	<h1 style="text-align: center;">Town of Cochrane Policy</h1>
<p>Policy: Policy Title: Approval Date: Revision Date: Department:</p>	<p>1706-01 Capital Project Cost Estimate Development Policy February 27, 2017 Corporate Services</p>

Policy Statement

- A. Capital projects require cost estimates that are developed according to the following guiding principles:
- **Quality:** Prepared using industry recognized practices that cover a comprehensive list of project requirements and includes costing parameters that suit the decision or stage of the project.
 - **Comprehensive Cost Estimates:** The preparation of cost estimates for municipal projects should be comprehensive and completed in collaboration with all applicable departments and engage external expertise when appropriate to ensure a complete scope of work from the concept stage.
 - **Interdisciplinary expertise:** Prepared by individuals in the appropriate disciplines with knowledge, skill and experience in estimating for the range of factors affecting the project.
 - **Reliability:** Prepared using repeatable and defensible practices including the use of thorough archives for future consideration.
- B. Proceeding with decisions, projects or applications before they are well defined will be avoided where possible in order to reduce the risks that accompany an early, incomplete project definition or cost estimate.
- C. Administration will exercise professional judgement, consider industry best practices and will engage with experts at their discretion to determine the uncertainties of a project and develop cost estimates that suit the appropriate project decision. The following guide for a range of uncertainty factors is to be used at different stages of a project.

Estimate Levels – Table 1

Estimate Letter (Class)	Cost Estimate Name	Typical Administrative Needs	Uncertainty Factor
			* Based on Project Uncertainty Low Uncertainty ←-→ High Uncertainty
E	Conceptual Planning	Business Case/Master Planning/Capital Planning	35% ←-----→ 50%
D	Functional /Feasibility Study	5 Year or Less Capital Planning	25% ←-----→ 35%
C	Preliminary Design/ 30% Design /Schematic	Budget Approval	15% ←-----→ 25%
B	Detailed Design 60% Design/ Design Development	Confirm sufficiency of budget	10% ←-----→ 15%
A	Pre-Tender /Design Build	Approval for tender	Up to 10%

*As a percentage of the estimated total of the project.

Cost estimates become more precise at each stage of a project. Different procurement methods could result in variations in estimate levels, such as a functional study. Reasons for missing an estimate level must be documented in the project file.

A cost estimate prepared using the guideline above includes risks within the scope of the project but does not cover a scope change.

D. Scope Statement

This policy applies to the development of the Ten Year Capital Financial Strategy, capital budget requests, and projects resulting in Town procurements over \$250,000.

1. Reason for Policy

Council decision making often relates to reliability and accuracy of cost estimates prepared by Administration. Inaccurate cost estimates for notable capital projects can erode public trust and negatively frame the overall project and its outcomes. Council direction through this policy recognizes the technical challenge in approximating and therefore offers further guidance to Administration. The purpose of the Capital Project Cost Estimate Development Policy is to help ensure the quality and reliability of cost estimates for financial and project delivery needs. This Policy supports the Town of Cochrane’s commitment to continual improvement in financial planning and sustainability.

2. Related Information

2.1 Purchasing Policy 1701-04

3. Definitions

- 3.1 Cost Estimate Level- A financial estimate including an uncertainty factor for the cost of a project at a specific stage of planning.
- 3.2 Uncertainty Factor - an amount of money added (also called a contingency) to an estimate to cover items of cost which are not known exactly at the time the estimate is developed, but which will likely occur during the life of the project. It is intended only for the scope as defined in the estimate, it is not intended to cover scope changes.
- 3.3 Scope – specifics of what is included in a project such as:
- project parameters (length of project, no. of lanes, bridge area etc.)
 - any specific, noteworthy items that are not included
 - the design criteria
 - a statement on the terrain (mountainous, rolling, flat)
 - geotechnical information on site proposed
 - inspections and surveys conducted on site proposed
 - a statement on the complexity of the project (urban, suburban, or rural)
 - key plan, map or sketch of the project site showing location
 - all applicable soft costs for items such as design fees, project management, inspection, quality assurance, engagement, financing (e.g. borrowing), planning fees, contract administration, land, advertising, taxes, insurance and legal fees.
- 3.4 Scope change -Additional work that was not included in the project specifics initially approved.
- 3.5 Final Price Risk – In addition to the uncertainty factor included in any project estimate level, there is also final price risk. This is when total cost of a project could vary from additional uncertain events or conditions. The following chart is a guideline of final price risk for information only. The variance ranges in Table 2 are in addition to the uncertainty factor included in a cost estimate. As this could result in overstating financial resources required for a project, final price risk should only be presented as information.

Final Price Risk – Table 2

Estimate Letter (Class)	Cost Estimate Name	Additional Project Cost Variance Risk
E	Conceptual Planning	-50% to +100%
D	Functional/Feasibility Study	-40% to +75%
C	Preliminary Design 30% Design/ Schematic	-30% to +50%
B	Detailed Design 60% Design/Design Development	-15% to +20%
A	Pre-Tender/Design Build	-10% to +10%

4. Responsibilities

4.1 Town Council to:

4.1.1 Approve by resolution this policy and any amendments.

4.1.2 Consider the allocation of resources for successful implementation of this policy in the annual budget process.

4.2 Chief Administrative Officer to:

4.2.1 Implement this policy and approve procedures.

4.2.2 Ensure policy and procedure reviews occur and verify the implementation of policies and procedures.

4.3 Senior Manager of the Division to:

4.3.1 Ensure implementation of this policy and procedure.

4.3.2 Ensure that this policy and procedure is reviewed every three years.

4.3.3 Make recommendations to the Chief Administrative Officer of necessary policy or procedure amendments.

4.4 Supervisor to:

4.4.1 Understand, and adhere to this policy and procedure.

4.4.2 Ensure employees are aware of this policy and procedure.

4.5 All Employees to:

4.5.1 Understand and adhere to this policy and procedure.

5. Exclusions

5.1 Purchasing Policy 1701-04 excludes purchases in an emergency situation where spending in excess of \$50,000 is to be approved by the Mayor or Deputy Mayor, or in absence of both any Councillor and the Chief Administrative Officer or Director of Disaster Services without the need to comply with the Purchasing Policy. Compliance with this cost estimating policy would also not be required.


5.2 This policy does not apply where the project costing method is defined in a separate legal agreement such as a franchise agreement or utility agreement.

6. Special Situations

6.1 Project delivery model affects levels of project risk and cost estimates made. If project delivery model chosen manages risks in other acceptable ways, contingency adjustments may vary from Estimate Levels recommended in this policy.

6.2 Exceptions made must be documented and approved by Chief Administrative Officer.

7. End of Policy

	<h1 style="text-align: center;">Town of Cochrane Procedure</h1>
<p>Policy No.: Policy Title: Department:</p>	<p>1706-01 Capital Project Cost Estimate Development Policy Corporate Services</p>

1. Cost Estimating Principles

All project cost estimates for the Town of Cochrane should be developed with the following guiding principles.

1.1 Quality

Project cost estimates should be prepared by individuals with knowledge, skill and experience in estimating capital projects using industry recognized, repeatable, and defensible practices.

Cost estimators should:

- apply expert judgment to the estimate and the assumptions made in developing it
- incorporate appropriate quality control processes into the estimating process
- appropriately consider and quantify the risks and uncertainties of the project
- present the estimate in an easily understood format
- be able to defend the estimate and the basis for the decisions and assumptions therein, if asked

1.2 Integrity

Project cost estimates should be prepared using a high standard of professional and ethical integrity. They should not be prepared by anyone who may be in a conflict of interest, real or perceived.

Developing the estimate through an open and transparent process, and presenting it in a manner that is easily understood, helps to maintain the public's and other stakeholder's trust, support and confidence in Town projects.

2. Preparing Cost Estimates

2.1 Interdisciplinary Experts

Project cost estimates are ideally developed in consultation with skilled, interdisciplinary experts, and not in isolation. Working with such expertise is particularly important when the project scope is least defined.

Where possible project cost estimates should be prepared using a team approach, employing expertise from appropriate disciplines for the major project components (e.g. engineers for design parameters; property acquisition experts for property costs and related risks; construction personnel for constructability and scheduling; and environmental experts to determine potential impacts and mitigation). Interdisciplinary experts should also review the project scope, objectives and risks to ensure the project is well defined and understood. Where practical, a field review should be conducted with the team of experts, prior to the preparation of the estimate. Consultation with outside agencies may also be appropriate, particularly for work that is unique or unusual (eg buildings & railroads).

After an estimate is initially developed it should be shared with the entire project team to capture items or issues that may have been previously overlooked or unknown.

2.2 Preparing a Project Cost Estimate

Project cost estimates should be prepared based on the best, most complete information available on the project as at the time the estimate is being prepared. A clear and concise scope statement identifying specifically what is included, and what, if anything, is not included in the scope of work for the project is the most important ingredient for preparing a cost estimate.

Additional resources for cost estimating recommended practices can be found at Association for Advancement of Cost Engineering International. www.aacei.org

Project cost estimates should always include the entire scope of work for the project. Include all of the cost elements and activities necessary to complete the project such as:

- project parameters (length of project, no. of lanes, bridge area etc.)
- any specific, noteworthy items that are not included
- the design criteria

- a statement on the terrain (mountainous, rolling, flat)
- geotechnical information on site proposed
- inspections and surveys conducted on site proposed
- a statement on the complexity of the project (urban, suburban, or rural)
- key plan, map or sketch of the project site showing location
- all applicable soft costs for items such as design fees, project management, inspection, quality assurance, engagement, financing (e.g. borrowing), planning fees, contract administration, land, advertising, taxes, insurance and legal fees.
- other pertinent information related to the overall project.

Prepare a cost allocation for each cost element using prevailing prices at the time the estimate is prepared.

Cost estimators must make assumptions in developing any estimate, particularly during the early stages of a project when much less information is known. All such assumptions should be documented clearly and comprehensively enough to readily establish the basis on which the estimate is built.

Cost estimators should identify the estimate level on each cost estimate so there is a clear understanding of the amount of project development upon which the cost estimate is based.

2.3 Uncertainty Factor

Project cost estimates should always include an uncertainty factor to cover uncertainties and risks. Uncertainty factor (also called contingency by the construction industry) is generally understood to be an amount of money added to an estimate to cover items of cost which are not known exactly at the time the estimate is developed, but which will likely occur during the life of the project. It does not cover scope changes. A scope change is when additional work is needed and it was not included in the project cost estimate.

Two examples of scope changes that would not be covered by uncertainty factors included in original estimates are:

- Facility scope change to add a requirement not originally contemplated, such as achieving gold LEED standard.
- Transportation project scope change to purchase land for a new arterial road as a result of an alignment change.

Uncertainty factor should:

- be presented on the estimate as a separate line item
- be expressed in terms that can be easily understood

- be reasonably expected to be expended during the life of the project
- be based on analysis of the uncertainty and risks associated with all major cost elements necessary to complete the entire project (engineering, property, construction, etc.)
- be reviewed and updated as each new estimate is prepared through the project life cycle

Ideally the amount should be derived through a risk analysis of the items of work within the project using the expert judgment of the experienced estimator and project team members. It evolves with the level of project understanding. During the early stages of a project when the concept lacks detailed definition, uncertainty factor could be relatively high, then as the project progresses and the design is further defined, it should decrease with each successive cost estimate.

Project sponsors and owners often challenge the estimator and project manager regarding the amount of uncertainty factor in the project estimate, while project managers are often wary of fully revealing this information in order to receive competitive bids and to avoid project overruns. A cost estimate which does not contain enough uncertainty factor may result in a project proceeding without adequate budget, thus jeopardizing the success of the project. Equally as important, estimators must guard against placing too much uncertainty factor in a cost estimate as the project may become overpriced and negatively impact project 'go/no-go' decisions.

Table 1 below provides a range of uncertainty factors to use at different stages of a project.

Estimate Levels – Table 1

Estimate Letter (Class)	Cost Estimate Name	Typical Administrative Needs	Uncertainty Factor * Based on Project Uncertainty
			Low Uncertainty ←---→ High Uncertainty
E	Conceptual Planning	Business Case/Master Planning/Capital Planning – discussion purposes based on limited information	35% ←-----→ 50%
D	Functional /Feasibility Study	5 Year or Less Capital Planning (rough order of magnitude estimate**)	25% ←-----→ 35%
C	Preliminary Design 30% Design/ Schematic	To verify project scope and costs for budget approval	15% ←-----→ 25%

B	Detailed Design 60% Design/ Design Development	To confirm sufficiency of funding for project prior to tender	10% ←-----→ 15%
A	Pre-Tender/Design Build	Verify project scope and establish basis for project cost schedule; used for tender	Up to 10%

*As a percentage of the estimated total of the project.

**rough order of magnitude estimate is a cost provided in the early stages of a project when requirements have not been fully defined yet.

Cost estimates become more precise at each stage of a project. Different procurement methods could result in variations in estimate levels, such as a functional study. Reasons for missing an estimate level must be documented in the project file.

2.4 Final Price Risk

In addition to the uncertainty factor included in any project estimate level, there is also final price risk. This is when total cost of a project could vary from additional uncertain events or conditions. The following chart is a guideline of final price risk for information only. The variance ranges in Table 2 are in addition to the uncertainty factor included in a cost estimate. As this could result in overstating financial resources required for a project, final price risk should only be presented as information.

Final Price Risk – Table 2

Estimate Letter (Class)	Cost Estimate Name	Additional Project Cost Variance Risk
E	Conceptual Planning	-50% to +100%
D	Functional/Feasibility Study	-40% to +75%
C	Preliminary Design 30% Design/ Schematic	-30% to +50%
B	Detailed Design 60% Design/Design Development	-15% to +20%
A	Pre-Tender/Design Build	-10% to +10%

2.5 Continual Documentation throughout Project Life Cycle

Project cost estimates should be prepared at strategic points throughout the project lifecycle, ideally at each project phase.

Each estimate should reflect prevailing pricing for the entire scope of work based on the knowledge and information available, and an appropriate assessment of the risks at the time each estimate is prepared.

Project cost estimates should always be accompanied by documentation of the assumptions made in the development of the estimate to ensure that the context in which the estimate was developed is clearly understood. Estimates without such documentation, could lead to incorrect assumptions by those viewing the estimate.

Each cost estimate should be presented in a consistent, repeatable format to ensure that they clearly demonstrate how the newer estimate evolved from the previous, less-detailed estimate. The desired result being a seamless progression of estimates each comparable to the previous.

Any scope changes should be clearly and completely documented on the estimate and should consider the risks to the project which may flow from the scope change itself.

2.6 Review of Estimates

Each estimate is based on the evaluation, views, and interpretation of a particular estimator. A second independent set of eyes reviewing the estimate will afford project managers and decision makers an opportunity to capture a different perspective (a second opinion), and provide assurances as to the quality of the estimate. The Town should contract qualified cost estimators on 'as and when required' consulting services for such estimate review purposes.

3. Documentation for each project cost estimate

The project cost estimate is an important document for any project. Each estimate should be recorded and maintained with care as a key support to the budget development and cost management process.

The full and complete project cost estimate consists of project information, the assumptions, and the estimate of costs for each cost element. An estimate submitted with just a total dollar amount is of limited value without a record of the context, basis, and assumptions

used to develop it. ***A copy of the entire project cost estimate should be retained in the project records, and all cost estimates should also be retained electronically.*** Although estimators usually retain a copy of any estimate they've prepared, it is Administration's responsibility to retain copies of the cost estimates for Town projects.

Early conceptual and planning level estimates are prepared prior to the assignment of a Project Manager, often in support of a business case for approving project funding. These estimates should be retained by the program area responsible for developing and submitting the business case. Once the project is assigned to a Project Manager, the Project Manager becomes responsible for retaining the project cost estimate.

The Project Manager should seek out copies of all relevant previous cost estimates to ensure they are retained in the project file.

4. Record retention for project cost estimates

Cost estimates are prepared throughout the project life cycle and must be retained in the project file to track the evolution of the project costs.

Project cost estimates are often requested during project reviews or audits, and they should be readily retrievable in response to such requests.

5. Release of Estimating Information

Careful consideration must be given to the context surrounding the release and potential use of the information provided in project cost estimates.

While estimates may have been developed for a specific and unique purpose, they may be subject to misuse by those who do not understand the applicable context, and by those parties who could derive some personal benefit from acquiring such information (e.g. potential bidders).

Project cost estimates should not be released to the public until they have been thoroughly reviewed and found to be an accurate reflection of the project scope and associated project risks. In particular pre-tender Town cost estimates prepared for construction contract tendering and bidder evaluation, shall remain confidential, and shall not be released to anyone who could be perceived to derive some benefit from acquiring such information.

6. End of Procedure

Approval

A large, stylized handwritten signature in black ink, consisting of several loops and a long horizontal stroke.

Julian deCocq, C.A.O.

March 1, 2017
Date