory and performance reporting.
- Ensure integrity and audit ability of all regulatory and performance management data.
- Implementation of a change management process to manage changes in reporting requirements.
- Implement and maintain data management tools to support the data reporting process.

In January, the data standards documents will be submitted to staff for review. The data warehouse will start being built in the spring of 2006 with an expected completion date of June 2006.

4.4.2 Network Architecture

In early 2005, the Water and Wastewater Branch conducted a requirements analysis for network communications. The analysis identified an opportunity to save network maintenance costs and increase network quality by consolidating parts of the Water and Wastewater SCADA network with the corporate converged network (combined network serving both business and SCADA needs). The business network typically provides for email, access to the corporate network, access to corporate applications such as PeopleSoft, and client/server applications such as Maximo and ISOsoft. Deployment of

the upgraded converged network will begin in early 2006. Objectives of the project include:

- Ensure high availability and high bandwidth for network connections at Water and Wastewater operational hubs to support best work practices.
- Reduced network management and maintenance costs.
- Elimination of bottlenecks in current networks.
- Provide a secure and reliable extension of the corporate network to operational hubs.

4.4.3 Integration Architecture

Analysis of water and wastewater systems integration requirements conducted in 2005 has identified a number of key business processes that will benefit from automation. The objectives of the Integration Architecture implementation are to:

- Automate business processes that demonstrate reduction in overall effort and cost, while sustaining or improving quality.
- Increase value to business processes by eliminating disconnected databases and creating the ability to monitor business process performance through key performance indicators.
- Reduce manual paper processes and leverage existing technologies such as PeopleSoft.
- Develop integrated key performance indicators to senior management to support business decision making.

Significant progress has been made toward the implementation of the Integration Architecture objectives. These include:

- Development of a business process data path model that documents how data moves in, out and throughout the business.
- Development of a data mastering matrix that defines business system's rights for creating, modifying or reading data.
- Development of a business process prioritization matrix to evaluate where the most value will be derived from business process automation and integration.
- Two business processes have been selected to pilot automation and integration to reduce manual effort and increase value to existing manual processes:
 - Generation of preventive maintenance work orders based on maintenance best practice thresholds and metrics.
 - Generation of electronic purchase orders in Maximo and integration with PeopleSoft Financials.

The anticipated completion for the Integration Architecture portion of the project is fall 2006.

4.4.4 Geographic Information Systems Strategy

The Water and Wastewater Branch has developed a number of goals to strategically deploy Geographic Information Systems (GIS) to support the delivery of our core services. These goals include using GIS for:

- Managing customer responses.
- Providing information about capital construction projects to the public including where the projects are occurring, when projects will begin and end, and the nature of each ongoing project.
- Supporting capital and long term planning decisions.
- Using resources and technology efficiently.
- Reporting key performance indicators spatially.

The work being done under the GIS strategy is in the early stages and the development of a schedule for implementation is yet to be completed.

4.4.5 Mobile Computing Initiative

A request of the Hub 1 pilot team was to use mobile technology to assist with and simplify data collection in the field. The Mobile Computing Initiative is designed to:

- Reduce manual effort and redirect staff efforts to value added activities such as asset maintenance and data analysis.
- Reduce duplication of data entry.
- Improve accuracy of collected data at water and wastewater facilities.
- Improve access to compliance and service billing data.

A hardware field test was conducted late in 2005 to assess the quality and functionality of using ruggedized Tablet PCs in the field. We will deliver the Mobile Computing Initiative by:

- Documenting business and user requirements to procure an application to support secure in-field data collection by the end of Spring 2006.
- Implementing Tablet PCs to a pilot area in the Water and Wastewater Branch by Summer 2006.

4.4.6 Information Systems Master Plan Update

The Information Systems Master Plan (ISMP) strategically outlines design requirements for technology required to support the efficient and effective delivery of Water and Wastewater services to York Region. To support organizational and process changes brought about with the integration of Capital Delivery services to the Branch, a master plan update was required to validate current projects and to identify new business requirements. The objectives of the master plan update include:

- Business process analysis to determine opportunities for efficiency through the use of technology.
- Definition of technology support system projects, including prioritization and budget estimates.

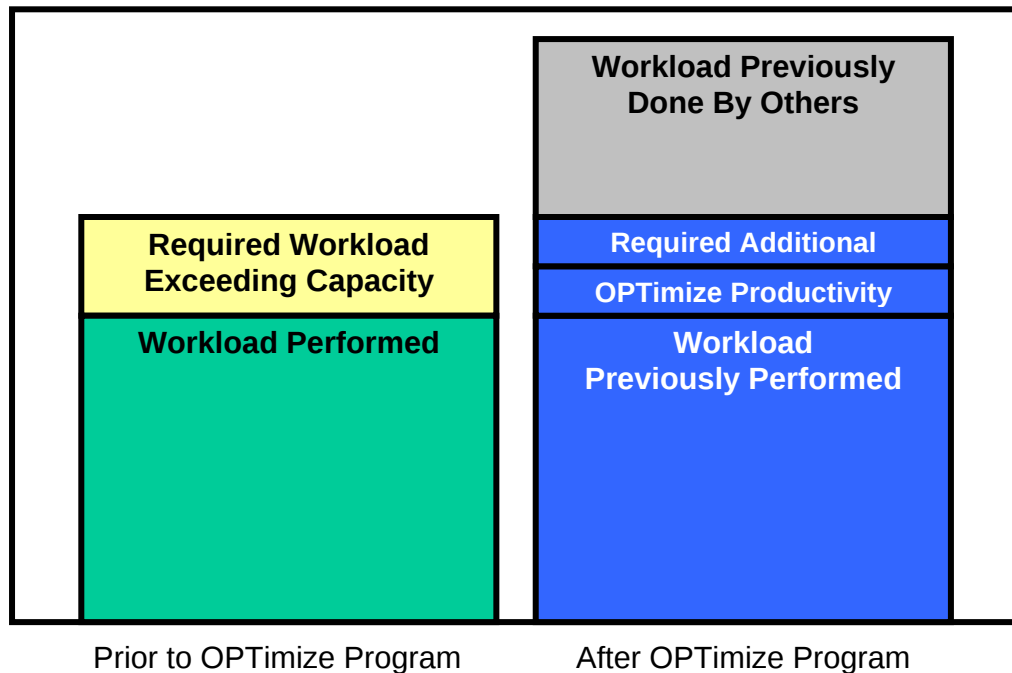
The update was initiated in October 2005 with workshops expected to continue until mid-December. Pending the completion of the Project Delivery Process (PDP), the ISMP update and the PDP will be coordinated to ensure integration of the projects. There are key technology touch points in the PDP that will need to be incorporated into the ISMP update. The ISMP update will have no impact on the 2006 budget.

5. FINANCIAL IMPLICATIONS

Costs and benefits were projected with the final report on the Phase 1 redesign in early 2004. The Phase 2 project was not awarded until the late fall of 2004; therefore, some of the initial projections have been pushed out into later years. The OPTimize Works program business case is essentially a comparison of the costs needed for implementing productivity improvements and adding staff against the benefits resulting from the productivity improvements (multi-skilling, flexible workers, program driven work) and the provision of additional services (asset management, compliance).

Prior to the OPTimize Works program, the Water and Wastewater Branch had difficulty delivering the 'Workload Performed' in an effective and sustainable manner. The shortfall in workload is illustrated by the 'Required workload Exceeding Capacity' segment in the left side of *Figure 1* below. The initial Operations and Maintenance Assessment identified a productivity gap of 10-16%. Productivity gains can be achieved by reducing the budget equivalent to the productivity gains or by increasing the amount of work completed. OPTimize Works is about implementing best practices for improved efficiencies that enable the redeployment of resources to deliver more of the required services (shown as 'OPTimize Productivity Benefit' on the right side of the chart in *Figure 1*).

Figure 1
OPTimize Business Case Elements



Implementing best practices activities such as preventive maintenance on infrastructure, long term infrastructure investment (asset management) and increased accountability reporting related to emerging legislation could not be made up by productivity gains alone. 'Required Additional Capacity' is needed to support these new and expanded services. Over the past two years, the Water and Wastewater Branch has taken on two significant services previously performed by the former Infrastructure Design and Construction (IDC) Branch (shown as 'Workload Previously Done By Others'). These services include the Water and Wastewater Planning and Capital Delivery of water and wastewater infrastructure projects. Staff and functions associated with these services were transferred to the Branch.

Benefits are derived from intangible items such as a reduction in manual work processes, eliminating instances of collecting erroneous data and eliminating the need to wait for parts. These intangible benefits mean that by improved efficiencies, the workers can spend their time performing other duties needed by the organization. Quantifying the saved time is the challenge in showing the benefits.

The benefits will primarily be derived from reductions in the growth of labour needs, improvements such as program driven work (away from reactive work) and increased use of technology. Opportunities for cost savings will be realized over time as the program is implemented. These savings are anticipated from:

- Improved automation and technology access – will help operators to access information when it is needed, reduce the number of field calls to verify or resolve alarms, and reduce overtime costs.
- Geographic hubs – shift from time spent driving to facilities to time spent at the facilities performing operations and asset maintenance activities and data analysis.
- Cross-trained operators – multi-skilled employees provide greater work force flexibility and allow employees to shift more readily to areas where their skills may be needed.

Costs for implementation of the OPTimize Works program include:

- Direct project costs – dedicating staff resources to the project team; consulting services and vendor resources (support for the work management system, SCADA).
- Organization costs –staffing adjustments for growth and ongoing support of best practices and training.
- Technology costs – hardware; software; program development.

A number of staff has been allocated to assist with the implementation of the OPTimize Works program at varying levels of effort. Other program costs include: implementing the Asset Management division, the cross-trained operations, the enhanced training program and the ISMP projects.

The cash flow projections for the first several years of the program are summarized in Table 2.

Table 2
OPTimize Works Program Implementation (\$1,000)

Item	2003	2004	2005	2006	2007	2008
Benefits						
Organization/Practices /Technology	0	126	776	2274	2792	3198
Subtotal Benefits	0	126	776	2274	2792	3198
Costs						
Organization/Practices /Technology	70	1366	1366	1256	1151	1051
Consulting	489	292	457	431	0	0
Subtotal Costs	559	1658	1823	1687	1151	1051
Cumulative Cash Flow	-559	-2091	-3138	-2551	-910	1237

The program's simple payback period is 5.5 years from the Phase 1 project start in 2003 with a continued cost savings thereafter associated with the residual benefits of maintaining a best practices environment. This represents a longer payback period that was initially projected (4.6 years) due to the delays that occurred during early 2005 with the Departmental Realignment.

6. LOCAL MUNICIPAL IMPACT

OPTimize Works is an overall efficiency improvement program aimed at York Region's water and wastewater services and products. The nine local municipalities that are the direct users of the services and products provided by the Water and Wastewater Branch will therefore benefit, resulting in increased value to the community and customers.

7. CONCLUSION

The OPTimize Works program implementation is underway. Delays to some activities due to the Departmental Realignment have subsequently presented opportunities to review the responsibilities of and the interactions between the Branch divisions. Implementation is expected to be complete by the fall of 2006.

The Senior Management Group has reviewed this report.

(The attachment referred to in this clause is attached to this report.)