Deloitte.

Local Roads Reconstruction Program Design

Sturgeon County

May 12, 2017

Sturgeon County
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Contents

1. Glossary

Term or Abbreviation	Meaning
ADKAR	ADKAR is an acronym from the PROSCI ADKAR model that represents five outcomes an individual must achieve for change to be successful: awareness, desire, knowledge, ability and reinforcement
APEGA	Association of Professional Engineers and Geoscientists of Alberta
Construction Contractor	A firm contracted to reconstruct roads, based on the detailed design prepared by the Design & Construction Engineer
DB	Design-Build procurement method
DBB	Design-Bid-Build procurement method
Design & Construction Engineer	An engineering firm contracted to prepare detailed design & provide construction engineering services
Detailed Design	The phase during which detailed design and specifications are prepared for the bundle of Projects
Feasibility Stage	Stage where Preliminary Engineering and other planning activities are performed
Land Related Activities	Activities including but not limited to regular communication with landowners and making agreements and if necessary, land purchases, related to backslope, disturbed area compensation, temporary stock piles, trees in the ROW, correction of road alignments for safety and existing encroachment onto Sturgeon County lands, drainage issues, and other structures located in the ROW. (e.g.: mail boxes, gates, fences).
LOS	Level of Service
Local Roads Reconstruction Program	Reconstruction of 128 km of Local Roads through contracted services
MCA	Multi-Criteria Assessment
Preliminary Engineering	Activities performed during the Feasibility Stage, including identifying Land Related Activities, environmental permit

Term or Abbreviation	Meaning
	requirements, utility relocation requirements, and Reconstruction Alternatives for road segments.
Program	Local Roads Reconstruction Program
Program Engineer	An engineering firm contracted to perform Preliminary Engineering, annual Project prioritization, Project preparation in advance of the design and construction phase, and annual Project design and construction support.
Project	Individual road segment which is part of the Local Roads Reconstruction Program.
ROW	Right of way
Reconstruction Alternatives	The optimal technical approach to achieving the desired performance for a Project, which may include alternatives up to and including full reconstruction.

2. Executive summary

2.1. Introduction

Sturgeon County (the “County”) has engaged Deloitte LLP (“Deloitte”, “we”, “our”) to design the Local Roads Reconstruction Program (the “Program”), including assessing potential procurement methods, conducting preliminary organizational change impact assessment, and providing recommendations for the successful delivery of the Program.

2.2. Procurement methods

At the preliminary procurement method workshop it was agreed that Design-Bid-Build (DBB) and Design-Build (DB) procurement methods would be the best candidates to carry forward into the Multiple Criteria Analysis (MCA) and market sounding interviews. It was also agreed that engaging an engineering firm to undertake preliminary engineering activities during the Feasibility Stage is necessary, given the decision to deliver the Program through contracted services.

2.3. MCA

The MCA scoring shows that DB method offers benefits over DBB in terms of schedule and cost certainty and mitigation of design and construction risk due to the integration of designer and construction contractor, whereas the DBB procurement method is judged most beneficial in ensuring construction quality due to the control which the owner retains in this approach.

2.4. Market sounding

Market sounding with a number of engineering firms and construction contractors revealed an eagerness by all firms to engage with the Program with strong support for the DBB procurement method but little interest in the DB method. The engineering firms indicated concern that involvement in the Feasibility Stage might not allow them to participate further in the detailed design and construction work.

2.5. Conclusion

While the MCA suggests that the DB method is theoretically preferable to deliver the design and construction phases of the Program based on the inherent method attributes, the market sounding confirmed that there is not a market of willing DB service providers. This takes the DB approach off the table, and as a result, DBB is the only logical delivery method to pursue.

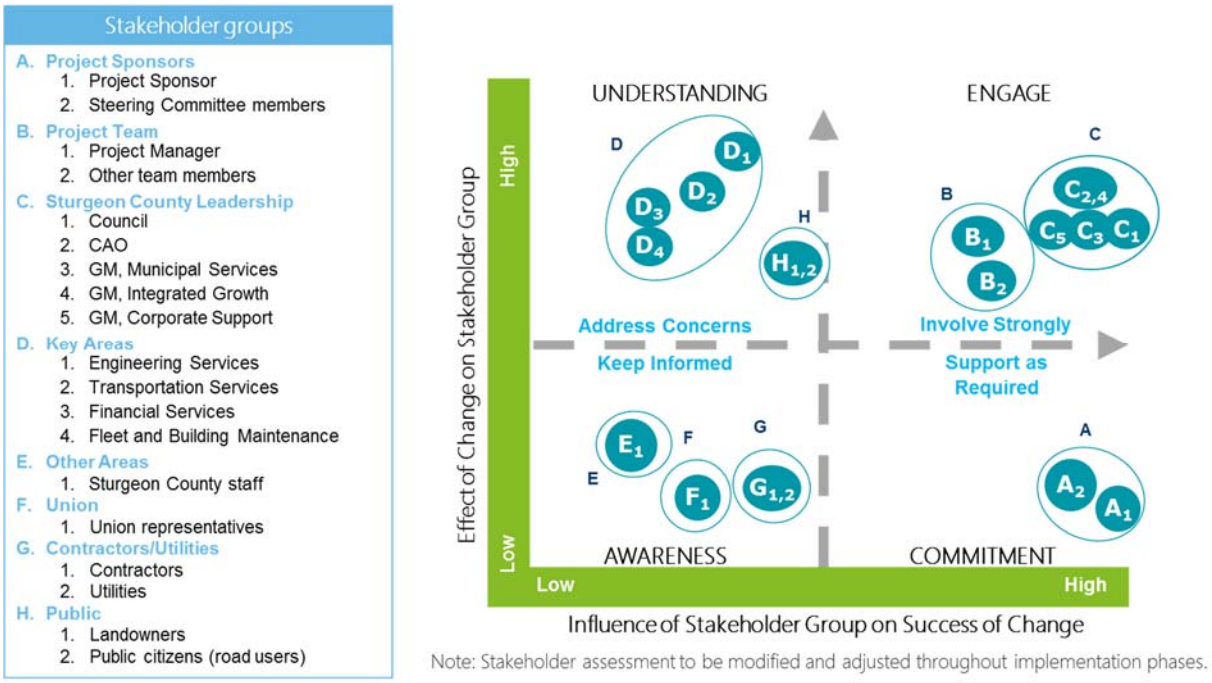
2.6. Change impact assessment

A preliminary change assessment was also conducted for the Program. Areas of change identified in our assessment include the following:

- Transportation Services Department ("Transportation Services") staff no longer assigned to Local Roads Reconstruction;
- Engineering staff to be working with or supervising new hires outlined by Program design;
- Prioritization of roads for reconstruction made available to the public;
- Increased engagement with utilities companies for relocating/protecting utilities; and
- Increased involvement with land owners for Land Related Activities.

From this assessment, it is our understanding that this change impacts a number of different stakeholder groups. Figure 1 below outlines the stakeholder groups that will be impacted by the changes associated with the Local Roads Reconstruction Program, and the overall influence and effect of change on each stakeholder group.

Figure 1: Stakeholder assessment mapping

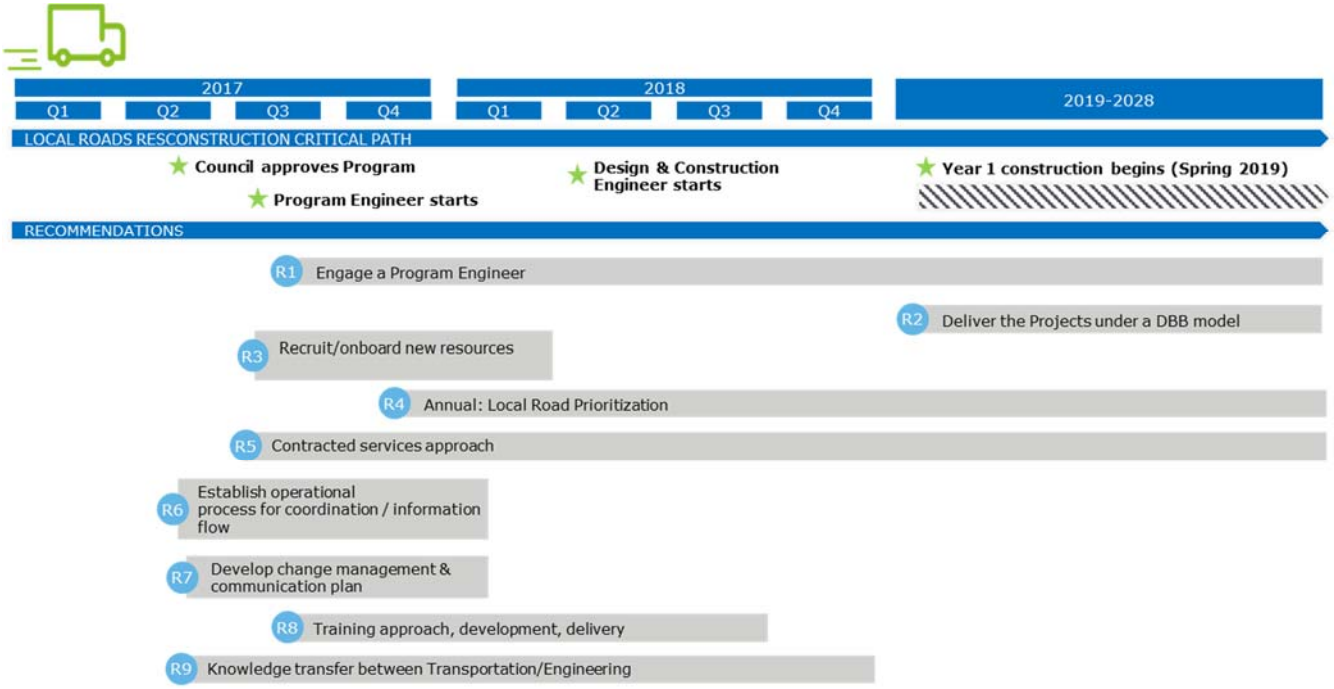


Note: Stakeholder assessment to be modified and adjusted throughout implementation phases.

2.7. Implementation plan

The County should underpin the overall Program with a Program Engineer under a professional services contract, and deliver the annual bundle of Projects through the DBB method which entails a Design and Construction Services Engineer under a professional services contract and a Construction Contractor selected by tender. Based on the results of the MCA analysis, insights obtained from the market, and the results of the change impact assessment, the County should consider a number of recommendations as illustrated in the roadmap in Figure 2.

Figure 2: Roadmap for implementation



3. Introduction

3.1. Local Roads Reconstruction Program

Sturgeon County covers more than 2,300 square kilometers of rural agricultural, industrial and residential land and is located close to several large urban centres. The County serves over 20,000 residents and is comprised of 38 townships (including partial townships), 185 kilometers (km) of secondary roads and 1,776 km of local roads (Refer to Appendix D – Local Roads layout).

The Engineering Services Department ("Engineering Services") provides engineering related services to all departments within the County. Engineering Services is comprised of 12 staff and is based out of the Engineering Services building in Morinville, Alberta. Engineering Services is comprised of four programs; Industrial and Commercial Development (one full time equivalent staff and one summer student), Residential Development (two full time equivalent staff), Capital Programs (five full time equivalent staff) and Operations Support (two full time equivalent staff) and one Engineering Administrative staff. The Manager of Engineering Services oversees all four programs.

The County has a vast network of existing gravel roads categorized as "Local Roads". These Local Roads are 8m wide, designed to accommodate only local traffic, typically less than 200 vehicles per day. The surfacing structure is generally gravel for rural roadways (Refer to Appendix E – typical Local Road cross section). Many of the gravel roads have flat cross slopes (crown), and were not constructed to meet the Level of Service (LOS) requirements of today.

In 2016 the County undertook a review of the Local Road Reconstruction Program (the "Program") which was operated internally through the Transportation Services to determine if construction should be maintained with the County resources or contracted services. The results of the review and the subsequent approval of Council has shifted the focus of the County to complete the Program through contracted services managed by the Engineering Services going forward.

The Program's objective is to reconstruct at a minimum 128 km of Local Roads over a 10 year period. The overall budget for the Program is estimated to be approximately $40M in 2017 dollars over a period of 10 years, with construction of the first annual bundle of Local Road projects anticipated to commence in 2019. The Program budget also includes an allowance for preliminary engineering activities during the Feasibility Stage, planned between 2017 and 2019.

3.2. Scope of work

The County has divided the Corporate Initiative of the Local Roads Reconstruction Program (the "Corporate Initiative") into three phases:

- **Phase 1**: Long-term visioning – contracting approach design and consultation – procurement process planning and design
- **Phase 2**: Procurement process execution – contracting – contract management – (Organizational Design/ Business Architecture for ongoing internal administration)

- **Phase 3**: Knowledge Transfer/ Training and Transition back to the County for Ongoing Administration

The County has engaged Deloitte to undertake Phase 1 of the Corporate Initiative. The scope includes development and design of the recommended implementation plan for how to conduct Phase 2 and Phase 3 of the Program. Actual implementation activities will not commence until after Council considers the implementation plan.

3.3. Approach

The following is the approach taken for the Phase 1 work:

- **Consultations and document review** – The procurement options were defined, and further refined jointly by Deloitte and the County through workshops and meetings. Deloitte reviewed the documents pertaining to all the initiatives undertaken by the County for the Program.

- **MCA analysis -** The Multi-Criteria Analysis was performed, comparing the procurement options on the basis of their qualitative factors considering cost differences, risk exposure differences, and the County's objectives and constraints as well as the results of the market sounding. Subsequently, we recommended one model to be carried forward for implementation.

- **Market sounding** - Eleven market sounding interviews were conducted by Deloitte throughout April 2017. In order to obtain an overall market perspective of the Program, market soundings were conducted with construction contractors and engineering firms.

- **Preliminary change impact assessment –** We examined the potential change and impact factors that need to be considered and accounted for in the Program implementation plan. We reviewed planned organizational structure changes (additional FTEs) for alignment with the preferred procurement strategy, and worked with the County (workshop and interviews) to conduct an initial assessment of process, people, and organizational/culture impact of the preferred procurement strategy recommendation.

- **Recommendations & roadmap for implementation –** Subsequently, a number of recommendations pertaining to procurement model and organizational change considerations were made, and a roadmap for implementation was developed. We also developed a timeline, demonstrating the sequence of Program activities between 2017 and 2028.

3.4. Limitations

This report was prepared for the exclusive use of Sturgeon County. No third party is entitled to rely, in any manner or for any purpose, on this report. Deloitte's services may include advice or recommendations, but all decisions in connection with the implementation of such advice and recommendations shall be the responsibility of, and be made by, Sturgeon County.

This report is based on the information, documents and explanations that have been provided to us and therefore the validity of any conclusions noted rely on the integrity of such information. This report relies on certain information provided by third parties, and Deloitte has not verified this information.

Deloitte was not engaged to, and did not perform, a financial statement audit, review or compilation engagement for the purposes of expressing an opinion on, or creating, historical financial statement in accordance with standards established by Chartered Professional Accountants Canada (CPA Canada), or any other regulatory body.

4. Procurement methods overview

4.1. Introduction

Sturgeon County needs to establish which type of procurement method is best suited to successfully deliver contracted services for the Program.

A preliminary procurement method workshop was held on 9th March 2017 with the intention of identifying the most suitable procurement methods to carry forward into a qualitative Multiple Criteria Analysis (MCA) and market sounding interviews. Table 1 lists the attendees at this workshop.

Table 1: Procurement methods identification workshop attendees

Attendees	Organization
Stephane Labonne	Sturgeon County
Brian Hartmann	Sturgeon County
Chris Pullen	Sturgeon County
Sara Arial	Sturgeon County
Chris Baisley	Deloitte
Arun Narayanan	Deloitte

At the preliminary procurement method workshop it was agreed that Design-Bid-Build (DBB) and Design-Build (DB) procurement methods would be the best candidates to carry forward into the MCA and market sounding interviews. It was also agreed that engaging an engineering firm to undertake preliminary engineering activities during the Feasibility Stage is necessary, given the decision to deliver the Program through contracted services. It was also agreed that the County must maintain ultimate control of the Program, including identifying and prioritizing Local Road Projects for reconstruction on an annual basis.

4.2. Program Engineer (Feasibility stage)

The Program envisions retaining an engineering firm during the Feasibility Stage, in the role of Program Engineer to conduct preliminary engineering for the entire 128 km of Local Road projects. As a minimum the Program Engineer will be expected to perform Preliminary Engineering, annual Project prioritization, Project preparation in advance of the design and construction phase, and annual Project design and construction support.

The Program Engineer procured through a professional services contract is a critical first step to implement the Program. The Program Engineering is not the subject of the procurement method assessment in this Section or of the MCA in Section 5.

4.3. Procurement methods selected for further assessment for the detailed design and construction component of the Program

Design-Bid-Build

This is the method traditionally used by the County for all types of projects. Under a DBB, the County will contract an engineering firm ("Design & Construction Engineer") to prepare detailed design & provide construction engineering services. The engineering firm will develop 100% design drawings and specifications. The method of selecting an engineering firm is typically done through an RFP with evaluation of qualifications and budget. Once the design is complete, the County will publically issue a tender package to be bid on by construction contractors. The Design & Construction Engineer will support the County in preparing documents for the construction tender, and in evaluating tender submissions. Typically, the contractor with the lowest price will be selected.

During the construction phase, the Design & Construction Engineer will oversee the activities of the construction contractor, perform quality assurance, and review payment applications and provide recommendations for payment.

Figure 3 illustrates the Contract structure, and Figure 4 illustrates the Reporting Structure for a DBB procurement.

Figure 3: Contract Structure - DBB

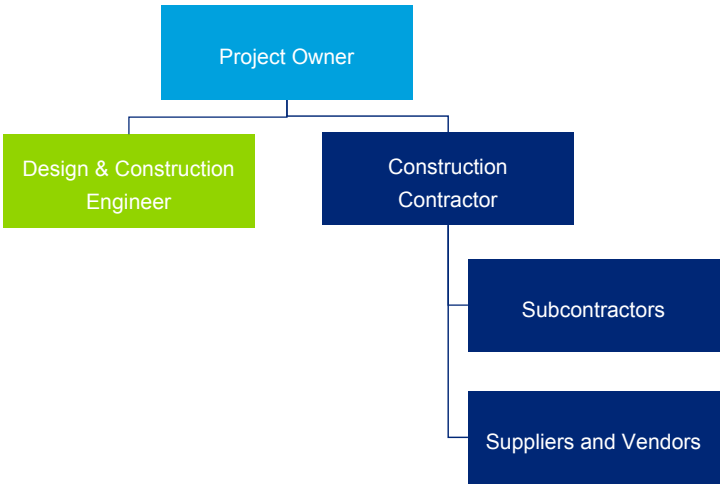
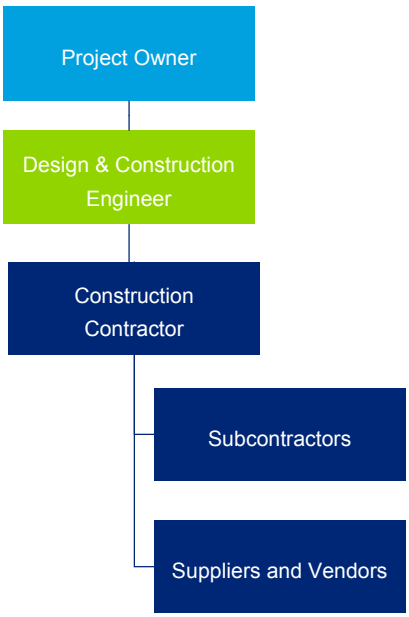


Figure 4: Reporting Structure - DBB



The County pays for design and construction services costs as they are incurred. Payment for construction would be made through progress payments to the contractor during the construction period. Performance by the contractor during the construction phase can be secured through performance bonds and limited construction warranties.

Under a DBB, there are a limited number of risks associated with the reconstruction of the local roads that the County may transfer to a private party. The County will be required to assume the remaining risks which are not transferable to a private party. In particular, design coordination issues that increase construction costs typically fall to the public sector under this delivery option. Table 6 below provides a summarized overview of the risk allocation associated with a DBB procurement method.

The DBB procurement method offers the project owner a number of advantages, the most pertinent advantages to the County include:

Table 2: DBB - Advantages

Advantages
• The County has control of design and extensive interaction with the design firm allow all requirements of the County to be incorporated into design prior to construction.
• DBB model allows for construction cost certainty to a limited extent. Design is complete prior to construction award allowing for greater clarity on quantities and construction cost.
• Greater control of scope and quality, and ability to adjust and respond to evolving Program risks.
• Familiarity with the delivery method

Characteristics of the DBB model which may be considered a disadvantage by the County include:

Table 3 – DBB - Disadvantages

Disadvantages
• Limited integration, collaboration and coordination due to separate and distinct detailed design and construction procurement sequencing: A DBB procurement method presents less opportunity for design and construction collaboration during the design and construction phases.
• Design and construction are sequential with the County contracting with different entities for each, resulting in longer schedules and loosing ability to “fast track.
• The County may be at risk for design errors, and construction cost overruns. Increased potential for changes and claims.

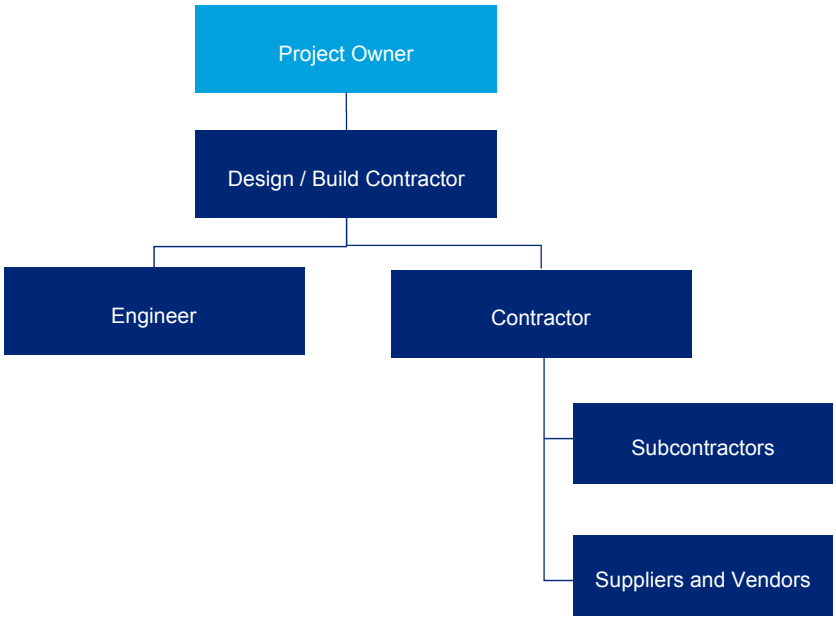
Design Build

This procurement method is an “alternative” model that involves selecting a design-builder based on a completion date and cost-certain price for design and construction of a Project. The competition would be based on a performance specification developed by the County’s Program Engineer. The procurement method is different from DBB in the following key ways:

- The County is responsible for developing a performance specification instead of detailed design and tender documents; and
- The competitive procurement process creates a competitive environment among the bidders for the best overall packaged design and construction solution.

Figure 5 illustrates the Contract/Reporting Structure for a DB procurement.

Figure 5: Contract/Reporting structure - DB



Payment for construction would be made through progress payments to the DB Contractor during the design & construction period. Performance by the DB Contractor during the construction phase can be secured through performance bonds and limited construction warranties. Alternatively payments can be based on milestones or at substantial completion which adds working capital and/or construction financing to the responsibilities of the DB Contractor.

The majority of design and construction risks are transferred to the DB Contractor, these include the risks of delays and cost overruns during both the design and construction phases of the project. Table 6 provides a summarized overview of the risk allocation associated with a DB procurement method.

The DB procurement method has the following advantages from the perspective of the County:

Table 4: DB - Advantages

Advantages
• Reduced risk of project cost over-runs: Fixed price contracts for design and construction transfer the risks associated with capital cost overruns to the private party, and provide the public sector with cost certainty.
• Schedule certainty as payments are tied to achieving milestones or substantial completion.
• Efficiency in bundling: “Bundling” the design and construction roles into one contract with one private party has efficiencies including: a reduction in design coordination issues and strong incentives to design a Project in a manner which can be constructed efficiently.

That being said, there are also disadvantages associated with a DB procurement method including:

Table 5: DB - Disadvantages

Disadvantages

- Higher planning costs: A DB procurement process typically requires the County to engage technical and legal advisors to assist in the development of the procurement documents (Request for Qualifications and Request for Proposals), along with the design-build contract.
- No control for the County over design once contract awarded.
- Reduced control of construction / quality for the County, once contract awarded.
- Design changes initiated by the County after the award of contract are costly.
- No County familiarity with the delivery method.

Risk allocation summary

The table below provides a high level overview of the project risk allocation for each of the phases which an infrastructure project is expected to undergo throughout the lifecycle of the project. From this high level overview it is clear that a DB procurement method allows for a significant amount of risks to be transferred to a private party, while under the DBB procurement method the project owner is limited in their ability to transfer project risks. However, the DBB procurement provides the project owner with greater control over the scope, design, and quality of construction.

Table 6: High level risk allocation per procurement method

	DBB	DB
Design	Shared	Private sector
Construction	Shared	Private sector
Maintenance	Sturgeon County	Sturgeon County

In both methods, the County remains responsible for the long term maintenance and rehabilitation of the reconstructed roads.

5. Multiple criteria analysis

5.1. Introduction

The Multiple Criteria Analysis (MCA) is a qualitative assessment of delivery methods based on a number of criteria that are aligned with the program objectives or desired outcomes of a project.

5.2. Evaluation process

Each of the evaluation criteria shown in Table 9 below were individually assessed for both the procurement methods and measured against the framework shown in the Table 7. MCA assessment was performed only for the DBB and DB procurement methods, and not for the Program Engineer role.

Table 7 - MCA evaluation framework

X	✔	✔ ✔	✔ ✔ ✔
Model fails to meet basic requirements of the Program and the County.	Minimally meets requirements of the Program and the County.	Adequately meets the requirements of the Program and the County.	Provides a highly efficient and effective delivery solution for the County or the Program.

5.3. Evaluation criteria

The MCA evaluation criteria shown in the table below were identified as being the most relevant to the Program. The MCA workshop did not attempt to weight or score the criteria for the following reasons:

- It is difficult for the criteria weighting to reflect the nuances that may exist in the qualitative MCA discussion. A single number simplifies the process too much and does not adequately meet the need of the MCA;
- The weights and scores assigned are subjective in nature and any potential bias would be reflected in the final number. A qualitative approach can easily communicate the factual pros and cons of the model; and
- Weighting the relative importance of criteria removes flexibility in reaching a decision. Decision-makers likely have different priorities, and the qualitative MCA process is sufficiently flexible to allow them to evaluate the relative importance of the criteria on their own.

Table 8 – Evaluation criteria

Evaluation criteria
Schedule certainty (Timely completion)
Maximize capital cost certainty

Construction quality
Minimize resource implication for Sturgeon County
Environmental and safety
Design and construction risks

5.4. Procurement options assessment

Schedule certainty (Timely completion)

Ability to complete the Project in a timely manner and in accordance with the schedule for the procurement model.

DBB	Under a DBB model, design firm and the construction contractor are separately contracted resulting in less integration between the design and construction phases of the Program. The County will retain a substantial portion of the schedule risk associated with the design phase of the Program, with only a modest level of schedule risk likely to be transferred during the construction phase.	✔ ✔
DB	Under a DB model a single RFQ and RFP process is undertaken to select a suitably qualified consortium that is responsible for all elements of the design and construction requirements. This typically results in better integration between the design and construction phases of the program, with the outcome of a faster overall construction schedule. Through the contract, the County will typically transfer a significant portion of the schedule risk to the private party, and where schedule certainty is required for the successful implementation of the Program, significant penalties for late completion can be included in the terms of the contract.	✔ ✔ ✔

Maximize capital cost certainty and cost savings

Does the procurement approach provide a level of construction cost certainty?

DBB	Under a DBB model, the relative ease of making design/scope changes allows the County a greater ability to initiate change orders, causing greater risk associated with project cost certainty and control.	✔
DB	As part of the RFP process, while under competitive tension, the proponents will bid a maximum price for the design and construction of the Program. The County will have lesser control over the design, limiting the possibility of owner initiated changes and thereby providing more cost certainty. The DB competition tends to result in lower capital cost, although for a simple asset such as the Local Roads, this may not be the case.	✔ ✔

Construction quality

Does the procurement approach maximize the counterparty's responsibility to provide robust oversight and quality management?

DBB	Under a DBB procurement model, the County would appoint an engineering firm to develop the designs for the road, meeting the construction standards required by the County. The engineering firm is then responsible for reviewing the work performed by the contractor thus ensuring that the construction contractor builds the roads to the required standards.	✔ ✔ ✔
DB	Under a DB procurement method, the preferred proponent is selected on price. This usually results in the contractor pricing the construction work as affordable as possible in order to be competitive. During the construction phase the contractor is primarily concerned about achieving all the requirements stated in the RFP as opposed to the quality of the construction work performed.	✔

Minimize resource implication for Sturgeon County

Does the procurement approach minimize the need to recruit additional County staff?

DBB	Under a DBB model, the engineering firm and construction contractor are separately contracted. The County or the Program Engineer will be required to review and sign off on all of the elements of the design. The Design & Construction Engineer will review and sign off on the work performed by the contractor.	✔ ✔
DB	Under a DB model, the Program Engineer has additional responsibility for developing the specifications which the project should meet and ensuring that the design of the Local Road projects and the construction work performed by the winning consortia meets the specifications. The County still needs to be involved to review and approve payment applications, and change orders, if any.	✔ ✔

Environmental and Safety

Does the procurement approach mitigate any environmental or safety requirements?

DBB	Under a DBB model, the County have better control over enforcing environmental or safety requirements. The Design & Construction Engineer will oversee the performance of the contractor during construction, ensuring that environmental and safety requirements are met.	✔ ✔ ✔
DB	Under a DB model, the County would require the consortium of engineering and construction firms to meet environmental and safety requirements as part of the project agreement throughout the construction period.	✔ ✔ ✔

Design and construction risk		
Does the procurement approach mitigate integration risk between design and construction that can cause cost or schedule overruns?		
DBB	The County engages with both parties though separate contracts and there is no contractor involvement during the design development stage.	✔ ✔
DB	The County engages with a design-build consortia, where the engineer and contractor work together as one team throughout the project, mitigating any potential integration issues.	✔ ✔ ✔

5.5. Conclusion

The MCA scoring shows that DB offers benefits over DBB in terms of schedule and cost certainty and mitigation of design and construction risk. If there was a ready market of service providers willing to team up into Design-Build consortiums to pursue DB competitions for each year's Project bundle, then DB would be a clear choice, assuming quality concerns could be alleviated through the DB specifications by making them more prescriptive.

Table 9 - MCA scoring

Evaluation criteria	DBB	DB
Schedule certainty (Timely completion)	✔ ✔	✔ ✔ ✔
Maximize capital cost certainty	✔	✔ ✔
Construction quality	✔ ✔ ✔	✔
Minimize resource implication for Sturgeon County	✔ ✔	✔ ✔
Environmental and safety	✔ ✔ ✔	✔ ✔ ✔
Design and construction risks	✔ ✔	✔ ✔ ✔

6. Market sounding

6.1. Background

Market soundings interviews have been conducted with the private sector in order to assess market interest in participating in the Program and the most appropriate procurement model for the Program.

Market soundings provide an opportunity to discuss and understand the views of the participants on issues associated with a project of this type, including, but not limited to: preferred delivery models (traditional vs alternative delivery model); the market's capacity to take on the project; and high level risks associated with the Project.

Market soundings are essential in determining private sector support for a project and can play a key role in identifying the appropriate procurement model through which the project should be delivered, however, the feedback should be considered in the context of whom it is received from.

Important features of the market sounding process include:

- The consultations were conducted on a confidential, non-attributable basis;
- Background information and consultation questions were provided to the participants prior to the date of the consultation in order to increase their understanding of the project; and
- The consultations were conducted via teleconference.

6.2. Participation

Eleven market sounding interviews were conducted throughout April 2017 with construction contractors and consulting engineers. Table 10 below provides a list of the participants who participated in the market sounding interviews.

Table 10 - List of market participants

Participant	Participant type
Opus SW	Engineering firm
ISL	Engineering firm
Sameng Inc.	Engineering firm
AECOM	Engineering firm
G&J Lot Maintenance	Construction Contractor
O'Hanlon Paving Ltd.	Construction Contractor
Heavy North	Construction Contractor

Carmacks Enterprises Ltd.	Construction Contractor
Petrowest Construction LP	Construction Contractor
M.A.P Earthworks Ltd.	Construction Contractor

6.3. Summary of responses

The following section summarizes the key insights provided by the market sounding participants. The questions used to guide discussions during the interviews are included in Appendix B.

Overall Program

- **Program complexity:** All of the market participants felt that this Local Road Reconstruction Program is not particularly complex; however, Land Related Activities, stakeholder management, environmental aspects (etc. bird nesting) and proper program planning may introduce complexity to this Program.
- **Program risks:** A number of potential program risks were identified by the market sounding participants including risks associated with Land Related Activities, soil conditions, including bringing in borrowed soil, current condition of the roads including water drainage and road shoulders, and environmental considerations such as bird nesting seasons and water bodies.
- **Resource commitments from the County:** The market participants believe that it is extremely critical that the County set aside dedicated budget for the Program in order to successfully deliver the Program in a timely manner. The participants also believe that the County should also assign a dedicated resource for managing the overall Program and be the County's representative in interacting with the private sector. The market participants also highlighted the importance of having a dedicated County resource to undertake Land Related activities.

Program Engineer role (Engineering Firm)

- **Importance of preliminary engineering**: Most participants agreed that it is a good idea to do preliminary engineering for the entire Program; the reason given is that all the obstacles which could potentially delay the Program such as Land Related Activities, utilities and permitting issues, could be identified and managed proactively through preliminary engineering.
- **Prioritization:** The majority of market participants indicated that that they would be able to facilitate the prioritization of projects. The prioritization of the Program needs to take place and most of the consulting engineers would be able to support the County in evaluating and prioritizing the road segment for reconstruction.
- **Fee structure:** Majority of market participants interviewed indicated that they would require an hourly fee for preliminary engineering services. One participant stated that they would be willing to do a fixed fee only if the scope of the preliminary engineering was properly defined.
- **Duration:** Some of the engineering firms thought that all preliminary engineering activities could be completed within a two year period; while some of them were not ready to provide a definitive answer.
- **Precluding Program Engineer:** The majority of market sounding participants indicated that if the Program Engineer role precluded them from participating in the subsequent DBB or DB procurements they may not be interested in the Program Engineer role. Some participants indicated that they would need to consider the scope of the Program Engineer role before making a decision.

Design-Bid-Build method (Engineering firms)

- **Interest in the Program**: All of the market sounding participants were extremely interested in participating in the Program if it came to market as a DBB. Most of the participants indicated that this (i.e. Design & Construction Engineer) would be their preferred role.
- **Duration & capacity**: Most of the market sounding participants indicated that it would take anywhere between 6-8 weeks and a couple of months to do the detailed design for 12.8km of road. All of the market sounding participants indicated that they would have sufficient capacity required to deliver the detailed design and construction engineering services required for the 12.8km of road every year.
- **Construction engineering services:** All of the market participants indicated that they are willing and able to support County throughout the tendering process, construction contract administration and to ensure construction quality.
- **Fee structure:** Majority of market participants interviewed indicated that they would require an hourly fee for detailed design and construction engineering services.
- **Term of the contract:** Majority of market sounding participants are flexible and could accommodate any time period; however, most would prefer a longer contract term (3 years plus a 2 year extension). In addition most of the participants indicated that they would require a yearly review or escalation factor applied to the hourly rates.
- **Advantages of DBB method:** The DBB procurement method provides the County a lot of flexibility and control over the Program. If required the County could change the individual Projects included in an annual bundle mid-year, e.g. as a result of Land Related Activities not being completed on time.

Design-Bid-Build method (Construction Contractors)

- **Interest in the Program**: The market sounding participants were extremely interested in participating in the Program if it came to market as a DBB.
- **Duration & capacity**: The market sounding participants all indicated that 12.8km of road per an annum was easily achievable and that most could do double that amount each year.
- **Fee structure:** The market sounding participants will provide unit rates for the various construction activities at a granular level and prepare bids per the quantities included in the tender document.
- **Term of the contract:** The market sounding participants indicated that they are flexible in terms of tendering for the annual construction bundles. Some participants would like construction bundles for 2-3 years and which allow for fuel and labour escalation adjustments.
- **Advantages of DBB model:** The market sounding participants believe that the County will have better control over the Program under a DBB model.

Design-Build method (Engineering firms)

- **Interest in the Program**: All of the market sounding participants indicated that they would be interested in a DB procurement, although their interest is likely to be significantly less than that for a DBB procurement.
- **Duration & capacity**: All of the market sounding participants stated that it would be possible to complete the design and construction of 12.8km of road each year.
- **Fee structure:** Typically DB procurements are priced on a fixed fee basis. Majority of the market participants believe that there are lot of unknowns at this stage and hence they are not willing to provide a definitive opinion on the fee structure under a DB model for the Program.
- **Term of the contract:** Most market sounding participants indicated that it was not possible to price more than one annual DB bundle due to the changes in conditions from one bundle to the

other; however, some market participants interviewed felt that if adequate geotechnical studies are performed during the Feasibility Stage of the Program then it may be possible.

- **Advantages of DB model:** The majority of the market participants felt that it was possible for a DB procurement to result in a faster design and construction process. A DB procurement package will have less of a burden on County staff.

Design-Build method (Construction Contractors)

- **Interest in the Program**: All of the market sounding participants indicated that they would still be interested in the Project as a DB procurement; however, their level of interest is much lower compared to a DBB model.
- **Duration & capacity**: All of the market sounding participants stated that the design and construction schedule was easily achievable under a DB.
- **Fee structure:** Typically DB procurements are priced on a fixed fee basis, the market sounding participants think that it would be extremely risky to go with a fixed fee approved. This can be construed as a lack of interest in the DB method for which a fixed price basis is fundamental.
- **Term of the contract:** Most market sounding participants felt that it would be difficult (and more expensive) to price more than one annual DB package.
- **Advantages of DB model:** Most market participants felt that a DB procurement would result in a faster design and construction timeframe.

6.4. Conclusion

Both the engineering firms and the construction contractors that participated in the market sounding exercise for the Program expressed strong support for a DBB procurement method with a duration of between three and five years and which allowed for an annual escalation or adjustment factor. This response was expected as DBB is the procurement model that these firms routinely deal with, especially the construction contractors. The desire for longer-duration arrangements is a desire, not a requirement.

The market sounding revealed that there is no strong interest in the DB model. This response was expected, given the small size of the opportunities that each year's Projects offer, and the cost of engineering-contractor teaming that is needed to pursue DB opportunities.

7. Recommended delivery model for annual bundle of Projects

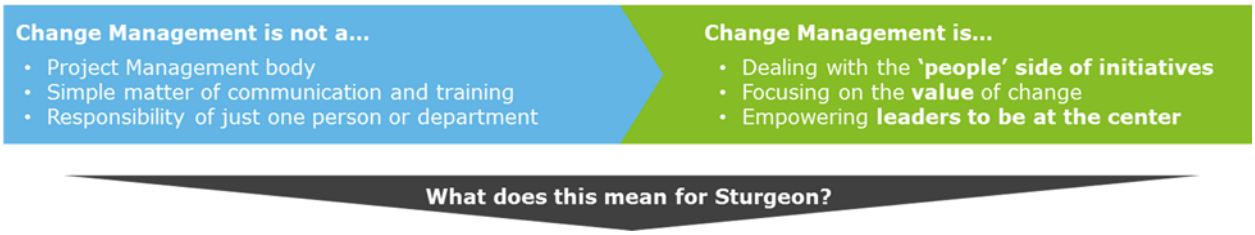
7.1. Conclusion

While the MCA suggests that the DB method is theoretically preferable for annual Project execution based on the inherent method attributes, the market sounding confirmed that there is not a market of willing DB service providers. This takes the DB approach off the table, and as a result, DBB is the only logical delivery method to pursue.

A number of recommendations for the County's consideration are included in Section 9 of the report.

8. Change impact assessment

8.1. Introduction



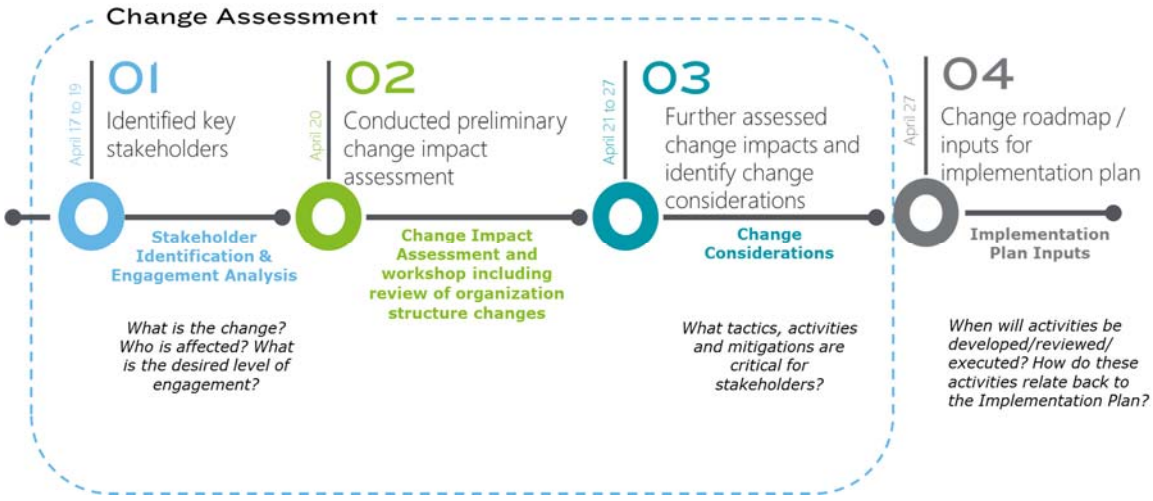
For the Program to be successful, employees need to be willing and able to adopt the new changes. To help employees adopt and to ensure appropriate level of public engagement, a change management plan and approach with clear, concise, action-oriented and outcome focused activities will be critical.

A successful Change Management approach will result in:

8.2. Change impact assessment approach

We focused on conducting a preliminary change impact assessment and providing change management considerations/recommendations as it relates to the implementation/design plan for the Program. To form this assessment, three key activities where conducted and are outlined in Figure 6.

Figure 6 – Change impact assessment approach



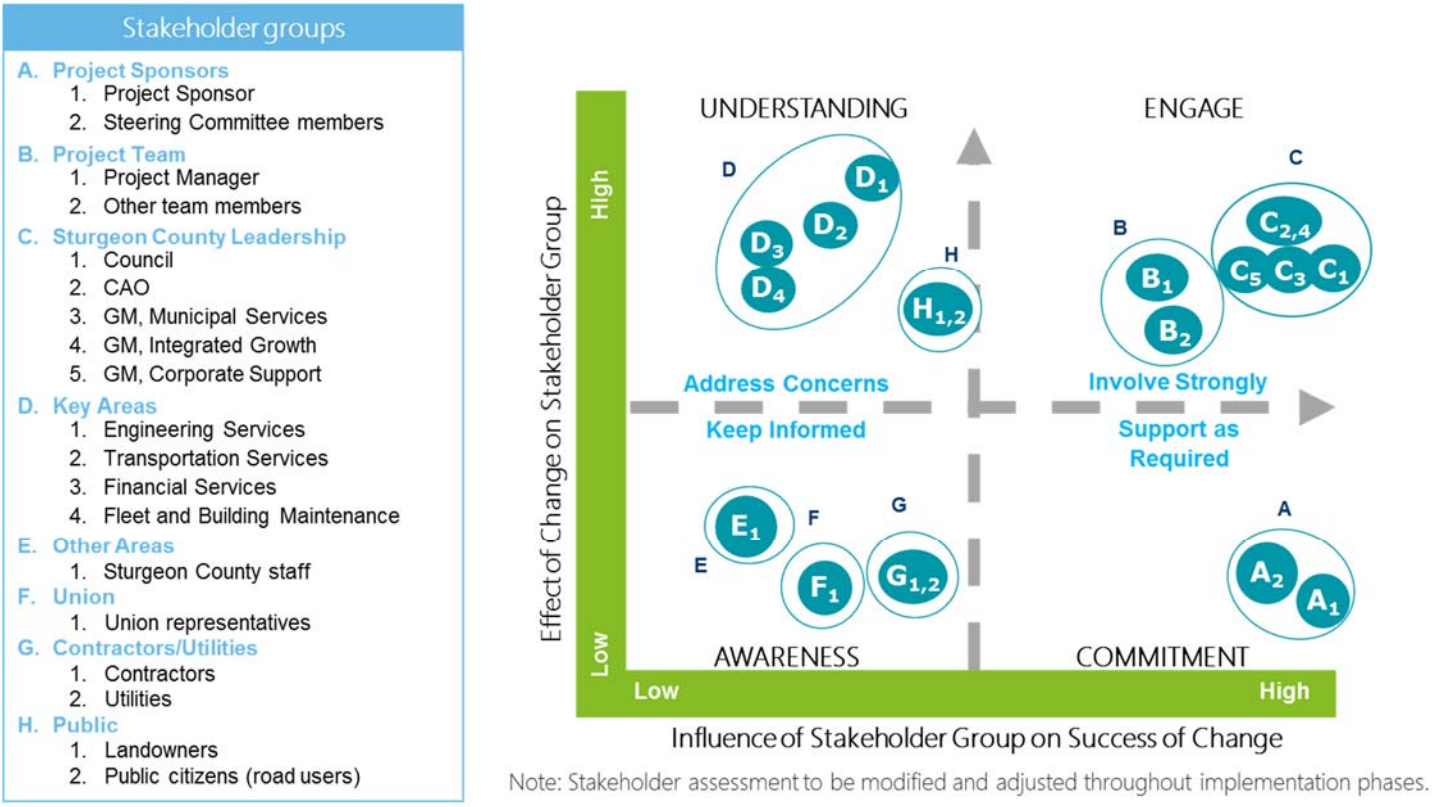
8.3. Change assessment – stakeholder identification & engagement analysis

Table 11 and Figure 7 below outlines the stakeholder groups that will be impacted by the changes associated with the Local Roads Reconstruction Program, and the overall influence and effect of change on each stakeholder group.

Table 11 – Stakeholder assessment table

Stakeholder group	Sub-Groups	Influence of Stakeholder Group (High, Medium, Low)	Effect of Change on Stakeholder Group (High, Medium, Low)	Desired Level of Involvement
A. Project Sponsors	• Project Sponsor • Steering Committee members	High	Low	**Commitment**
B. Project Team	• Project Manager • Other team members	High	Medium	**Engaged**
C. Sturgeon County Leadership	• Council • CAO • GM, Municipal Services • GM, Integrated Growth • GM, Corporate Support	High	Medium	**Engaged**
D. Key Areas	• Engineering Services • Transportation Services • Financial Services • Fleet and Building Maintenance	Low to Medium	High	**Understanding**
E. Other Areas	• Sturgeon County staff	Low	Low to Medium	**Awareness**
F. Union	• Union representatives	Medium	Low	**Awareness**
G. Contractors / Utilities	• Contractors • Utilities	Low	Low to Medium	**Awareness**
H. Public	• Landowners • Residents (road users)	Medium (some may be low)	Medium to High (some may be low)	**Awareness / Understanding**

Figure 7 – Stakeholder assessment mapping



Note: Stakeholder assessment to be modified and adjusted throughout implementation phases.

Table 12 below outlines the impacted stakeholder group's current change readiness levels as it relates to ADKAR (awareness, desire, knowledge, ability and reinforcement). Results suggest that additional awareness and level setting is required as well as targeted change management activities in order to be successful with this Program. Given we are early in the Program, the results are not surprising and should be revaluated throughout the Program. In addition, further assessment would be required to validate the accuracy of the information below with the particular stakeholder groups.

Table 12 – ADKAR Current state assessment

Stakeholder group	Sub-Groups	ADKAR Current State Assessment				
		Awareness	Desire	Knowledge	Ability	Reinforcement
A. Project Sponsors	• Project Sponsor • Steering Committee members	✓	✓			
B. Project Team	• Project Manager • Other team members	✓	✓			
C. Sturgeon County Leadership	• Council • CAO • GM, Municipal Services • GM, Integrated Growth • GM, Corporate Support	✓	✓			
D. Key Areas	• Engineering Services	✓	✓			
	• Transportation Services • Financial Services • Fleet and Building Maintenance	✓				
E. Other Areas	• Sturgeon County staff	**Some**				
F. Union	• Union representatives	✓				
G. Contractors / Utilities	• Contractors • Utilities	✓	✓			
H. Public	• Landowners • residents (road users)	**Some**				

Stakeholders have been divided into three core categories for engagement analysis: **Leadership** (Project Sponsor, Steering Committee, and Council), **Transportation / Engineering** and the **Public / External Stakeholders**. Below is a summary of the current analysis completed on these stakeholder categories:

Leadership	Engineering / Transportation	Public Residents / Land owners
• Currently leadership support is assumed (aware and desire for the change) around the big picture (outsourcing of Local Road Reconstruction and the responsibility of the function transitioning into Engineering) • While the degree of leadership alignment and overall support is assumed, 1:1 discussions have not occurred to assess degree of sponsorship support. Further understanding and interviews should be conducted to validate leadership alignment and support, specifically around process and overall program design/implementation plan as the program progresses • **Council:** There is a sense from Council that outsourcing will improve the QA/QC management, resulting in improved roads for the public. This expectation will need to be managed/monitored closely	• **Engineering:** Supportive, recognize the issues and that Local Road Reconstruction will become a core part of the Engineering Services delivery model • Not sure extent of the change and impact it will have to workload • **Transportation:** Supportive, however mix of desire as some staff are unclear what the extend of outsourcing may become in the future and how that may impact their day to day jobs/role within the County • **Overall:** Clear and consistent processes should be developed that visually articulate how each role and department fits into new/changed processes for Local Road Reconstruction and how information will flow between the departments annually and on a day to day basis (including ad hoc / unplanned events impacting residents and road maintenance plans)	• **Public:** Some public may be more aware than others. Overall, public has a vested interest in the final product. While they are supportive of the transition of services outside of the County, expectations are high and the final product will dictate level of support. County will need to manage/monitor expectations and standards to provide confidence to the residents that the right decision was made to outsource services. Given that some errors in Local Road Reconstruction may not be evident for 1-10 years, it will be important to maintain ongoing quality control and level of engagement with the public residents • **Land owners:** Some land owners will be impacted more significantly than others. Close stakeholder engagement and interaction will be required in order to have satisfied parties/support from land owners and minimize negative public relations for the County

What does this mean for Sturgeon?

The County needs to:

- Assess and continue to assess/monitor leadership alignment to ensure leaders are supportive or change champions;
- Provide more information to Transportation Services and Engineering Services and establish clear processes, roles and responsibilities between the two groups;
- Establish baseline level of awareness with the public and land owners; and
- Overall establish change readiness/monitoring activities (i.e., regular assessments to monitor/track change adoption progress and monitor/manage expectations both internally (with staff) and externally (with public).

8.4. Change assessment – preliminary change impact

Change impacts were assessed across major areas of change, as well as by individual employee for highly impacted areas. Information gathered was validated by the respective highly impacted senior management. While this information serves as a baseline understanding of the magnitude of change, impacts should be monitored and reassessed on an ongoing basis and more information will be learned and/or changed throughout the design and implementation of the Program. Changes are assessed using a change impact assessment criteria shown in Table 13 .

Table 13 – Impact assessment criteria

Impact Assessment Criteria			
	Low	**Medium**	**High**
Process	Minimal change to business processes. Minimal changes to data sources or inputs. Minimal changes to communication or interaction. (<10% change from current)	Moderate change to business processes. Moderate changes to data sources or inputs. Moderate changes to communication or interaction. (between 10-40%)	Significant change to business processes. Significant changes to data sources or inputs. Significant changes to communication or interaction. (>50% change from current)
People	Very minor change to skills required, behaviour, and ways of working. Minor number of tasks added or eliminated for a position. Minor change in accountability or reporting relationship. (i.e. <10%)	Some new behaviours, capability, ways of working and skills required. Moderate number of tasks added or eliminated for a position. Moderate change in accountability or reporting relationship. (between 10-40%)	New behaviours, capability, ways of working (business model), and new skills required. High number of tasks added or eliminated for a position. High change in accountability or reporting relationship. (>50% change from current)
Technology	No new systems/tools required/retired or minor change to existing systems/tools. Minor changes in the way users access or obtain information. Minor changes to security access rights to different information.	Basic systems and/or tools to be learnt. Moderate changes in the way users access or obtain information. Moderate changes to security access rights to different information.	Complex systems and/or tools to be learned. Significant changes in the way users access or obtain information. Significant changes to security access rights to different information.

Areas of change identified in our assessment include the following:

- Transportation Services staff no longer assigned to Local Roads Reconstruction;
- Engineering staff to be working with or supervising new hires outlined by Program design;
- Prioritization of roads for reconstruction made available to the public;
- Increased engagement with utilities companies for relocating/protecting utilities; and
- Increased involvement with land owners for Land Related Activities.

The change impact by area of change is illustrated in Table 14. The change impact by key roles/stakeholder groups is illustrated in Appendix D.

Table 14 – Change impact by area of change

Area of change	What is changing	Impacted stakeholder group(s)	Degree of change (1 to 5)	Timing

Transportation staff no longer assigned to Local Roads Reconstruction	• **Process Change:**
	  • Transportation Services to STOP reconstruction of Local Roads Rand CONTINUE to maintain Local Roads before and after reconstruction (change already in effect, Local Road Reconstruction has been stopped since 2015)
	  • Engineering Services to START taking on responsibility for reconstructing Local Roads through use of contractors (implementation 2017 to 2019)
	  • Engineering Services to START vendor management/procurement processes for Road Reconstruction (starting in 2017)
	  • Transportation services will START to track the costs and time of maintaining specific road segments
	  • New process to be designed for information/communication flow and roles between departments as it relates to Local Roads Reconstruction and interaction with the public
	• **Behaviour Change:**
	  • Engineering Services to START using new enhanced procurement/contracting processes and supporting tools/templates
	  • Overall, higher emphasis on ability and skill around lengthening the life cycle of a road
	• **Knowledge Change:**
	  • Engineering Services to START learning prioritization of roads for reconstruction, how to manage vendor relations/standards, procurement, oversee contractors and quality assurance
	  • Transportation staff to START formal knowledge transfer process (1-2 years) with Engineering staff
	  • All parties to have knowledge and understanding on roles/responsibilities as it relates to information/communication flow between departments and to the public
	• **Workload / Work Outputs Change:**
	  • Increase in workload for Engineering Services as result of new responsibility for Local Roads Reconstruction
	  • Slight increase in workload potentially for Finance as result of activity based accounting and working with Engineering Services as part of daily financial activities
	  • Increase in workload (low to medium) anticipated for Transportation services to start tracking the costs and time of maintaining specific road segments
		• Transportation
		• Engineering
		• New Proposed Role: Local Roads Program Officer
		• Finance
			4
			5
			2
				Starting 2015
				2017-2019
				2018

Legend

1-2	Low impact
3	Medium impact
4-5	High impact

Area of change	What is changing	Impacted stakeholder group(s)	Degree of change (1 to 5)	Timing
Engineering staff to be working with or supervising new hires outlined by program design	• **Workload / Work Outputs Change:** Engineering Services to START having new resources and to oversee Contractors	• Manager, Engineering Services • Engineering - Infrastructure Engineering Officer	**2** **4**	Early 2018

Prioritization of roads for reconstruction made available to the public	• **Process Change:**
	  • Yearly reprioritization by the County/Engineering Services and Program Engineer
	  • Process to be identified as it relates to communicating/cascading the roads prioritization
	• **Behaviour Change:**
	  • Sturgeon County accountable for prioritization plans to be communicated/shared with the public
	• **Knowledge Change:**
	  • Public START to be informed on prioritization of roads for reconstruction
	  • Council will need to understand the road reprioritization criteria
	• **Workload / Work Outputs Change:**
	  • Communication department may experience an increase in workload, to be explored
	  • Engineering and Transformation Services to be prepared with what information has or will be shared with the public, and what information can be should their be public inquiries
		• Public
		• Communications
		• Council
		• Transportation
		• Engineering
			3-4
			2
			2
			2
				2018
				Present
				Present
				2018

Area of change	What is changing	Impacted stakeholder group(s)	Degree of change (1 to 5)	Timing

Increased engagement with utilities companies for relocating/protecting utilities	• **Process Change:**
	  • Engineering Services to START to refresh process to engage utility companies in order to be successful
	  • Engineering to START engaging utility companies via refreshed processes
	• **Workload / Work Outputs Change:**
	  • Increased workload anticipated for Infrastructure Engineering Officer (in coordination with the Program Engineer) as it relates to engagement with utility companies.
		• Infrastructure Engineering Officer
		• Utility Companies
			2-3
			1
				Early 2018
				Early 2018

Increased involvement with land owners for Land Related Activities	• **Process Change:**
	  • Engineering Services to START to have a role responsibility for Land Related Activities
	• **Workload / Work Outputs Change:**
	  • Land Agent (proposed new role) to START engaging with land owners about Land Related Activities
		• New Proposed Role: Land Agent
		• Land Owners
			NA – new role
			3-5
				Early 2018
				Early 2018

8.5. Change assessment – change considerations and risks / mitigations

Based on the stakeholder and change impact analysis completed, a number of change considerations have been identified in Figure 8 and for the County to take into account from a people/change management perspective. The County should also take into account potential risks and corresponding mitigation strategies identified in Table 15 while implementing the change considerations.

Figure 8 – Change considerations

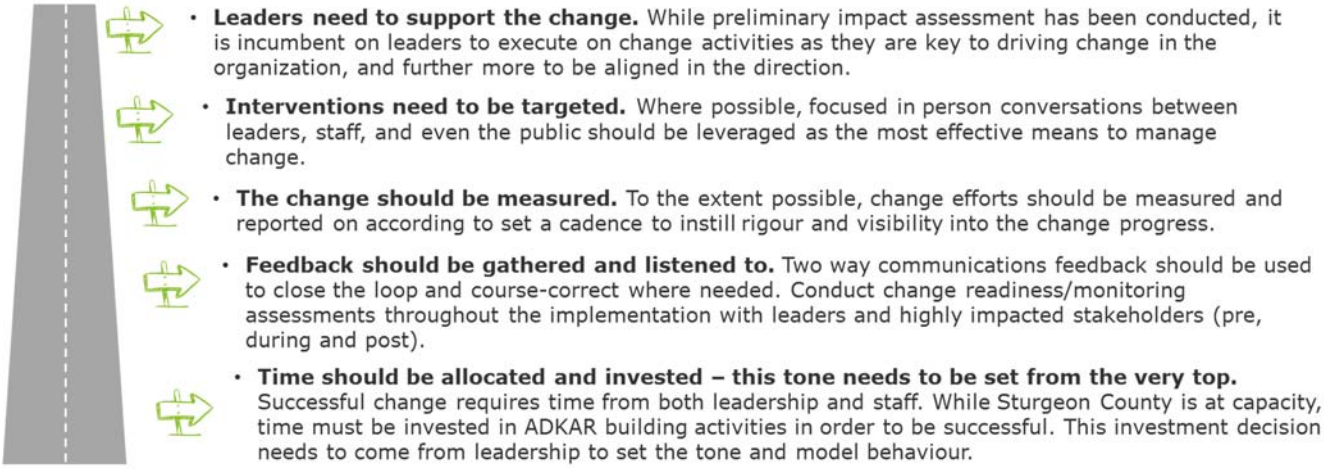


Table 15 – Risks and suggested mitigations

Risks	Suggested mitigations
Key stakeholders and knowledge experts feeling that the change is happening to them and that they are not part of the change (i.e., Transportation Services (including field staff))	• Develop **change management and stakeholder engagement plan** to mitigate risk which could include: - **Consult Transportation Services with the draft prioritization criteria** and reprioritization plan during a workshop/meeting; - Involve Transportation Services **during annual reprioritization** as a key stakeholder and input group; - Establish **regular touch points** between Transportation Services and Engineering Services to discuss respective maintenance/reconstruction priorities, impacts and identify opportunities for collaboration; - **Assess questions** raised by employees in meetings/day to day work to gauge whether plans are adequate to address this issue; and - **Conduct assessment** with Transportation Services (including field staff) to gauge progress at specific intervals as part of broader change readiness/monitoring assessments (as part of change readiness/monitoring activities).
Managing expectations with the public and council	• Develop **change management and stakeholder engagement plan** to mitigate risk which could include: - **Establish standards, escalation process, and frequency of reporting** to be communicated to the public; - **Meet with Council** on standards, escalation process, and frequency of reporting to be communicated to the public for feedback; - **Manage** the standards, reporting and escalation process. Reporting to track variances in a user friendly/publicly appealing format; and - **Establish / utilize two way communication feedback channels / pulse checks** with both council and public as a means of determining if plans are adequate to address expectations or if additional mitigations/course corrections are required.

Confusion between responsibilities/ownership over communication/ information flow, how that impacts scheduling/work plans and public interaction	• **Establish clear processes for flow of information**, priorities and collaboration across departments. Conduct training and scenario based examples to help key stakeholders adopt the new processes. Establish clear ownership for communicating to the public.
Lack of capacity to execute on tasks	• **Re-assess workload capacity** and how long processes actually take starting in 2018 (mid/end, and annually thereafter).
Leadership misalignment around detailed design/implementation plan	• Develop **change management and stakeholder engagement plan** to mitigate risk which could include: - **Begin conducting leadership alignment exercise** to determine any individuals who may influence/alter the desired outcome of the program in an attempt to proactively manage any leadership misalignment; and - Alignment to be monitored at reoccurring intervals throughout the implementation to ensure leadership support and address any issues that could impact the success for the Program.
The Transportation Services staff anticipating additional outsourcing which may impact their productivity	• Develop **change management and stakeholder engagement plan** to mitigate risk which could include: - **Honest and clear communication** from the CAO regarding direction is required. This to be reinforced by the County leadership; and - **Conduct assessment** with Transportation Services to gauge progress at specific intervals as part of broader change readiness/monitoring assessments (as part of change readiness/monitoring activities).

9. Implementation plan

9.1. Recommendations

The County should underpin the overall Program with a Program Engineer under a professional services contract, and deliver the annual bundle of Projects through the DBB method which entails a Design & Construction Engineer under a professional services contract and a Construction Contractor selected by tender. Based on the results of the MCA analysis, insights obtained from the market, and the results of the change impact assessment, the County should consider implementing the following recommendations:

1. **Engage a Program Engineer -** Engage an engineering firm for the role of Program Engineer to undertake Preliminary Engineering activities for the entire 128km of Local Road. The Preliminary Engineering activities for the first annual bundle of Projects should be ready for construction in 2019; the remainder of the Local Roads can be assessed at a rate that at a minimum is sufficient to meet the annual construction target of 12.8km but could be done as quickly as the County desires, subject to annual budget limitations. The Program Engineer's tasks are broader than just Preliminary Engineering, and include:

    - Task 1 – Confirming or determining the design standards, material specifications, construction quality assurance / quality control procedures, and other Program-wide

technical requirements and standards that will be needed throughout the full duration of the Program

- Task 2 – Preliminary Engineering: conduct Preliminary Engineering (which may include providing, procuring, or subconsulting field investigations and surveys) on the subject roads to determine:

  - If a subject road's condition warrants it remaining in the Program;
  - Land purchase requirements;
  - Environmental permit requirements;
  - Utility relocation requirements;
  - Reconstruction Alternatives;
  - Planning-level budget estimates, taking into account the previous four factors; and
  - Prepare Project Descriptions which concisely describe each Project's scope, Reconstruction Alternatives, location, and other key features necessary to support procurement of the Design & Construction Engineer.

- Task 3 – Annual Prioritization: assist the County in the initial and subsequent annual Project prioritization process

- Task 4 - Project Preparation: for specific planned Projects in an annual bundle, in advance of the design and construction phase:

  - Obtain environmental permits on behalf of the County;
  - Arrange for utility relocation/protection on behalf of the County and ensure that utility companies follow the crossing agreements;
  - Assist County with Land Related Activities if necessary; and
  - Assist the County in procuring the Design & Construction Engineer.

The Program Engineer can complete the Preliminary Engineering at the rate dictated by the County depending on costs versus the available budget. Once the Preliminary Engineering is complete (in perhaps 2 or 3 years), the remaining tasks are envisioned to continue to support the execution of the overall Program. To make the Program Engineer role attractive to the market, we recommend an initial contract term that is sufficient to complete all of the Preliminary Engineering, with an option to renew for a 2 year period (e.g. 3 years plus 2 year renewal option). This should make the opportunity attractive enough in size for the market to respond. We also recommend that the Program Engineer not be eligible to serve as a Design & Construction Engineer, because allowing them to do so may discourage competition for the Design & Construction Engineer role due to the appearance of an incumbent advantage on the part of the Program Engineer. When it comes time to renew or re-procure the Program Engineer, the County can evaluate at that time if the Program Engineer role is required any longer, or if the County would be better served by allowing the firm previously serving as the Program Engineer to be eligible to serve as a Design & Construction Engineer.

2. **Deliver the Projects under a DBB model –** The County should consider delivering the design and construction activities of the Program under a DBB model. Delivering the Projects under a DBB model entails the following:

   - Procurement of the Design & Construction Engineer

     - The Program Engineer prepares supporting documents (Project Descriptions and preliminary engineering drawings) and drafts or assists the County in drafting the RFP for detailed design and engineering construction services;
     - The County issues the RFP;
     - The Program Engineer assists the County in responding to bidder questions, in evaluating the submissions, and in negotiating with the preferred proponent; and
     - The County executes the contract for detailed design and construction engineering services.

The term of the Design & Construction Engineer contract will depend on the number of annual bundles of Projects that are available at the time of procurement. For example, if only 1 year's worth of Projects are ready to go for design and construction (i.e. Project Descriptions are done, environmental permits received, utilities relocated or protected) then the Design & Construction Engineer would be procured specifically for those projects. It is expected that an hourly rate contract with upset fee should be possible because each Project's details will be very well defined in the Project Description.

If more than one year's worth of Projects are ready, then the Design & Construction Engineer could be procured for multiple years of the Program. This could result in overall cost savings for the County through economies of scale, and by attracting greater competition.

- The Design & Construction Engineer develops the detailed design and specifications for the bundle of Projects

- Procurement of a Construction Contractor to perform Local Roads reconstruction

  - The Design & Construction Engineer prepares the tender documents for the bundle of Projects;
  - The County issues the tender documents to solicit tenders from the market;
  - The Design and Construction Engineer assists the County in in evaluating the tenders;
  - The County executes the contract for road construction with the Construction Contractor.

  It is recommended that the County tenders the construction bundles every year, given that the tender process is quick and this is expected to maximize competition. If the Design & Construction Engineer manages to develop the detailed design for more than one annual bundle of Local Roads, then the County could consider packaging the construction tender to include more than one annual bundle of Projects.

- Undertake construction of Local Road projects

  - The Construction Contractor undertakes road reconstruction activities, based on the detailed design prepared by the Design & Construction Engineer;
  - The Design & Construction Engineer oversees the work of the contractor, performs quality assurance during construction, reviews and provides recommendations on the contractor's monthly progress payment applications, and prepares as-built drawings of the completed work.

3. **Recruit and onboard new resources –** It is recommended that two additional full time equivalent resources be hired exclusively for the Program:

   - Local Roads Program Officer – A commercially savvy and technically competent, experienced resource should be assigned full-time to lead the Program. The Local Roads Program Officer should be the point of contact, managing the Program Engineer and the Design & Construction Engineer, on behalf of the County. The Local Roads Program Officer should be the conduit between the contractors and other departments within the County. Other responsibilities of the Local Roads Program Officer include, but are not limited to:

     - Conducting the procurement process to engage the Program Engineer;
     - Conducting the procurement process to prequalify Design & Construction Engineers, with assistance from the Program Engineer;
     - Prioritizing Local Road Projects for reconstruction on an annual basis, in coordination with the Transportation Services and the Program Engineer;
     - Reviewing and approving the payment applications of the Program Engineer, and the Design & Construction Engineers;
     - Providing regular Program status updates to the Engineering Manager, Program Sponsor and the Steering Committee;
     - Engaging with the Engineering Manager, Program Sponsor and the Steering Committee to resolve issues with the private sector participants, if any;

- Providing recommendations to the Finance Department to issue progress payments to the Construction Contractors;
- Liaising with Transportation Services and Communications to issue public notifications pertaining to road closures and Program status; and
- On behalf of the County, receive, review and process/file as-built drawings and other construction/quality information received from the Design & Construction Engineer.

It is expected that the Local Roads Program Officer will be engaged full-time in the Program for most part of the year; however, there may be some instances where the subject resource may have availability to support other County initiatives. The level of effort is likely to decline after the Preliminary Engineering is done.

- Land Agent – A Land Agent be hired to undertake Land Related Activities related to the Program. The responsibilities of the Land Agent include, but not limited to:

  - Contact and conduct negotiations with landowners, as required for purchase or other access to necessary lands;
  - Make agreements related to backslope, disturbed area compensation, temporary stock piles, trees in the ROW, correction of road alignments for safety and existing encroachment onto County lands, custom fitting solution to address drainage issues, and other structures located in the ROW. (e.g.: mail boxes, gates, fences);
  - Registration of legal documentation pertaining to these agreements;
  - Liaising with the Legal Department and Finance Department as necessary to develop agreements and make payments;
  - Provide land-related advice to the Program Engineer and Local Roads Program Officer to assist with Program Engineering;
  - Communication with landowners throughout the construction phase; and
  - Post-project interactions with landowners to address concerns (if any) related to non-compliance with agreed agreements.

The extent of Program workload for the Land Agent is unclear at this stage; however, it is expected that the Land Agent may have availability to support Land Related Activities for the remainder of the Engineering Services' capital plan activities.

Resources for both roles should be in place for early 2018, and if possible the Local Roads Program Manager should start in the fall of 2017 to start preparation activities.

The RACI (Responsible, Accountable, Consult, and Inform) chart in Table 16, shows the distribution of tasks between the private sector and the County staff.

Table 16 – Program RACI

Sturgeon County Local Roads Reconstruction Program - RACI	Responsible	Accountable	Consult	Inform
Program Engineering (Feasibility Stage)				
Procurement - Program Engineer				
Draft and issue Program Engineer RFQ	Local Roads Program Officer	Local Roads Program Officer	Engineering Manager	Project Sponsor
Respond to bidder clarifications	Local Roads Program Officer	Local Roads Program Officer	Engineering Manager	Project Sponsor
Evaluate submissions	Local Roads Program Officer	Local Roads Program Officer	Engineering Manager	Project Sponsor
Interview and negotiate with the shortlisted proponents	Local Roads Program Officer	Local Roads Program Officer	Engineering Manager	Project Sponsor
Execute the Contract for Program Engineer	Local Roads Program Officer	Local Roads Program Officer	Engineering Manager	Project Sponsor
Preliminary Engineering				
Determine if a subject road's condition warrants it remaining in the Program	PE	PE	Local Roads Program Officer	Engineering Manager, Project Sponsor
Identify land requirements and related activities	PE	PE	Local Roads Program Officer	Engineering Manager, Project Sponsor
Identify utility relocation/protection requirements	PE	PE	Local Roads Program Officer, Infrastructure Engineering Officer	Engineering Manager, Project Sponsor
Identify environmental permit requirements	PE	PE	Local Roads Program Officer	Engineering Manager, Project Sponsor
Finalize Reconstruction Approach for the road segments	PE	PE	Local Roads Program Officer	Engineering Manager, Project Sponsor
Prepare planning-level budget estimates, taking into account all factors	PE	PE	Local Roads Program Officer	Engineering Manager, Project Sponsor
Prepare Project Definitions which concisely describe each Project's scope, Reconstruction Approach, location, and other key features	PE	PE	Local Roads Program Officer	Engineering Manager, Project Sponsor
Review and approve payment applications of the Program Engineer	Local Roads Program Officer	Local Roads Program Officer	Engineering Manager	Project Sponsor
Prioritization				
Identify and prioritize road segments for reconstruction * *	Local Roads Program Officer	Local Roads Program Officer	Engineering Manager, Transportation Manager *	Project Sponsor
Prepare preliminary estimate for the prioritized road segments	PE	PE	Local Roads Program Officer	Engineering Manager, Project Sponsor
Project Preparation				
Prepare supporting documents and obtain environmental permits	PE	PE	Local Roads Program Officer	Engineering Manager, Project Sponsor
Coordinate with utility companies, make agreements related to crossing and relocations, and manage relocation/protection activities	PE	PE	Local Roads Program Officer, Infrastructure Engineering Officer, Land Agent	Engineering Manager, Project Sponsor
Contact and conduct negotiations with landowners, as required for purchase or other access to necessary lands	Land Agent	Land Agent	Local Roads Program Officer	Engineering Manager, Project Sponsor
Make agreements related to backslope, disturbed area compensation, temporary stock piles, trees in the ROW, correction of road alignments for safety and existing encroachment onto County lands, custom fitting solution to address drainage issues, and other structures located in the ROW	Land Agent	Land Agent	Local Roads Program Officer	Engineering Manager, Project Sponsor
Registration of legal documentation pertaining to these agreements	Land Agent	Land Agent	Local Roads Program Officer	Engineering Manager, Project Sponsor
Liaising with the Legal Department and Finance Department as necessary to develop agreements and make payments	Land Agent	Land Agent	Local Roads Program Officer	Engineering Manager, Project Sponsor
Provide land-related advice to the Program Engineer and Local Roads Program Officer to assist with Program Engineering	Land Agent	Land Agent	Local Roads Program Officer	Engineering Manager, Project Sponsor
Procurement - Design & Construction Engineer Prequalification				
Prepare supporting documents for the detailed design & construction engineering RFQ	PE	PE	Local Roads Program Officer	Engineering Manager, Project Sponsor
Draft RFQ for detailed design & construction engineering	PE	PE	Local Roads Program Officer	Engineering Manager, Project Sponsor
Issue RFQ for detailed design & construction engineering	Local Roads Program Officer	Local Roads Program Officer	Engineering Manager	Project Sponsor
Respond to bidder clarifications	PE	PE	Local Roads Program Officer	Engineering Manager, Project Sponsor
Evaluate submissions and prepare a shortlist of qualified Design & Construction Engineers	PE	PE	Local Roads Program Officer	Engineering Manager, Project Sponsor
Procurement - Design & Construction Engineer RFP				
Prepare supporting documents (scope and necessary preliminary engineering drawings) for the detailed design & construction engineering RFP	PE	PE	Local Roads Program Officer	Engineering Manager, Project Sponsor
Draft RFP for detailed design & construction engineering	PE	PE	Local Roads Program Officer	Engineering Manager, Project Sponsor
Issue RFP for detailed design & construction engineering	Local Roads Program Officer	Local Roads Program Officer	Engineering Manager	Project Sponsor
Respond to bidder clarifications	PE	PE	Local Roads Program Officer	Engineering Manager, Project Sponsor
Evaluate submissions	PE	PE	Local Roads Program Officer	Engineering Manager, Project Sponsor
Interview and negotiate with the shortlisted proponents	PE	PE	Local Roads Program Officer	Engineering Manager, Project Sponsor
Execute the Design & Construction Engineer contract	Local Roads Program Officer	Local Roads Program Officer	Engineering Manager	Project Sponsor

Sturgeon County Local Roads Reconstruction Program - RACI	Responsible	Accountable	Consult	Inform
Detailed Design Stage				
Develop design				
Develop detailed design and specifications	DC	DC	PE	Local Roads Program Officer, Engineering Manager
Review and approve progress payment applications of Design & Construction Engineer	Local Roads Program Officer	Local Roads Program Officer	Engineering Manager	Project Sponsor
Procurement - Construction Tender				
Prepare tender documents	DC	DC		Local Roads Program Officer, Engineering Manager
Issue tender documents for road construction	Local Roads Program Officer	Local Roads Program Officer	Engineering Manager	Project Sponsor
Evaluate submissions	DC	DC	Local Roads Program Officer	Engineering Manager, Project Sponsor
Execute the Contract for road construction	Local Roads Program Officer	Local Roads Program Officer	Engineering Manager	Project Sponsor
Construction Stage				
Construction				
Issue notification to the public about road closures during construction	Local Roads Program Officer	Local Roads Program Officer	Communications Manager, Land Agent	Engineering Manager, Project Sponsor
Regular communication with landowners during construction	Land Agent	Land Agent	Local Roads Program Officer	Engineering Manager, Project Sponsor
Construct roads as per schedule	CC	CC		Local Roads Program Officer, Engineering Manager
Oversee the construction work	DC	DC	Local Roads Program Officer	Engineering Manager
Perform quality assurance during construction	DC	DC		Local Roads Program Officer
Review and approve progress payment applications of the Construction Contractor	DC	DC	Local Roads Program Officer	Engineering Manager
Project Close-out				
Inspect the reconstructed road and open the road for traffic	Local Roads Program Officer	Local Roads Program Officer	Engineering Manager, Transportation Manager	Project Sponsor
Prepare as-built drawings upon completion of construction	DC	DC	PE	Local Roads Program Officer, Engineering Manager
Post-project interactions with landowners to address concerns (if any) related to non-compliance with agreed agreements	Land Agent	Land Agent	Engineering Manager	Project Sponsor

Legend

* Transportation Manager to include relevant team members in the consultation
** Program Engineer to support Sturgeon County during initial years
Grey shaded cells show Sturgeon County staff
PE - Program Engineer
DC - Design & Construction Engineer
CC - Construction Contractor

4. **Local Roads prioritization –** The County should undertake prioritization of Projects for the Program. The initial prioritization should be undertaken early on during the Feasibility Stage and the Program Engineer should support this initiative. Going forward, the Local Roads Program Manager should update the prioritized list on an annual basis by assessing the Local Road projects against various factors including the Preliminary Engineering findings, in consultation with the Transportation Manager.

   The framework illustrated in Table 17 provides some guidance to the County for prioritization. The Program Engineer retained should have the expertise to develop a more detailed framework, should the County require.

Table 17 – Project Prioritization framework

Criteria	Suggested Weighting	Indicator	Prioritization Framework			
			-3	0	3	5
Traffic volume	20%	Rate of change	Expected to reduce in the next 10 years	Will remain the same in the next 10 years	Expected to increase < 10% every year	Expected to increase > 10% every year
Current condition	30%	SRIS Report rating	Very Good	Good	Poor	Very Poor
Health & safety impacts	20%	Number of collisions	No collisions in the last 5 years	Number of collisions remained the same in the last 5 years	Number of collisions increased < 10% every year in the last 5 years	Number of collisions increased > 10% every year in the last 5 years
Alignment to Community Plans	10%	Level of local community support	Strong opposition from the community	Does not impact the community	Moderate community support	Strong community support
Land Related Activities	10%	Timeframe required to complete Land Related Activities	Protected process expected	Land Related Activities could take more than 4 months to complete	Land Related Activities could be completed within less than 4 months	No Land Related Activities
Utility relocation/protection requirements	10%	Timeframe required to complete utility relocation/protection	Strong opposition from the utility company	Utility relocation/protection could take more than 4 months to complete	Utility relocation/protection could be completed within less than 4 months	No need to relocate/protect any utilities

5. Contracted Services approach

- **Program Engineer**

  - Scope: Tasks as laid out for Program Engineer role in Recommendation#1.
  - Duration: Initial contract should include completion of Task 1 plus Preliminary Engineering for full 128km of Local Roads (Task 2), plus additional Tasks as needed to support the Program during the initial contract period. Suggest 3 years plus option to renew for 2 years
  - Procurement Process: RFQ, shortlist based on qualifications, RFP. Select based on value: proposed workplan and cost
  - Workplan should include an annual plan for completion of the relevant Tasks and a proposed end date for completion of Task 2, and an approach to each Task.
  - Key Term: Program Engineer not permitted to serve as Design & Construction Engineer. If this limits interest in the Program Engineer opportunity, consider relaxing the restriction after Task 2 is complete.
  - Payment: Hourly rates, indexed to CPI. Each year's workplan and budget to be approved annually by the County.

- **Design & Construction Engineer**

  - Scope –Tasks as laid out for design and construction services on one or more Projects (Design & Construction Engineer role in Recommendation#2).
  - Duration – as necessary to complete the tasks for a single year's bundle of Projects or multiple years' bundle of Projects, dependent on the number of annual bundles that are ready to move to detailed design and construction phase. The pace of the Program Engineering (all tasks) will dictate this.
  - Procurement Process – Initial RFQ to shortlist firms to be put on a vendor list, with shortlisting based on respondent's proven experience on rural road reconstruction with appropriate Reconstruction Alternatives, proven roster of in-house and/or subconsultant resources for all aspects of the Design & Construction Engineer role (e.g. designers, surveyors, inspectors, etc.), and ability to stamp and sign all designs, drawings, specifications, and similar documents in accordance with APEGA requirements. RFP for each year (or multi-year) of design and construction engineering services, selected largely on price. RFP to include the Project Descriptions developed by the Program Engineer. RFP process is intended to be a relatively short and simple process that is standardized for each year.
  - Payment: Hourly rates and disbursements to an upset limit for each year's Project bundle. This is predicated on thorough Program Engineering having been done, with concise Project Descriptions that will give the engineering firms comfort to be able to be bid an upset fee limit. Indexing rates to CPI if contracts are multi-year duration may be considered.

- **Construction Contractor**

  - Scope – as dictated by the detailed designs and specifications
  - Duration – either annual (for an annual bundle of Projects), or multi-year if the Design & Construction Engineer can complete the design and tender documents needed for more than one year's worth of Projects
  - Procurement process – standard tender process
  - Payment – monthly progress payments

6. **Establish operational processes for coordination / information flow –** This Program involves changes to interactions/communications between departments and also could have significant impact to landowners and residents of the County. Given the closeness of the community and the history of sensitivities around the Program, a streamlined operational end-to-end process should be developed that identifies process roles, accountability and interactions between various stakeholders and as it relates to communication and information flow internally and externally for the Program on a day to day basis. The new process will need to be learned and adopted as business 'as usual' for the County.

7. **Develop change management & stakeholder engagement/communication plan -** Based on the change assessment results, we recommend that a change management plan and stakeholder engagement plan be developed to support adoption of the changes from the Program. The change management plan should include:

- Roles/responsibilities for change management work stream/activities and plan

  - To be effective in managing change, it will be important for the County to establish a change management lead, change sponsors, communication support resources and other key resources to formulate the change management team. Without ownership of key change management tasks, it will be difficult to establish results and accountability for driving change efforts.

- Leadership alignment activities

  - Begin conducting leadership alignment exercise to determine any individuals who may influence/alter the desired outcome of the program in an attempt to proactively manage any leadership misalignment; and
  - Alignment to be monitored at reoccurring intervals throughout the implementation to ensure leadership support and address any issues that could impact the success for the Program.

- Stakeholder engagement & communication plan

  - A robust stakeholder engagement and communication plan should be developed and closely monitoring throughout the implementation of the Program, including the following elements:
    - Communication Plan and Execution: includes tasks to plan, design, develop and deliver communications throughout the Program life cycle. Stakeholder assessment is a critical input and should be leveraged so that the appropriate communication channel is employed based on the audience and level of desired engagement. Includes:
      - Communication assessment
      - Communication strategy and plan/tracker (detailed tracker/plan)
      - Development and execution of communications and key messages tailored to audience

  - For communications delivered to the public, it will be important to notify/keep both Transportation and Engineering leadership involved as they are very close to the public needs. Furthermore, it is suggested that inquiries from the public (those received to communications or those directly to Transportation Services staff on the road) are tracked and monitored as there may be an opportunity to develop more targeted communications (frequently asked questions guide) based analysis of the themes from incoming questions.

- Ongoing assessment/monitoring of change impacts

  - While a preliminary change impact assessment was conducted, as the County finalizes the Program, change impacts should be reviewed and reassessed as new information may be learned. Up to date change impact assessment is critical to ensuring communications, training and transition activities are designed in a way that facilitate adoption of the changes and those specific impacts staff will face. Change impact assessment is typically a living document throughout the duration of a program.
  - Conducting change readiness/monitoring activities
    - As suggested within the change considerations, it will be important to conduct pulse checks within the County (Transportation Services and Engineering Services) as well as with the public to monitor the effectiveness of the change activities. Such assessments can be achieved through change readiness assessments which target specific ADKAR elements against set criteria specific to the Program. Inputs will support the County to be proactive in managing the change and expectations of the public. We recommend establishing a baseline assessment, then conducting multiple assessments throughout the duration of the program.

- Training activities (refer to recommendation 8)

- Support with knowledge transfer activities (refer to recommendation 9)

8. **Develop training approach, development, and delivery -** A comprehensive training strategy/plan is critical. Both anxiety associated with change and the performance dip typically results from the requirement to learn new skills, behaviours and mindsets. Based on the preliminary change impact assessment, a few roles have been identified requiring training at different degrees. Further analysis should be conducted to assess training requirements. Once assessed, the County should consider the following training approach:

   - **Develop training approach/strategy:** Validate scope of work for resources requiring training. Analyze audience groups and their training requirements, and methods to delivery training.

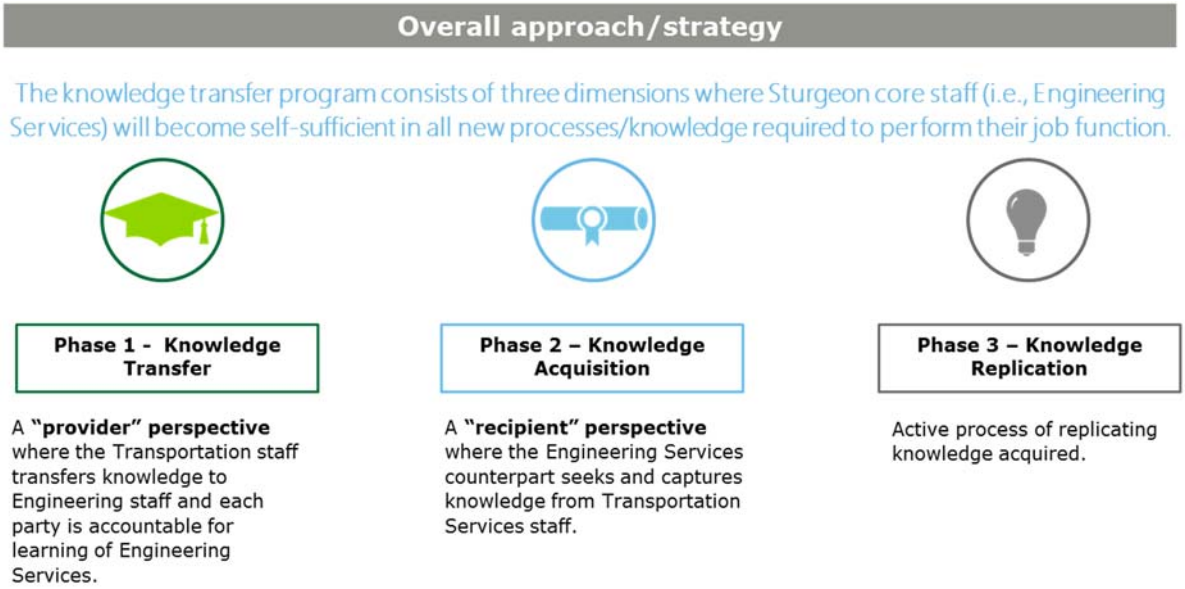
   - **Develop training curriculum/schedule and materials:** Develop training materials based on end to end processes (new/changed). Identify timing for delivery of training and schedule training.

   - **Deliver training, evaluate and retrain if necessary.** Delivery training to the resources requiring training. Evaluate training by analyzing if knowledge is being applied on the day to day job, and/or retrain if required.

   Roles which may require training/understanding of new knowledge:
   - Council
   - Senior Leadership Team
   - Manager, Engineering Services
   - Engineering Administrative
   - Senior Infrastructure Engineering Officer
   - Infrastructure Engineering Officer
   - New Proposed Role: Local Road Program Officer
   - New Proposed Role: Land Agent

- Manager Transportation Services
- Transportation Services Supervisors
- Transportation Services and Engineering Services staff (on new processes and Program overall)
- Public residents
- Contractor/Program Engineer

9. Knowledge transfer and ongoing coordination with Transportation Services –



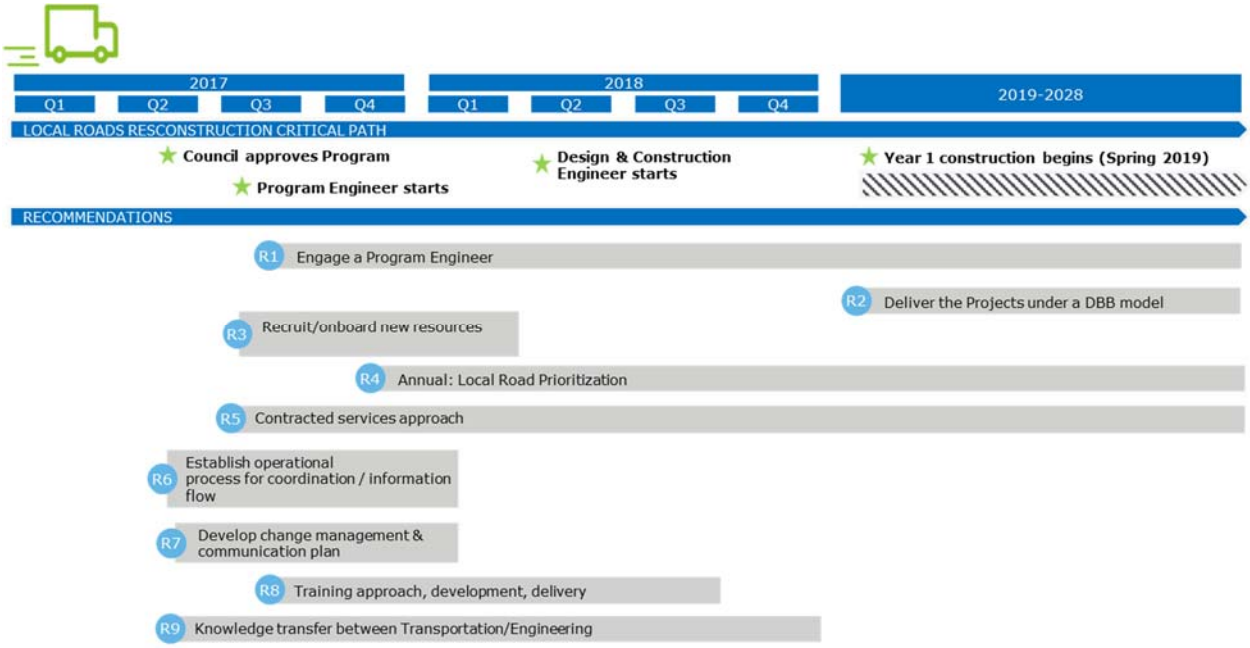
To be successful with knowledge transfer, it needs to be treated as a formalized process that includes: articulating goals, activities, milestones and measures of success at key stages of the Program. Such activities may include job shadowing, seeing then doing.

Develop a plan to conduct knowledge transfer between Transportation Services and Engineering Services staff so that the County can continue to be successful with the Program. A formalized and structured process should be used to document, execute, and monitor knowledge transfer action plans to completion. Knowledge transfer can typically be determined complete once resources reach an agreed upon level of proficiency and capability. Key deliverables for such a process would include knowledge transfer plans/agreements and timeline for assessing proficiency and capability.

9.2. Roadmap

A roadmap for implementing the recommendations is illustrated in Figure 9.

Figure 9 – Roadmap for implementation



9.3. Implementation timeline

A timeline showing key milestones leading up to the commencement of the first year construction in 2019 is illustrated in Figure 10 below. A detailed Program timeline for the entire 10 years is illustrated in Appendix A.

Figure 10: Program schedule

9.4. Acceleration option

Completing all Preliminary Engineering as soon as possible will give maximum visibility to the County near the outset of the Program of technical and financial issues, and should facilitate better planning for the duration. It would also allow the County to package the "annual" Design & Construction Engineer contracts and construction tenders to cover multiple years, if this is considered advantageous at the time, considering market factors. The annual budget allowance for Preliminary Engineering is the limiting factor to completing the Preliminary Engineering upfront.

9.5. Measuring the success of the Program

The County's Steering Committee needs to monitor and assess the Program implementation on a regular basis. The Local Roads Program Officer should provide quarterly reports (or seasonal reports tied to the construction season) to the Steering Committee, outlining the status of the Program. Parameters which could demonstrate the success of the Program include:

Criteria	Metric / Indicator	Units
Program Management Readiness	Progress towards completion of Program Engineering Task 1	**%**
Prioritization Progress	km of candidate Local Roads which have been allotted to a specific calendar year Project bundle / total length of candidate Local Roads (128 km)	**%**
Preliminary Engineering	Cumulative km of road for which Preliminary Engineering has been completed (Program Engineering Task 2)	km
Construction Completion	Cumulative km of road which has been reconstructed	km
Overall Field Progress	Cumulative km of road which has been reconstructed / total length of candidate Local Roads (128 km)	%
Total Cost Progress	Cumulative spend on capital cost and Program Engineering / total budget	%
Public impact	Number of public complaints about condition of the candidate Local Roads per year	# / year

During each construction season, parameters which may be used to compare the relative success of each construction year include:

Criteria	Metric / Indicator	Units
Project bundle completion	Number of km of Local Roads reconstructed during the year	km/year
Schedule	Number of days ahead/behind schedule in the reconstruction of the annual bundle of Projects	Number of days
Cost Variance	The cumulative actual cost of the annual bundle of Projects compared to budget (% above/below budget)	%
Change orders	The cost of change orders compared against the initial approved budget	%
Quality	Number of quality non-compliance issues reported by the Design & Construction Engineer per month	Number/Month
Health & safety	Number of health & safety incidents reported during construction per month	Number/Month
Environment	Number of reported environmental incidents per month	Number/Month
Public impact	Number of public complaints about the conduct of the reconstruction Projects received	Number/Month

10. Appendix A – Timeline

11. Appendix B – Market sounding discussion guide

The following questions were intended to help guide discussions during the interviews; however, participants were also invited to bring up other topics of interest related to the Program.

11.1. Firm background & participation

1. Please describe your firm's typical role in road reconstruction projects.
2. Please describe your firm's general experience and capacity to work in the County.
3. What role would interest your company in the development of this Program?
4. Are you interested in participating in the Program alone? If not, are you willing to team up with another firm and participate in the Program?
5. What is your impression of the overall complexity/ challenges of the Program?
6. Considering your knowledge of the local area and the Program, what are the factors which could cause potential delays to this Program?
7. Can you identify any specific risks that would be of concern in your typical role?
8. What could make the Program more attractive?
9. What information would you require before you could make a decision to pursue this Program?

11.2. Preliminary Engineer role

10. Based on your knowledge of the Program, how long does it take to complete the preliminary engineering for 128 km of road?
11. Do you think it is important to complete preliminary engineering for the entire Program, prior to commencing construction in 2019 of the first annual package of projects?
12. What is the extent of involvement you require from the County's side during the preliminary engineering phase?
13. Would you be able to lead and manage the environmental permitting process?
14. Would you be able to act as County's representative, supporting the design/construction procurements, administering the design/construction contracts, and monitoring the overall quality of the Program?

15. What are the potential risks which could impact the timely completion of the preliminary engineering for the Program?

16. What is your preferred fee structure - Hourly rates or Unit rate per km or Lump sum for 12.8 km or Lump sum for the entire 128 km?

17. Would you be able to facilitate the prioritization of projects as you go through the preliminary engineering of Local Road projects included in the Program?

18. Would you be comfortable to undertake the Program engineer role if it precludes you from the subsequent DBB or DB procurements?

11.3. Design-bid-build (Design & construction engineering services firm)

19. Please indicate your level of interest in pursuing the annual package of Local Road projects as a Design-Bid-Build.

20. How long might it take to complete detailed design of 12.8 km of Local Roads? Do you require access to the sites during the detailed design phase?

21. What is the capacity of your firm to provide design & construction engineering services for 12.8 km of Local Road projects over a period of 5 (+/-) quarters?

22. What is your preferred fee structure to complete the detailed design & construction engineering services - Hourly rates or Unit rate per km or Lump sum for 12.8 km or Lump sum for the entire Program?

23. Would you prefer bidding for the design & construction engineering services every year or would you be able to lock-in your fee for multi-year periods? What is the term which you would prefer?

24. What specific advantages does a DBB model offer for this Program?

11.4. Design-bid-build (Construction firm)

25. Please indicate your level of interest in pursuing the Program as a Design-Bid-Build.

26. Does the draft schedule shown appear reasonable? Do you think it's practical to complete the construction of 12.8km of Local Road projects during the construction window (May 21 – Oct 31st) each year?

27. Do you recommend tendering for the construction work on an annual basis or would you be able to price multiple years of annual packages if the designs were available? What is the term which you would prefer?

28. Is it feasible to price Local Roads reconstruction on a fixed per-km basis? Or, are detailed designs and specifications required for you to price a package of projects?

29. What specific advantages does a DBB offer for this Program?

11.5. Design-build (Engineering firm & construction firm)

30. Please indicate your level your level of interest in pursuing the Program as a Design-Build.

31. Does the draft schedule shown appear reasonable (shows DBB delivery model)? Would you be able to complete the design and construction of 12.8 km of road every year?

32. Could a DB contract be priced to cover more than one annual package of projects? What is the term which you would prefer?

33. Do you have any concerns with bidding fixed prices for design and construction of an annual package of projects?

34. Is it feasible to provide a fixed cost per-km to design and build 1 km of Local Road?

35. Could a DB result in a faster overall design and construction process compared to DBB?

36. What advantages does DB offer as compared to DBB?

12. Appendix C – Multi criteria analysis methodology and criteria

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Memo

Date:	April 7, 2017
To:	Sara Arial
Subject:	MCA methodology

Objective
The objective of this memorandum is to set out the methodology to be applied for the Multiple-Criteria Analysis and to agree on the evaluation criteria to be applied to each of the procurement methods.

Introduction
As part of the assignment, a Multi-Criteria Analysis (MCA) has been conducted. The MCA is a qualitative assessment of delivery methods based on a number of criteria that are aligned with the program objectives or desired outcomes of the project. Each of the procurement methods have been considered on a stand-alone basis.

Evaluation process
Each of the procurement criteria shown in Table 2 below will be individually assessed for each of the procurement methods and measured against the framework shown in the Table 1.

Table 1: MCA evaluation assessment

X	✔	✔ ✔	✔ ✔ ✔
Model fails to meet basic requirements of the program and the authority.	Minimally meets requirements of the program and the authority.	Adequately meets the requirements of the program and the authority.	Provides a highly efficient and effective delivery solution for the authority or the program.

The MCA will not attempt to weight or score the criteria for the following reasons:

- It is difficult for the criteria weighting to reflect the nuances that may exist in the qualitative MCA discussion. A single number simplifies the process too much and does not adequately meet the need of the MCA;

- The weights and scores assigned are subjective in nature and any potential bias would be reflected in the final number. A qualitative approach can easily communicate the factual pros and cons of the model; and

- Weighting the relative importance of criteria removes flexibility in reaching a decision. Decision-makers likely have different priorities, and the qualitative MCA process is sufficiently flexible to allow them to evaluate the relative importance of the criteria on their own.

Evaluation Criteria

Table 2 below details the evaluation criteria which have been identified for each of the procurement methods under consideration.

Table 2: MCA evaluation criteria

Evaluation criteria	DBB	DB
Schedule certainty (timely completion)		
Value for Money (Capital costs)		
Construction quality		
Minimize resource implications for Sturgeon county (during construction)		
Ability to perform as a whole program		
Environmental and safety		
Design and construction risks		

13. Appendix D – Change impact by key roles/stakeholders

Engineering Services - Change impact by key roles:

Role	What is changing	#size	Degree of change (1 to 5)	Status	Timing

GM, Integrated Growth	• Process: Low
	  • Minimal change to process
	• People: Low
	  • Increased responsibility as it relates to addition of 4 million in contract programming per year (i.e., making sure tendering processes are followed, ensuring managers completes tasks for capital project management)
		1	**Low**	*Current*	*2018*

Manager, Engineering Services	• Process: Medium
	  • Additional processes need to be introduced as it relates vendor management and coordination/communication between the County departments
	  • Change in communication/interaction between departments will be required to ensure speedy relay of information/reconstruction changes as they occur so that other departments have information they need (i.e., to inform the public)
	• People: Medium
	  • Increased responsibility to manage additional staff, contractors, and coordination of work
	  • Increased workload (~15% estimate)
	• Technology: Minimal to no change
		1	**Medium**	*Current*	*2018*

Engineering Administrative	• People: Low/Medium
	  • Increased financial accountability which may require some training and/or increase in work load
	  • The County to review FTE status should increase in financial accountability occur
		1	**Low / Medium**	*Current*	*2018*

Role	What is changing	#size	Degree of change (1 to 5)	Status	Timing

Senior Infrastructure Engineering Officer	• Process: High
	  • New processes for contract management and procurement
	  • New interaction/coordination for communication required
	  • New annual processes for reprioritization of roads and reconstruction of local roads
	• People: High
	  • Increase in responsibility and skills required as it relates to contract management (new responsibility for the role)
	  • Role no longer performs function of local road design, this function will be transferred to contracted services
	  • Moving from overseeing 1 staff to 1-3 staff
	• Technology: Low to high depending the change
	  • May require new tools/technology to manage the contract management/procurement and local roads reconstruction effectively
		1	**5**	*Current*	*Now*

Infrastructure Engineering Officer	• Impact TBD. While not currently any FTE, the current surveying technician is fulfilling this role and the surveying technician position is being backfilled by a contractor. The County is reviewing to change some of the surveying technician to the infrastructure engineering officer. This individual would have the additional responsibility of the utility agreements. Duties included which are under review:
	  • Land owner negotiations, drainage program (drainage investigation), shoulder polling, look at gravel supply, locations, proper line surveying for brushing, utility agreements, road closures, traffic counting
	• Land owner negotiations are assumed to be transferring to the new 'Land Agent' role within Engineering Services. Role would continue to be responsibility for utility agreements.
	• Process:
	  • No longer responsibility for land owner negotiations (<10%)
	• People: Minimal to no impact/change
		1	**2**	*NA*	*2018*

Role	What is changing	#size	Degree of change (1 to 5)	Status	Timing
Surveying Technician (Contracted)	• Minimal to no change/impact anticipated	1	**1**	*Current*	*Now*
Local Roads Program Officer	• Proposed new role responsible for liaison with the engineering firms/contractors as it relates to the Program. Ultimately responsible for timely communication within the County as it relates to impacts to other departments as result of any delays/changes, etc.	1	**NA – proposed new role**	*Proposed*	*2018*
Land Agent	• Responsible for day to day management of landowners and land related activities	1	**NA – proposed new role**	*Proposed*	*2018*
All other Engineering Services department roles	• Minimal to no change/impact anticipated	12-16	**1**	*NA*	*2018*

Transportation Services - Change impact by key roles:

Role	What is changing	#size	Degree of change (1 to 5)	Status	Timing

Manager, Transportation Services	• Process: Medium
	  • Process changes related to planning, budgeting, and coordinating schedules/activities
	  • Increased/change in communication with senior leadership (i.e., council, the County leadership) as it relates with keeping parties up to date with progress, how our activities are being effected by this program, etc. as well as keeping the public informed
	• People: Medium
	  • Moderate change of ways of working as it relates to more rigour around clear communication between departments / coordination of scheduling (any ad hoc/ changes to reconstruction plan and what that means for public and maintenance plan)
	  • Workload: minor increase to workload anticipated in short term (1-3 years) for setting up processes for planning/budgeting and public engagement as Transportation Services is typically a key contact for the public
	• Technology: None identified at this time
		1	**3**	*Current*	*Now*

Transportation Assistant	• Minimal to no change/impact anticipated	1	**1**	Vacant	Now
Operations Supervisor (Paved Roads)	• Process: Medium • Moderate changes to communication and interaction as they will need to coordinate/interact with Engineering Services about the activities, scheduling and prioritization (daily/weekly basis)	1	**3**	*Current*	*2018*

Operations Supervisor (Gravel Roads)	• Process: Medium/High
	  • Moderate to high change to processes to coordinate with contractors via Engineering Services
	  • Moderate to high changes to communication and interaction as they will need to coordinate/interact with Engineering Services about the activities, scheduling and prioritization (daily/weekly basis)
	  • Workload: minor increase anticipated until new processes/communication/integrations fully adopted
	• Increased emphasis on prioritization for maintenance aligned with reprioritization and scheduling/coordination/collaboration
		1	**4**	*Current*	*2018*

Program Supervisor	• Process: Low • Some changes to communication as it relates the awareness and coordination of activities • People: Low – minimal changes anticipated • Technology: None	1	**1**	*Vacant /current*	*2018*

Role	What is changing	#size	Degree of change (1 to 5)	Status	Timing

Transportation Supervisor (Paved Roads)	• Process: Medium/High
	  • Moderate to high change to processes to coordinate with contractors via Engineering Services
	  • Moderate to high changes to communication and interaction as they will need to coordinate/interact with Engineering Services about the activities, scheduling and prioritization (daily/weekly basis)
	  • Workload: minor increase anticipated until new processes/communication/integrations fully adopted
	• Increased emphasis on prioritization for maintenance aligned with reprioritization and scheduling/coordination/collaboration
		2	**4**	*Current*	*2018*

Operator II	• Minimal to no change/impact anticipated	5	**1**	*Current*	*2018*
Operator III	• Minimal to no change/impact anticipated	4	**1**	*Current*	*2018*
Summer - Operator I	• Minimal to no change/impact anticipated	4	**1**	*Temp*	*2018*
Summer - Operator II	• Minimal to no change/impact anticipated	5	**1**	*Temp*	*2018*
Operator I	• Minimal to no change/impact anticipated	1	**1**	*Current*	*2018*
Summer - Operator II	• Minimal to no change/impact anticipated	1	**1**	*Temp*	*2018*
Summer - Operator I	• Minimal to no change/impact anticipated	1	**1**	*Temp*	*2018*
Summer - Labourer II	• Minimal to no change/impact anticipated	1	**1**	*Temp*	*2018*

Role	What is changing	#size	Degree of change (1 to 5)	Status	Timing

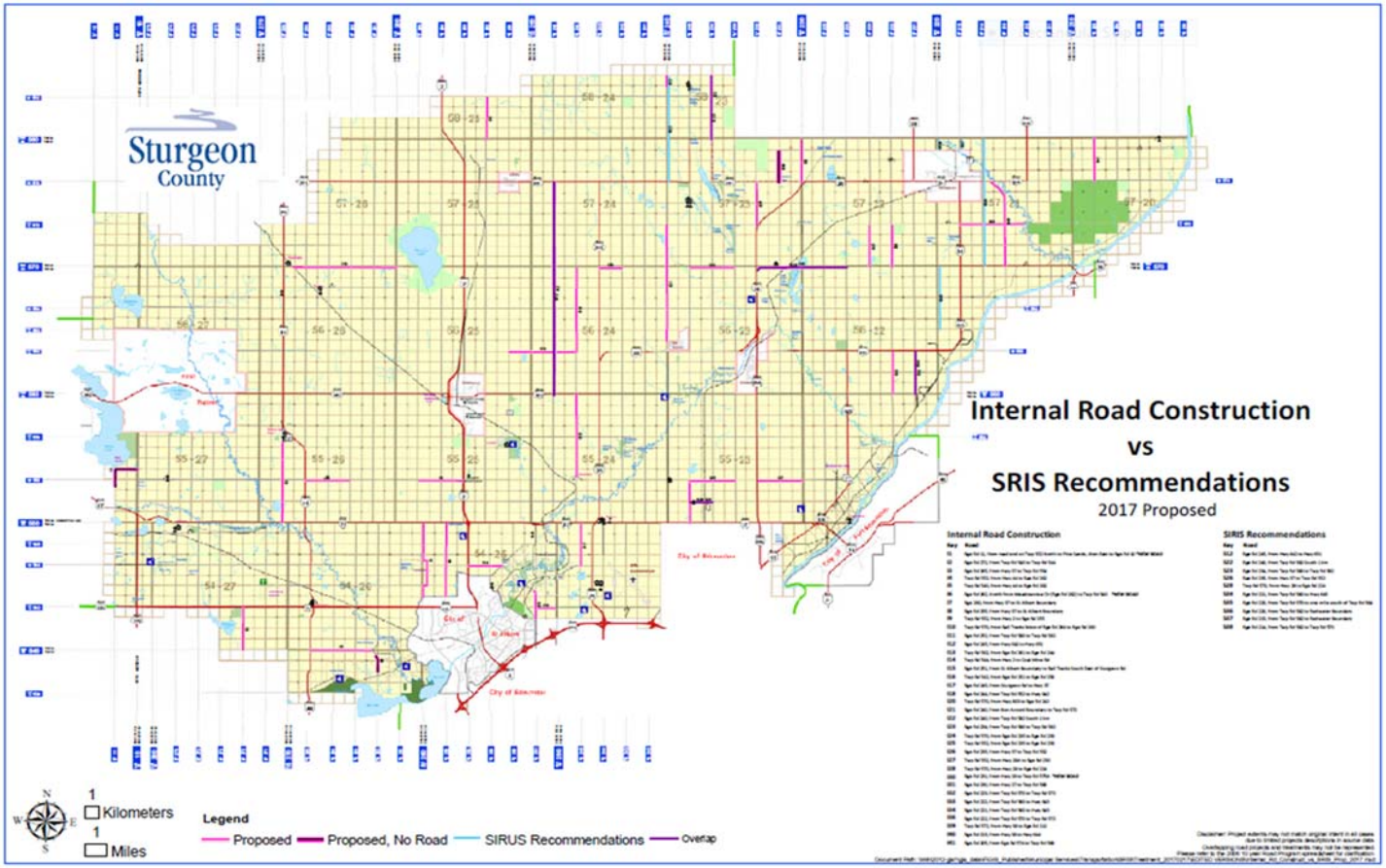
Transportation Supervisor (Gravel Roads)	• Process: Medium/High
	  • Moderate to high change to processes to coordinate with contractors via Engineering Services
	  • Moderate to high changes to communication and interaction as they will need to coordinate/interact with Engineering Services about the activities, scheduling and prioritization (daily/weekly basis)
	• People:
	  • Workload: minor increase anticipated until new processes/communication/integrations fully adopted
	• Increased emphasis on prioritization for maintenance aligned with reprioritization and scheduling/coordination/collaboration
		1	**4**	*Current*	*2018*

Transportation Supervisor (Drainage)	• Process: Low/Medium
	  • Low/Medium to high change to processes to coordinate with contractors via Engineering Services
	  • Low/Medium to high changes to communication and interaction as they will need to coordinate/interact with Engineering Services about the activities, scheduling and prioritization (daily/weekly basis)
	• People
	  • Workload: minor increase anticipated until new processes/communication/integrations fully adopted
	• Increased emphasis on prioritization for maintenance aligned with reprioritization and scheduling/coordination/collaboration
		1	**2**	*Current*	*2018*

Road Maintenance Program Technician	• Minimal to no change/impact anticipated	1	**1**	*Current*	*2018*
Operator II	• Minimal to no change/impact anticipated	12 + 3	**1**	*Current*	*2018*
1 Operator I	• Minimal to no change/impact anticipated	1	**1**	*Temp*	*2018*
1 Operator II	• Minimal to no change/impact anticipated	1	**1**	*Temp*	*2018*
Operator III	• Minimal to no change/impact anticipated	1	**1**	*current*	*2018*

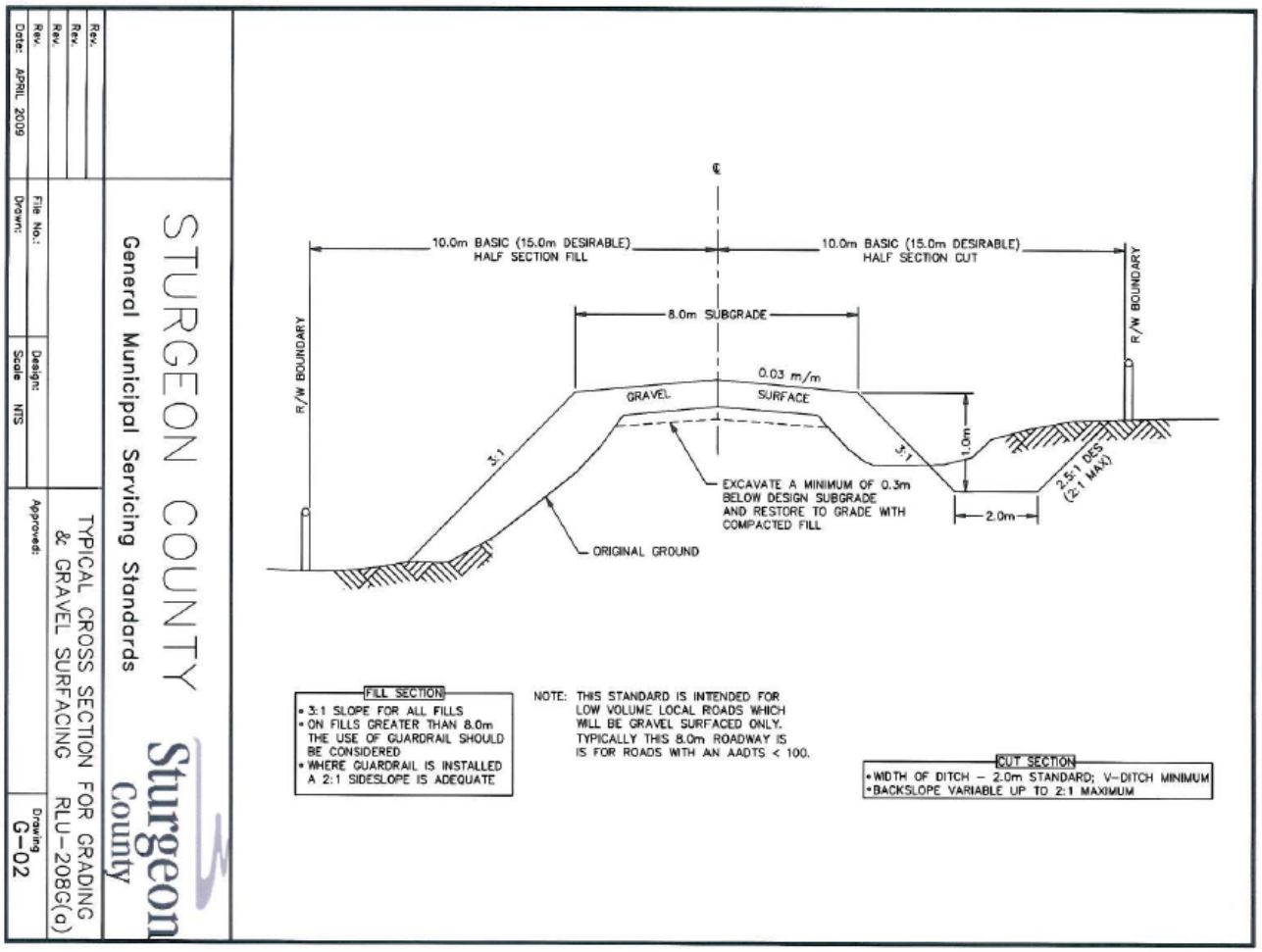
Role	What is changing	#size	Degree of change (1 to 5)	Status	Timing
Contracts Specialist	• Minimal to no change/impact anticipated	1	**1**	*Current*	*2018*
Transportation Coordinator	• Process: Minimal change anticipated. Increase in coordination with external/internal stakeholders as it relates to roads reconstruction • People: Medium • Anticipate moderate increase in communication required with residents as result of the change and increase of use of contractors on a day to day basis for the first few years	1	**3**	*Current*	*2018*
Program Coordinator	• Minimal to no change/impact anticipated	2	**1**	*Current*	*2018*
Customer Service Analyst	• People: Medium • Anticipate moderate increase in communication required with residents as result of the change and increase of use of contractors on a day to day basis for the first few years	1	**3**	*2018*	*2018*
Program Assistant	• People: Medium • Anticipate increase in communication required with residents as result of the change and increase of use of contractors on a day to day basis for the first few years	1	**3**	*Temp*	*2018*

14. Appendix E – Local roads layout



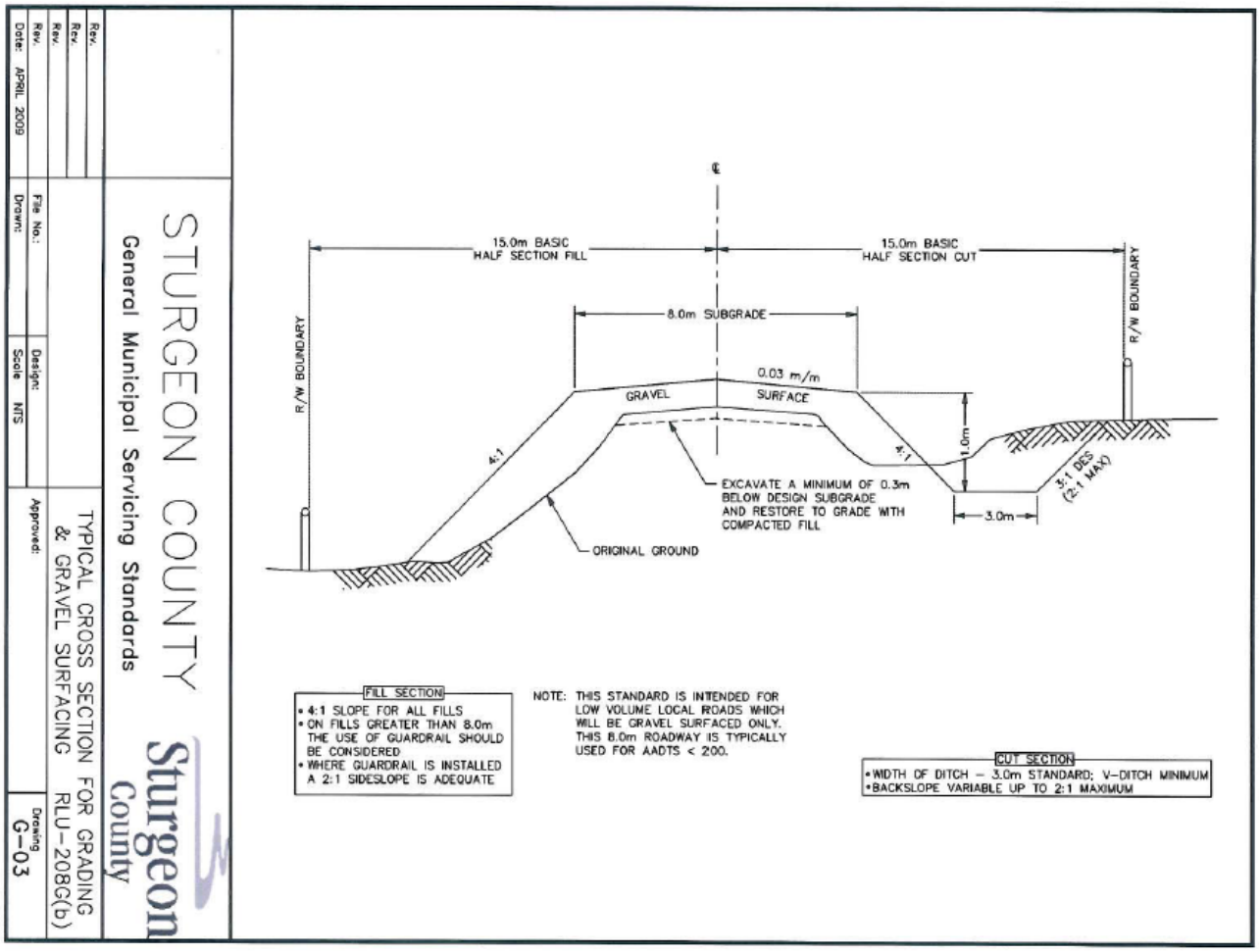
15. Appendix F – Local roads cross section

Annual Average Daily Traffic <100



Annual Average Daily Traffic <200

16.
17.


STURGEON COUNTY
General Municipal Servicing Standards
Sturgeon County
TYPICAL CROSS SECTION FOR GRADING & GRAVEL SURFACING RLU-208G(b)
Drawing G-03
Approved:
Scale NTS
Design:
Drawn:
File No.:
Date: APRIL 2009
Rev.
Rev.
Rev.
Rev.
15.0m BASIC HALF SECTION FILL
15.0m BASIC HALF SECTION CUT
8.0m SUBGRADE
R/W BOUNDARY
R/W BOUNDARY
0.03 m/m
GRAVEL SURFACE
4:1
4:1
1.0m
3:1 DES (2:1 MAX)
3.0m
EXCAVATE A MINIMUM OF 0.3m BELOW DESIGN SUBGRADE AND RESTORE TO GRADE WITH COMPACTED FILL
ORIGINAL GROUND
FILL SECTION
• 4:1 SLOPE FOR ALL FILLS
• ON FILLS GREATER THAN 8.0m THE USE OF GUARDRAIL SHOULD BE CONSIDERED
• WHERE GUARDRAIL IS INSTALLED A 2:1 SIDESLOPE IS ADEQUATE
NOTE: THIS STANDARD IS INTENDED FOR LOW VOLUME LOCAL ROADS WHICH WILL BE GRAVEL SURFACED ONLY. THIS 8.0m ROADWAY IS TYPICALLY USED FOR AADTS < 200.
CUT SECTION
• WIDTH OF DITCH – 3.0m STANDARD; V-DITCH MINIMUM
• BACKSLOPE VARIABLE UP TO 2:1 MAXIMUM

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