

STAFF REPORT: ENGINEERING & PUBLIC WORKS DEPARTMENT



REPORT TO: Infrastructure & Recreation Committee
MEETING DATE: September 27, 2011
REPORT NO.: EPW.11.085
SUBJECT: Engineering Division Service Delivery Review
PREPARED BY: Reg Russwurm, Director of Engineering and Public Works

A. Recommendations

THAT Council receive Staff Report EPW.11.085 entitled “Engineering Division Service Delivery Review”.

B. Background

The Engineering Division is one of four Divisions within the Engineering and Public Works Department. The Division takes a support role to the operating divisions by providing engineering services and contract administrative coordination. The Division furthermore provides advice to Council regarding engineering, construction, development and related infrastructure matters.

Prior to 2005, all engineering services were provided by external consultants. For reasons of cost control and better coordination, the Town created the Engineering and Public Works (EPW) Department to internalise engineering services plus bring the water and wastewater services, public works and solid waste functions into one department under the supervision and coordinate of one Director. In addition to the Director, a Design Technologist and a Construction Coordinator were hired to provide engineering support.

The primary areas of responsibility for the Engineering Division are:

Development Review: Staff review development applications at all stages of the project. Concepts are reviewed for general conformance to the infrastructure requirements within the Town. Once the concepts have matured to the point where construction drawings are generated, the Division takes the lead on the technical review to ensure that all works are in accordance with the Town’s Engineering Standards. The conclusion of the technical review is stamping the construction drawings as “Accepted for Construction” (AFC).

Development Agreement Administration: Engineering Staff assist Planning and the Town's Solicitor in the preparation of the Subdivision, Condominium or Site Plan Development Agreements as the case may be by providing draft plan conditions, fee & security calculations, and drawing lists. After the Agreement is executed, Engineering Staff administrate the Agreement with support provided by Planning and legal counsel as needed. Staff ensure the works are constructed in accordance with the Agreement and the Accepted for Construction Drawings. This task includes actively monitoring construction activities, identifying outstanding work and deficiencies, issues certificates as the project achieves key goals, and establishing and processing security reductions.

Engineering Standards

Engineering Staff maintain the Town's Engineering Standards by which all road, stormwater, drinking water, wastewater, solid waste and third party utilities infrastructure is designed and constructed. Staff are continuously reviewing the document to ensure that it is current and provides the Town with industry best practices.

Asset Management and Coordination

In order to undertake reconstruction activities in a cost effective manner, all infrastructure within a road allowance should be assessed both individually and as a sum of the parts. Engineering Staff provide the coordination and link between the operating Divisions. The tangible capital asset process that the Town has recently completed lead by the Finance Department provides an excellent overview tool based on industry norms. Engineering Staff will assist with and provide that infield assessment that will judge the relative urgency of repair / replacement of the Town's infrastructure to minimise the overall project cost.

Project Management

Once a project is identified, Engineering Staff provide the managerial skills to scope, budget, coordinate, and administrate the project. Primarily for financial impact reasons, focused internal project management is becoming more important within municipalities. The quality of the final works and cost control is increasingly becoming a function of the internal project management and design oversight than it has been previously. As budgets become tighter for consultants and contractors, inexperienced people are being assigned to the project without the senior oversight that would be expected. A definite advantage of internal project management is that Staff have a higher sense of ownership than external consultants which results in decision making taking a longer term view of the implications of various alternatives.

Not all EPW capital projects are managed by the Engineering Division. For instance, the simpler and smaller projects are after managed by the operating division initiating the project. This decision depends on the resources available and knowing that the Engineering Division is easily available to provide advice and specialised skills as necessary. Projects that cross Divisions are as a practice managed entirely by the Engineering Division.

Contract Preparation and Administration

The Engineering Division provides contract preparation and administration services to the Department and the Town as a whole. This service includes preparing Requests for Proposals (RFP) to retain consulting engineers and quotations / tenders to procure services, goods and contractors. During the design phase, Staff ensure that the consultant completes the tasks outlined in the RFP within the quoted upset fee limit, and peer review the design for constructability, value and quality. The tender document is reviewed to ensure clarity of contract to minimise contractor disputes and maximise the quality of work. Contract Change Orders which modify the scope of work within a contract are attentively vetted to ensure the contemplated work is actually an extra to the Contract, the cost implications are appropriate, and the cost is appropriately assigned. All payment progress reports are carefully checked to ensure that no mistakes are made that result in over or under payment. Finally, the final project documentation is vigilantly reviewed so that when someone returns to this project, the Record Drawings and similar are correct.

In addition to the operating divisions in the Engineering and Public Works Department, these skills are utilised by other Departments. The work completed for other Departments can be for the entire project or only on an as-needed basis for specialised assistance and advice.

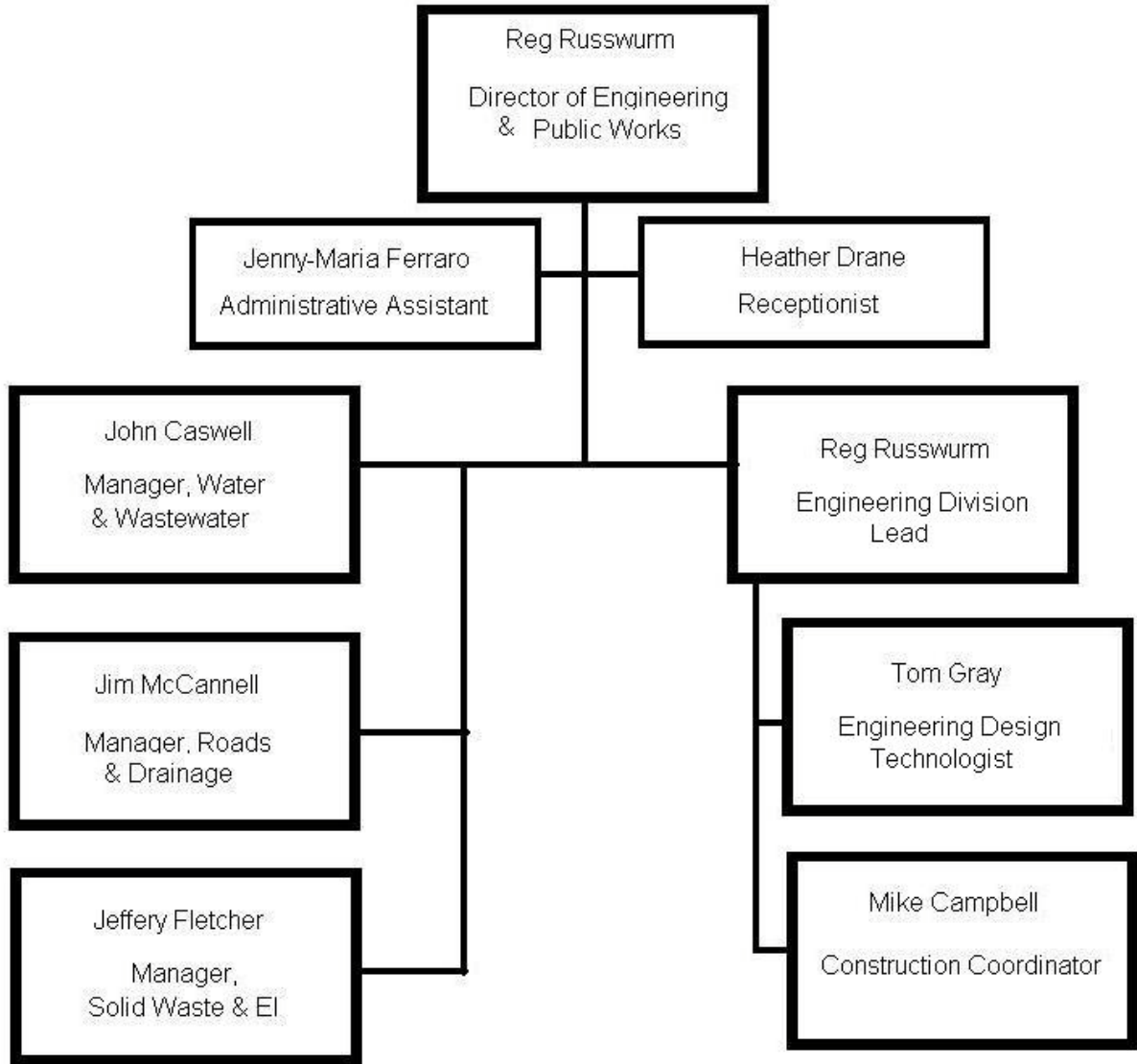
Department Administration

Overall departmental administration is carried within the Engineering Division budget for convenience. These costs include the Director, department administrative assistant and reception. The role of department reception is shared with the entire corporation in that the "Dial Zero" function of the Town's phone system is routed to the EPW receptionist with EPW administrative staff providing backup.

Divisional Structure

The Engineering Division is structured within the Department as a distinct division on par with the operating divisions as per the organisation chart provided on the next page. It should be noted that the Department Director acts also as the divisional manager. Although there are no immediate plans for a dedicated Manager of Engineering, should the Department grow in either people or responsibility; a Manager of Engineering will be warranted to provide the oversight and coordination necessary to appropriately manage the resources (capital and human) that are within the mandate of the Engineering Division, and to permit the Director the time to better carry on the functions expected of a large multi-disciplinary department.

Engineering Division Organizational Chart



Expenses

Salaries and Benefits amount to 80+% of the operating cost the Engineering Division while insurance amounts to 10+% (increasing to 12% by 2012). The remaining is divided between professional services and other operational costs like administrative, communication, training and travel, equipment, and vehicular. The above percentages have varied in the past due to staff vacancies and operating programs allocated to the division, however on average the percentages are a fair representation. Although the Town has a well rounded Engineering Staff, there is a need from time to time for specialised services to assist with development review. An allowance for professional services is carried with the Engineering Division operating budget to cover these costs that may be incurred - primarily for development review. A chart of actual and budget expenses is provided below for reference:

Expenses	2009 actual	2010 actual	2011 budget	2012 budget	2013 budget
Salaries and Benefits	\$387,083	\$407,793	\$416,713	\$430,835	\$442,300
Insurance	\$46,928	\$57,087	\$59,538	\$60,690	\$61,900
Professional Services	\$7,290	\$3,812	\$5,000	\$3,500	\$3,250
Other	\$22,916	\$26,444	\$27,136	\$22,015	\$22,396
Total	\$464,217	\$495,136	\$508,387	\$517,040	\$529,846

Revenues and Transfers

The Engineering Division recovers a portion of its operating cost from revenues. The primary revenue is the "Works Fee" collected at the time of execution of a development agreement. Other forms of revenue include an allocation for management of Development Charge projects and Construction Supervision.

Currently the Works Fee is 3.5% of the capital cost of the works installed by a developer. Typically, this fee ranges from 4 – 6% in most municipalities. Since Engineering Staff have multi-functional roles, it is difficult to ascertain the operating costs just due to development projects. To fill this information gap, Staff have kept time sheets for the past two years to quantify the amount of time spent on various activities within a development project. Unfortunately, developments take many years to unfold in the Town and therefore it will be a couple of years to get a fuller understanding of the time spent on specific projects. Revenues from Works Fee have proven to have been highly variable and unpredictable. The number of developments that are expected to execute an Agreement has tended to be overestimated and this revenue line has routinely not been achieved.

To avoid the situation where Staff have completed work and a development agreement never materialised, several years ago the Engineering Division initiated the collection of a Works Fee deposit to ensure that at least the majority of the cost of design review was being collected, and to place the revenue in the same year (or as near as possible) as to when the effort is expended.

Prior to the Town implementing a Works Fee as a percentage of capital in 2006, the Town forwarded the invoiced cost of external engineers to the development proponent for reimbursement. Once the Town created in-house engineering resources, this practice continued in that Staff recorded their time spend administrating pre-2006 developments agreements and forwarded invoices to the Developer. There are approximately 15 development projects for which the Town still collects revenue for on an hourly basis. In the event that the invoices go unpaid, the Town reduces the amount of securities returned to the Developer when a security reduction is completed.

The Engineering Division also receives 2% of capital spent on Development Charge projects within water and wastewater services. This fee is for the cost of project management related to growth driven projects. It is contemplated that in the next Development Charges Update scheduled for 2013, road based projects funded from Development Charges will also transfer a fee to the Engineering Division.

From time to time, Engineering Staff will take on the design and/or contract administration of projects that otherwise would have been assigned to an engineering consultant. This is done when there is some time available in Staff calendars. Two recent projects that were done internally was the contract administration of the Georgian View Estates Wastewater Service Extension and the design and administration of the Hester Street Parking Lot Improvements. The time spent is allocated out of the projects capital budget to the Engineering Division's operating budget based on time sheets. This same service is offered to other Departments. For example, Engineering Staff provided assistance to the Recreation Department for the Delphi Park Parking Lot Improvements.

In addition to revenue, the Division receives transfer from various project accounts and the operating divisions. The Division is operated as a "net zero" cost centre within the Department. That is, the net cost (expenses less revenues) is divided up among the operating divisions of the Department to reflect the fact that the Engineering Division provides supports to all EPW divisions. If all the operating divisions were tax based, this practice may not be necessary, but since water and wastewater are user rate systems, an appropriate allocation between taxation and user rate is warranted. The cost sharing calculation is based on the division's operating and capital costs as a proportion of the Department's overall operating and capital costs.

A chart of actual and budget revenues and transfers is provided below for reference:

Revenues and Transfers	2009 actual	2010 actual	2011 budget	2012 budget	2013 budget
Works Fee	\$71,906	\$65,837	\$125,000	\$80,000	\$80,000
Construction Supervision	\$14,486	\$34,968	\$7,500	\$5,000	\$4,000
Net Transfers	\$377,825	\$394,331	\$375,887	\$432,040	\$445,846
Total	\$464,217	\$495,136	\$508,387	\$517,040	\$529,846

Goals

The Division will continue to provide solid project management and contract administration in order to ensure the Town's infrastructure inventory has the lowest expected life cycle costs. In particular though, the Division plans to emphasise the following tasks over the next few years.

Engineering Standards: The Engineering Division plans to continue with a thorough review of the Town's Engineering Standards to ensure the document reflects best industry standards and is user friendly. This work will be done primarily internally as time permits with some expert advice provided by specialised engineering firms. As case in point, a local engineering firm has been retained to provide design guidelines to establish the rate of natural and manmade snowmelt off a ski hill. A review of the underlying principles of snow melt is being completed and extrapolated for compacted man-made snow. The same firm will be reviewing and provided industry best practice revisions to the stormwater management portion of the Standards.

Asset Management: The Town has completed an inventory of assets and has assigned the expected replacement timeline based on industry norms. The next step will be to do an engineering assessment to determine the infield condition of the various components of the infrastructure to better understand whether an asset is at its life's end and whether replacement is warranted. For example, when considering improvements to a road corridor, the relative condition of the watermain, sewers, third party utilities, sidewalks, lighting, and road structure should be determined to see if it is the best decision to completely reconstruct the road or only resurface the road to gain a few years so that the remaining life in the underground works can be maximised. Although this work is planned to be done internally, it is unclear if there will be sufficient time to do this work in a timely manner given other divisional priorities. Third party assistance may be required.

Engineering Scope of Work Assessment: To date the primary role of the Division has been to provide project management, design review and contract administration services. The undertaking of design and construction tender administrations has been assigned to consultants other than some small projects (i.e. Hester Street Parking Lot). The reason is that the Division lacks the staff resources to undertake larger projects.

It has become increasingly evident that the Town should investigate whether there are warrants to undertake larger projects internally for the reasons of quality improvements and reduced overall costs. Generally speaking, the mark-up on consulting staff is 2 to 2.5 times salary which permits some opportunity for the Town to undertake design activities internally to reduce the engineering fee portion of projects. Similarly, a rule of thumb is that engineering services are 12 – 15% of the cost of construction. Therefore, a typical construction project having a cost of \$2M will result in \$250,000 to \$300,000 being available to pay for staff resources for one year. This could equate to one engineer and two support people. Linear projects like road and underground reconstruction projects provide the most opportunity in this regard. Specialised projects like treatment plants and pumping stations would still require the expert knowledge of consultants. The counter argument to retaining internal project staff is the ability to easily defer projects without resulting in carrying overhead costs. Over the next year or two, Staff plan to explore the concept of expanding the Engineering Division to provide internal project staff, and to determine whether the idea results in a positive business case given the risk of over staffing.

C. The Blue Mountains' Strategic Plan

This report supports Strategic Plan Goal #6 "Providing a strong, well managed municipal government.

D. Environmental Impacts

None

E. Financial Impact

None

F. Attached

None

Respectfully submitted,

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