



MEMORANDUM

To: Mayor and Members of Council

From: Graham Seaman, Director of Sustainability & Asset Management

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Date: June 4, 2020

Re: Construction of the East Markham Works Yard at 10192 Ninth Line – General Committee June 1, 2020 Follow Up

RECOMMENDATION:

1. THAT the memorandum entitled “Construction of the East Markham Works Yard at 10192 Ninth Line – General Committee June 1, 2020 Follow Up” be received

PURPOSE:

The purpose of this memorandum is to provide more detail to Council regarding the reasons for the Phase 1 budget increase from \$7,040,000 to \$14,315,000 for the East Markham Works Yard (10192 Ninth Line), as requested at the General Committee meeting on Monday, June 1, 2020

BACKGROUND:

In June 2019 Council approved the purchase of the land (\$16M) at 10192 Ninth Line. The overall project to develop the site for City use was to be completed in three phases at an estimated cost of \$31,765,000 not including the land cost.

Council approved a Phase 1 budget of \$8,240,000 which includes Phases 1A and 1B. The remaining phases proposed were as follows:

Table # 1 – Original Budget June 2019

PHASE	DESCRIPTION	ESTIMATED COST
Phase 1A	10192 – 9 th Line Salt/Sand/Brine Storage, and Temporary Office Trailer	\$7,040,000
Phase 1B	555 Miller Salt Structures	\$1,200,000
Phase 2	10192 – 9 th Line Water Crossing, Permanent Snow Storage w/ Storm Water Management, Decanting Facility and Site Servicing	\$10,740,000
Phase 3	10192 – 9 th Line Storage, Permanent Office and Maintenance Space	\$12,785,000
	Total for all three phases	\$31,176,500

The Real Property Group had been monitoring land acquisition opportunities in east Markham for a Works Yard Facility based on certain key criteria to meet City operational needs (i.e., land size, catchment area (location), site configuration and developable area). Very little land inventory has been available in east Markham over the past few years. In early 2019, Real Property identified an “off market” site that met the criteria and acted opportunistically to approach the Vendor and negotiate a sale price to secure the property. The acquisition of this strategic asset was completed on July 29, 2019, based on a purchase price of less than \$300,000 per developable acre. Given the lack of land inventory and high demand, if the property were purchased today, the cost would be in the range of \$500,000 per developable acre. Given the subject property has approximately 56 acres of developable land, the City has achieved a cost avoidance of about \$11,000,000.

This parcel of land (10192 Ninth Line) is strategically located within the City’s boundaries to better deliver much needed services to the east and north portions of Markham. The map labelled Attachment 1 illustrates the difference in service levels with and without this facility. As well it shows how well positioned the site is in terms of location.

Given the East Markham Works Yard will be situated on 10 acres of the property, fronting onto 9th Line, the City is now presented with an opportunity to mitigate some of its future development costs. This could be done by seeking a partnership or tenancy arrangement on the back portion of the property (46 acres) with either the private or public sector having complementary use. This would permit the City to obtain a revenue stream while creating synergies with a compatible user. Another option could be to sever and sell the back portion of the property at some point in the future, if the City determines its long term needs can be met with the 10 acre front portion of the property. These proceeds could be a significant offset to some of the costs incurred in developing the East Markham Works Yard facility.

DISCUSSION:

The City of Markham has grown, requiring a second Works Yard in the eastern part of the city for the storage of salt, sand and brine to aid the Operations Department in improving the delivery of winter operations in a more efficient and effective manner. Achieving those service outcomes resulted in a service imperative that drove an accelerated project delivery schedule of 18 months from approval to completion.

Budget estimates in 2019 were developed based on a Needs Assessment Report by an external consultant in April 2017 without a preliminary design tailored to the specific site we acquired, but accounting for inflation. Budget estimates for construction are typically done at the end of the design process, which is normally done over the course of one year, with tendering, award and construction taking another one to two years more. Major facility capital delivery usually takes three years or longer.

The immediate service need, resulted in design, tender and award, construction, commissioning and operational status to be delivered in less than 18 months (June 2019 Council approval to December 2020 completion). In June 2019 the budget estimate developed allocated 10% to the unknowns (highlight in Table # 2), instead of the industry standard of between 50-80%, a Staff oversight.

Property acquisition due diligence and project management process changes already underway and will mitigate these issues in the future. Projects with significant unknowns during budget estimation will have more due diligence investigation, studies and reports before budget development. Additionally, through project development phases a healthy budget for unknowns should be recognized appropriately and adjusted down as a project moves from concept, to design, to construction award and completion.

Table # 2 illustrates the correlation between the progression of the design and cost to build, relative to the percentage or estimated dollars associated with the unknowns to produce the final cost estimate for the East Markham Works Yard. The budget estimate was developed at the concept stage (0% design complete), with very little to no design in place and a very high percentage of unknowns.

From the chart below you can see that as the design progresses (from 0% to 95%), the estimates become more accurate and the dollars/percentage allocated to the unknowns is reduced.

Table # 2 – Design Maturity, Unknowns and Estimated Cost

	% of Design Complete	\$ to build based on Design	\$ (%) for Unknowns Carried	Estimated Cost
Budget Estimate based on 0% design complete	0%	\$6,564,000	\$477,000 (10%)	\$7,040,000
Based on 50% design complete	50%	\$10,249,000	\$2,310,000 (18.3%)	\$12,559,000
Based on 95% design complete	95%	\$11,207,000	\$1,503,000 (11.8%)	\$12,710,000

Council approved a Phase 1 budget of \$8,240,000 which was split into 2 components.

1. Phase 1A at the East Works Yard - \$7,040,000
2. Phase 1B at 555 Miller - \$1,200,000

Staff was able to deliver Phase 1B at the end of 2019, for \$850,000 a savings of \$350,000 to aid in some of the cost increases of Phase 1A.

As the project progressed it became apparent that Phase 2 and 3 should be deferred to mitigate costs. At the same time it was recognized that some items from Phase 3 would need to be included in Phase 1 in order to produce a fully functioning stand-alone site.

These included a vehicle weigh scale and fuel system, and a larger office trailer to accommodate showers and mustering space. In addition, a requirement by York Region for a road widening for a left hand turn lane on Ninth Line was identified later in the process, further increasing the revised budget (refer to Table # 3 items 2-5). Resulting in a revised base budget with a \$1,000,000 increase from the original budget, A in Table # 3.

Table # 3 – Revised Base Budget 2020

ITEM	COMPONENT	BUDGET	DESCRIPTION
1	Council Approved Budget – June 2019	\$7,040,000	Phase 1A – 10192 Ninth Line East Markham Works Yard
2	Addition - Fuel System	\$350,000	Moved from Phase 3 to Phase 1, cost estimated based on recent similar work
3	Addition - Road Widening and Left Turn Lane	\$300,000	Regional Request
4	Addition - Vehicle Weigh Scale	\$207,000	Moved from Phase 3 to Phase 1, cost estimated by consultants
5	Incremental Addition - Office Trailer Changes	\$51,000	Muster room and Staff showers moved from Phase 3 to Phase 1
A	Revised Budget Total	\$7,948,000	Includes original budget and items from Phase 3 needed in Phase 1

Table # 4 illustrates the revised and updated budget for Phase 1A presented June 1, 2020 and includes the original budget, revised budget items and additional costs from site conditions or other areas.

Table # 4 – Revised and Updated Budget June 2020

ITEM	COMPONENT	BUDGET	DESCRIPTION
A	Revised Budget Total from Table # 3	\$7,948,000	Includes original budget and items from Phase 3 needed in Phase 1, plus turning lane
6	Addition - Salt/Sand/Brine Facility	\$2,880,000	Increase costs of structural foundation to support higher walls than anticipated due to soil conditions, grades, and increased lateral forces from salt pile loading. Increase in facility size (500m2) for loader movement.
7	Addition - Site Development	\$2,107,000	Site has significant grading needs (6m fall in both compass axis'). 2019 Budget assumed minimal grading, actual bid price is \$740k of this line. Additionally, internal roadways increased from 25% of site area to 40%.
8	Addition - Servicing (Electrical/Well/Septic)	\$634,000	Site servicing estimate for building and site electrical was undervalued.
9	Addition - Contingency/HST Impact/Consultants	\$746,000	Due to the increase in project costs, the HST impact, consulting fees, and contingency have increased.
B	Subtotal of Additions (Items 6-10)	\$6,367,000	Total increased cost
C	PHASE 1A PROJECT TOTAL C = (A+B)	\$14,315,000	

CONCLUSION:

In summary, the budget shortfall can be attributed to the following three components:

1. The original budget requirement was underestimated in that it did not account sufficiently for magnitude of “unknowns” given that the design was at the conceptual stage.
2. There was an increase in budget due to items that were moved from Phase 3 to Phase 1 to create a fully functioning works yard for the foreseeable future.
3. As the design progressed, new information regarding site slope and soil condition caused necessary changes to the building structural design, site development and grading, servicing, consultants and contingency which increased project costs.

Staff are already implementing a number of changes based on lessons learned in this project.