City of Peterborough
Television Road Bridge Replacement
Municipal Class Environmental Assessment

Draft Value Planning Report

October 10, 2019
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1.0 Introduction

1.1 Background

This report summarizes the results of the Value Planning Workshop carried out by BT Engineering Inc. (BTE) for the Television Road Bridge Replacement over South Meade Creek. The Value Planning team was comprised of staff from the City of Peterborough, Brown|CO, and BTE.

The Television Road Bridge had an OSIM inspection in late 2016 which determined that the bridge was undergoing significant deterioration. The project objective is to define the bridge management plan with consideration of the traffic demand on Television Road and the bridge. This report summarizes the results of the Workshop for the review of the planning and preliminary design of the crossing. It is an initial task in the preliminary design phase to refine expectations and define the functional requirements of the project.

1.2 Process of the Workshop

The Value Planning Workshop took place on June 4, 2019 to:

- Provide a greater understanding of issues and requirements;
- Develop a list of value proposals (alternatives) to assist in the delivery of a quality project;
- Analyze constructability requirements; and
- Define the project objectives.

The Value Planning mandate included a review of the history of the project and Television Road corridor, constructability of the project and the identification of project risks that could be mitigated during the design development phase. A list of functions was developed to assist in the delivery of a quality project. The value planning methodology helps to ensure that the final project delivered is cost effective, constructible and in keeping with the project delivery objectives.

The Value Planning approach is a powerful decision-making process, which differs from the conventional scientific process by focusing on the project/process functions to allow both convergent and divergent thinking. Alternatives are then generated to appropriately deliver the functions required for the success of the project.

The study utilized the initial phases of the 6-phase job plan of SAVE International to define the necessary project requirements and prioritize elements. This was achieved through: data collection, and analyzing and reviewing study materials; analyzing functional requirements and generating, evaluating and developing ideas of alternative value enhancements to move forward with the project; further refinement of the ideas short-listed by the VP Team; and screening by the owner and design team on which ideas to implement. These alternatives will subsequently be further developed as part of the preliminary design.
1.3 Governing Principles

The discussions prior to, during, and following the Workshop with the City of Peterborough helped to establish the principles that were important to the stakeholders, and that would contribute to the success of the project. The governing principles of the Workshop were defined to be:

- The VP Team will remain focused on necessary elements defined in the study scope, but will document generated ideas, outside the scope, that may be of benefit to others;
- All suggestions will be accepted by the VP Team and evaluated later for application and development;
- The VP Team will focus on the functions and value of components to ensure that the most appropriate and best value solutions are selected; and
- The City of Peterborough will continue to have the authority and responsibility to accept, modify, or reject any/all recommendations and estimate corrections made by the VP Team.

1.4 VP Team

The VP Team was comprised of technical specialists and select staff from the City of Peterborough, Brown|CO, and BTE. During the workshop, the VP Team was asked to set aside the perspectives of their individual organizations and act solely as knowledgeable experts in their fields of planning, design and operations. The VP Team recommendations/ideas do not reflect the approval of any agency.

The VP Team members and their affiliation, expertise, and attendance are listed in Table 1.

The design team presented background information to inform the VP Team and workshop participants of the project scope and objectives.

**Steve Taylor**, P.Eng., M.Eng., Certified Value Specialist (CVS-Life), BTE, served as the VP Team Leader (VPTL) for the Workshop session and oversaw the preparation of the VP report.

<table>
<thead>
<tr>
<th>Name</th>
<th>Representing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kevin Jones</td>
<td>City of Peterborough (City)</td>
</tr>
<tr>
<td>Robert Dunford</td>
<td>City</td>
</tr>
<tr>
<td>Blair Nelson</td>
<td>City</td>
</tr>
<tr>
<td>Sue Sauvé</td>
<td>City</td>
</tr>
<tr>
<td>Stephen Brown</td>
<td>Brown &amp; Co. Engineering Ltd. (Brown</td>
</tr>
<tr>
<td>Steve Taylor</td>
<td>BT Engineering Inc. (BTE)</td>
</tr>
<tr>
<td>Darcie Dillon</td>
<td>BTE</td>
</tr>
</tbody>
</table>
1.5 VP Job Plan

The Job Plan prepared for the Workshop follows the standard value management methodology (October 1998) of SAVE International (authority to accredit Value Management). The VP Job Plan (refer to Figure 1) is conducted in three stages – Pre-Workshop, Workshop, and Post-Workshop.

The Job Plan originally prepared for the Workshop was essentially maintained, although several activities were adjusted in scope to accommodate discussions and ideas generated throughout the Workshop. The VP Study results serve as key input into the project.

Figure 1: Value Planning Job Plan

1.5.1 Workshop Activities

The Pre-Workshop activities included data collection, and analyzing and reviewing study materials. The Workshop analyzed functional requirements and generated, evaluated and developed ideas of alternative value enhancements to move forward with the project. The post-workshop activities will involve refinement of the ideas short-listed by the VP Team and screening by the owner and design team on which ideas to implement.

The agenda prepared for the Workshop followed the VP Job Plan consisting of the Information, Function Analysis, Creativity, Evaluation, Development, and Presentation phases of the SAVE International value methodology standard.

The Post-Workshop activities involved the review of the input from the Workshop and the development and evaluation of ideas including the preparation of the Value Planning Report. The FAST (Functional Analysis System Technique) diagram was finalized based on the draft FAST
diagram and the functions identified during the workshop. Each idea was assessed in terms of how it will (or should) be used during the project.

1.5.2 Workshop Presentations

Introductory presentations were made to the VP Team to provide a common understanding of background on the project and objectives of the workshop. The PowerPoint presentation by Mr. Taylor is included in Appendix A.
2.0 Quality Modelling

The project analysis included a quality modelling exercise. This exercise highlighted the areas of greatest concern and high priority for this project, as shown in Figure 2.

Quality Modelling is a consensus building technique designed to identify the more sensitive aspects of the study. The VP Team developed unique definitions of predefined criteria and ranked them in a relative manner.

The value of the Quality Modelling session is not the end-product graphic, but rather the discussion preceding the development of the model, during which definitions are agreed to and consensus is reached on the relative importance of the quality indicators.

The Quality Modelling exercise was focused on gaining consensus from the VP Team members when considering the performance or quality requirements of project specific elements.

The project had 11 quality indicators. These indicators were:

1. Environmental
2. Traffic Operations during Construction
3. Arterial Road Operations
4. Bicycle Safety / Pedestrian Safety
5. Accommodate Future Growth
6. Emergency Vehicles
7. Goods Movement
8. Capital Costs
9. City Operations and Maintenance Costs
10. Safety – TAC Standards

Of the 11 criteria considered, there were two factors that the VP Team collectively considered more important when assessing priorities. These are along the outside edge of the circle on the Quality Model. These factors were:

1. Capital Costs
2. City Operations and Maintenance
2.1 Function Analysis

The success of any VP Workshop is predicated on the VP Team being focused on the right problem or opportunity.

Value Planning is a team-oriented review process in a Workshop format, focused on the functions that the project, product or process must successfully deliver. During the Workshop, the VP Team identified the functions and prepared a Function Analysis System Technique (FAST) diagram.

The functions that must be performed were identified and categorized during the workshop. The VP Team identified and categorized functions into Basic Functions (essential), Supporting Functions (desirable related to stakeholder requirements or assisting Basic functions), and Other Goals.

The power of the function analysis is not in developing the FAST diagram, but rather the team understanding of the objectives to be solved. In the following figure functions are presented as “the Basic Function” (which is the project being delivered), “Supporting Functions” and Other Goals. This function analysis exercise forces the team to understand why project components exist in order to meet an objective. Moving to the right in the function logic path presents a solution (project or project element) and moving to the left on the diagram presents a goal to be accomplished (more abstract than a specific solution).

The interdependency of the project functions is illustrated in Figure 3.
Reading the FAST Diagram

The FAST Diagram is a model of the interdependencies of the project/process functions. While the graphical presentation of the functions is the end result, it is the discussion, teamwork, and consensus building that went into the development of the FAST diagram that truly benefits the VP Team. This is because a diverse group of participants have been able to reach agreement on what the Basic and Secondary functions of the project/process should be, described using a verb-noun pair for each function.

The FAST diagram is read from left to right asking the question for each function box: “How is <the function> performed...by doing <function to the right>. It can also be read from right to left: Why does it perform <the function>...to do the <function to the left>. Vertical function boxes when linked are read as <function 1 is done when doing function 2>.

The function analysis process allowed the Team to focus on understanding the primary element of work necessary to be accomplished and questioning the value of cost associated with this primary purpose.

Assessing the rationale for this project element by function rather than the prescriptive solution led to greater abstraction by the team for methods to accomplish this objective. This led to creative ideas that achieved the function but were not limited to the current solution.
3.0 Idea Generation and Evaluation

3.1 Idea Development and Tracking

The purpose of the exercise was to develop a list of ideas for consideration by the Project Team. During the Workshop, the Team reviewed each of the ideas to screen out relatively weaker/less promising ideas.

One objective of the Workshop was to reduce the number of ideas to a manageable number that represent the best ideas, or those ideas that have the greatest opportunity for acceptance.

The short-listed ideas include a reference number used by the VP Team during the generation of alternatives, which relates to the function being studied. For example, code PE-1 refers to the first idea generated by the Team for the “Protect Environment” category. This list of ideas formed the basis for further development by the VP Team.

3.2 VP Targets

The VP workshop is essentially a time management exercise in that critical choices must be made to select the best proposals for development, given the limited time available.

The goal of the VP workshop is to improve value. Value is best defined as the relationship of Function (quality or performance or benefits) versus Cost (monetary, time, environmental impact, etc.). The relationship between Value, Function, and Cost is expressed:

\[ \text{Value} = \frac{\text{Function}}{\text{Cost}} \]

In most VP Workshops, Study Targets are generally selected based on the functions identified in the FAST diagram, cost models and/or the higher rated quality indicators.

3.3 Evaluation

The evaluation of the ideas focused on eliminating duplicate or very similar ideas or those with the least likelihood of being implemented. Combining dependent ideas was also considered.

The study generated 14 ideas that had the opportunity to improve value (i.e. improve performance or reduce cost while meeting the required performance). Table 2 presents the list of ideas from the creative phase of the workshop including those championed by one or more team members for further review.

<table>
<thead>
<tr>
<th>Traffic/Minimize Traffic Disruption</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>T-1</td>
<td>Consider a transition zone between Highway 115 and the bridge to induce a change in driver behaviour to reduce speeds</td>
</tr>
<tr>
<td>T-2</td>
<td>Provide a median across the structure (5.0 m) for a potential intersection to accommodate a possible Maria Street extension</td>
</tr>
<tr>
<td>T-3</td>
<td>Potentially include a statement of flexibility in the ESR for associated elements of the bridge such as the median to accommodate the Maria Street extension if the East Side Traffic Study concludes it is warranted</td>
</tr>
<tr>
<td>-------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Protect Environment</strong></td>
<td></td>
</tr>
<tr>
<td>PE-1</td>
<td>Create bird nesting habitat (ledges on or off the bridge to replace the existing habitat)</td>
</tr>
<tr>
<td>PE-2</td>
<td>Create turtle nesting areas (from the demolition of the original bridge abutments (if a longer bridge is used))</td>
</tr>
<tr>
<td>PE-3</td>
<td>Utilize open abutments (longer bridge span) to accommodate animal passage, improve hydraulic performance and avoid the existing piles</td>
</tr>
<tr>
<td>PE-4</td>
<td>Construct the multi-use pathways (MUP’s) on separate structures with longer spans to avoid the wetland making use of the lower loading on the MUP bridges</td>
</tr>
<tr>
<td><strong>Cross Creek</strong></td>
<td></td>
</tr>
<tr>
<td>CC-1</td>
<td>Widen the structure on the east side to minimize impact to the creek</td>
</tr>
<tr>
<td><strong>Active Transportation</strong></td>
<td></td>
</tr>
<tr>
<td>AT-1</td>
<td>Consider 3 alternatives for the MUP including:</td>
</tr>
<tr>
<td></td>
<td>• 3 m MUP beyond the curb of the bridge</td>
</tr>
<tr>
<td></td>
<td>• Offset from the travelled lane to a barrier wall with 3 m MUP on the back-side of the barrier wall</td>
</tr>
<tr>
<td></td>
<td>• Separate MUP structure beyond the bridge</td>
</tr>
<tr>
<td>AT-2</td>
<td>For the separate MUP consider 3.0 m and 4.0 m wide crossings on the bridge</td>
</tr>
<tr>
<td>AT-3</td>
<td>Sidewalk alternatives 1.8 m sidewalk from curb face</td>
</tr>
<tr>
<td><strong>Minimize Cost</strong></td>
<td></td>
</tr>
<tr>
<td>MC-1</td>
<td>Build a 4-lane substructure and defer the superstructure for the future lanes 3 and 4)</td>
</tr>
<tr>
<td>MC-2</td>
<td>Defer the future foundations for lanes 3 and 4 (this will not meet the design criteria for the traffic demand in 2042)</td>
</tr>
<tr>
<td>MC-3</td>
<td>Use existing bridge for active transportation</td>
</tr>
</tbody>
</table>
4.0 Study Recommendations

It must be recognized that the proposals and recommendations from the VP workshop represent the brainstorming of potential ideas without any detailed analysis. These ideas will be the subject of more detailed review, debate, and analysis as part of the EA. The Value Planning (VP) Workshop was solely a scoping and brainstorming exercise utilizing industry expertise for project understanding as one of the phases of the study, and these short-listed ideas are expected to be used for generation of alternatives to be considered by the EA.

The primary recommendations of the Workshop were to design a structure that minimizes traffic impacts, provide active transportation facilities, allow for staging of the project, and protect the environment while minimizing costs.
City of Peterborough
Television Road Bridge Replacement
EA Study

TAC Meeting No. 1
Value Planning Workshop
June 4, 2019

Outline

• Key Staff
• Project Introduction
• Schedule
• Value Planning
• Next Steps
Key Staff

City of Peterborough
Project Manager
Steve Taylor

Quality Control Auditor
Peter Shaver

Assistant Project Manager
Daniele Dillon

Environmental Lead
Gord Bell

Fisheries/Natural Environment
Rudi Warne
Zachary Wells
Kyle Fanning

Cultural Heritage
Wendy Shearer

Archaeology
Laure McRae

Geotechnical
Stuart Baird

Fluvial Geomorphology
Ed Gazendam

EA Process
Gord Bell

Consultation
Steve Taylor

Preliminary Design Lead
Steve Taylor

Roadway Design
Steve Taylor
Stephen Brock

Structural Engineering
Stephen Brown
Jason Jelinek

CAD Design
Tim McNaughton

Pavement Marking / Signage
Stephen Brock

Accessibility
Stephen Brock

Traffic Operations Analysis
Stephen Brock
Daniel Riemende

Active Transportation
Stephen Brock
Daniele Dillon

Traffic Engineering
Stephen Brock
Daniel Riemende

Utility Coordination
Mike Urquhart

Construction Staging
Stephen Brock

Drainage and Hydrology
Leo Sanchez

Constructability Review
Gary Carneiro
Murray Barten

Safety
Stephen Brock
Steve Taylor, P.Eng., M.Eng., CVS
Project Manager
• President of BTE
• 30 years of experience
• Transportation Planning and Preliminary Design
• Masters in Structural Engineering
• Roadway/Highway Design
• Noise Studies
• Value Engineering
• Risk Assessments

Stephen Brown, P.Eng.
Structural Lead
• Senior Structural Engineer with 35 years of experience
• Experience in the structural design and construction industry, including shoring and formwork, the full stress analysis of structures for rapid replacement, alternate structure design, and resolution of construction related issues
Darcie Dillon, P.Eng.
Assistant Project Manager

- Partner at BTE
- Transportation Planning
- Master Plan EA Process
- Public Consultation
- Evaluation

Stephen Brook, P.Eng.
Senior Traffic Engineer

- 30 years of experience
- Experience in traffic engineering, comprehensive transportation planning, transit planning, active transportation, parking, functional design and environmental assessment studies
- Member of ITE’s Complete Streets Council and their Pedestrian and Bicycle Standing Committee
Tim McNaughton
• Over 25 years of experience
• Extensive experience in the design of municipal roadways including:
  o Limebank Road – preliminary design
  o Parkdale Avenue – detail design
  o March Road – detail design
  o McNeely Avenue Bypass – Town of Carleton Place - detail design
  o Woodroffe Avenue and Southeast Transitway – preliminary design

Peter Shaver, P.Eng.
• Senior Transportation Engineer with 30 years of experience
• Former Head of Highway Engineering Office for MTO Central Region
• Quality Control on all deliverables
Environmental Team

Gordon Bell
Environmental Planner

Rudi Warmé
Terrestrial/Aquatic Investigations

Zachery Wells
Environmental Planner

Kyle Fleming
Natural Science and Ecology

Ed Gazendam
Fluvial Geomorphologist

Technical Specialists

Leo Sanchez
Drainage and Hydrology

Laura McRae
Archaeology

Wendy Shearer
Heritage

Stuart Baird
Geotechnical Engineering

Murray Batten
Constructability

Mike Ulozas
Utilities

Garry Carriveau
Constructability
Project Introduction

• Municipal Class Environmental Assessment (MCEA) to define the bridge management plan for the Television Road Bridge over South Meade Creek

• Project Deliverables:
  – Environmental Study Report (ESR)
  – Preliminary Design Drawings
Television Road Bridge crossing of South Meade Creek

Study Area
Study Issues

View to North
View to South

Recommended Ultimate Road Network (2031) from Peterborough Comprehensive Transportation Plan
MTO Peterborough Bypass
Lansdowne Street

Initial Intersection
Ultimate Interchange

Source: PDR 1978

Television Road Bridge
Out-of-Way Travel
## Schedule

**EA Schedule**

<table>
<thead>
<tr>
<th>Task</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Start-Up Meeting</td>
<td>April 2019</td>
</tr>
<tr>
<td>Study Commencement Notice</td>
<td>May 2019</td>
</tr>
<tr>
<td>Indigenous Peoples Consultation Program</td>
<td>April – May 2019</td>
</tr>
<tr>
<td>Information Gathering</td>
<td>April – June 2019</td>
</tr>
<tr>
<td>Environmental Review</td>
<td>April – July 2019</td>
</tr>
<tr>
<td>Study Design and Value Planning Workshop</td>
<td>June 4, 2019</td>
</tr>
<tr>
<td>Stakeholder Meeting</td>
<td>June 2019</td>
</tr>
<tr>
<td>Transportation Analysis</td>
<td>June 2019</td>
</tr>
<tr>
<td>PIC No. 1</td>
<td>June 19, 2019</td>
</tr>
<tr>
<td>Analysis and Evaluation of Alternatives</td>
<td>August – September 2019</td>
</tr>
<tr>
<td>Evaluation of Alternatives (TAC Meeting)</td>
<td>October 2019</td>
</tr>
<tr>
<td>Preparation of ESR</td>
<td>November 2019</td>
</tr>
<tr>
<td>PIC No. 2</td>
<td>December 2019</td>
</tr>
<tr>
<td>City Review ESR (TAC Meeting)</td>
<td>March 2020</td>
</tr>
<tr>
<td>City Council Presentation</td>
<td>March 2020</td>
</tr>
<tr>
<td>Public Review of ESR</td>
<td>April 2020</td>
</tr>
</tbody>
</table>
Request for Information

- Survey data
- Traffic
- Collision history
- Drainage report
- As-built drawings
- Property data
- Tax roll database (mailing list)
- Stakeholder lists (utilities, cycling clubs, etc.)
- Hydrology and hydraulic data
- Current and historic air photos
- Background reports

Handout 1 - Study Commencement Notice
2026 Total Traffic
(Ashborough TIS Feb 2018)

By 2026 over 1800 vehicles were projected to cross the structure during the pm peak hour.

Traffic Demands

- Existing AADT on this section of Television Road is already over **11,000 vehs./ day**
- Within a 20 year planning horizon the daily traffic is projected to approach **20,000 vehs./ day**

Based on both the existing demands and the anticipated traffic growth, construction of **a 4 lane structure is recommended.**

This is consistent with the recommendations of the Transportation Master Plan.
Preliminary Coarse Screening
Preliminary Coarse Screening of Alternatives

The following initial candidate alternatives are recommended to not be carried forward:

1. Do Nothing (Based on Structure Condition)
2. Rehabilitation of existing bridge (Based on Structure Condition)
3. 2-lane replacement structure (based on forecast 20 year horizon traffic demand)
4. Off-site detours (Based on staging on-site associated with necessary 4-lane Television Road Structure)
Preliminary Alternatives Carried Forward for Detailed Evaluation

- Replacement 4-lane Structure
  - Alignment to the east
  - Alignment to the west
  - Alignment on centre
- Traffic Management
  - Two stage construction (bridge in halves)
  - Temporary traffic control (bridge alignment on existing centreline)
- Bridge Alternatives
  - Steel and Concrete

Alignments

- East Widening
  - Shortest wetland crossing
  - Ease of Traffic Staging
- Widening on Centre
  - Moderate wetland crossing
  - Complex traffic staging
- West Widening
  - Largest wetland Crossing
  - Ease of traffic Staging
East Alignment

Value Planning
The Origins of VE?

- General Electric in the 1940’s
- Developed by Lawrence Miles
  - Purchasing Engineer
- Result of shortage of materials
- Created function based methodology
- Results reduced cost/improved value
- Formalized VE process

Value / Quality

- Quality
  - good performance
- Value
  - appropriate performance and cost
Value Engineering Overview

• VM Definition:
  – Value Management is a systematic, creative, function-oriented, team approach to optimize project performance/quality for the resources spent

• Another way of looking at it:

  \[
  \text{Value} \sim \frac{\text{Function}}{\text{Cost}*}
  \]

* monetary, schedule, environmental or property impacts, space, etc.

Sample Cost Model

- Rock Face: 36%
- Swamp/Musk Excavation: 27%
- Granular 'A': 2%
- Granular 'B': 6%
- Asphalt: 12%
- Lighting: 6%
- Structures: 7%
- Rock Excavation: 2%
- Other: 1%
Function Analysis

- Identifies:
  - What customers really want
  - How much they are willing to pay for
- The 6 “What Questions” we ask…
  - What is the purpose of the project or project element?
  - What does it do?
  - What does it cost?
  - What is it worth?
  - What alternative would do the same job?
  - What would that alternative cost?
Defining Functions

- The work performed by a project, product, process, or procedure.
- A concise statement of what is being accomplished without specifying the means.
- A two-word performance description using an active verb and a measurable noun.

<table>
<thead>
<tr>
<th>Action Verb</th>
<th>Noun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transports</td>
<td>Vehicles</td>
</tr>
<tr>
<td>Conveys</td>
<td>Weight</td>
</tr>
<tr>
<td>Transmits</td>
<td>Flow</td>
</tr>
<tr>
<td>Protects</td>
<td>Heat</td>
</tr>
<tr>
<td>Houses</td>
<td>People</td>
</tr>
<tr>
<td>Supports</td>
<td>Load</td>
</tr>
</tbody>
</table>
Functional Analysis

Conventional Design Review

Project A → ° → Project A'

Value Analysis

Project A → ° → Project A' or B

Eyeglasses Example
Function Analysis

<table>
<thead>
<tr>
<th>Component</th>
<th>Functions</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>...</td>
<td></td>
</tr>
</tbody>
</table>

Creativity

Creative

4 to 5 Years Old

Formal Education

Working Environment

Judicial
Closing Thoughts

• If I had an hour to cut a tree …

• I’d spend the first 50 minutes sharpening my axe!

Abraham Lincoln

Television Road Bridge Replacement EA
Technical Advisory Committee Meeting No. 1
Value Planning Workshop
QUALITY MODEL

Water Resources
- Stormwater Drainage Improvements (conveyance 25 yr)

Safety
- Visibility, collision, accommodating turning vehicles, shoulders, recovery area

Operations and Maintenance Costs
- Consider future operating costs

Capital Costs
- Meets budget

Goods Movement
Balanced Value – Centrally (meets standards)

Emergency Vehicles
- Accommodate Fire, EMS, Police

Environmental
- Species at Risk
- Fluvial
- Wetland

Traffic Operations
- Maintain traffic vs. off-site detour

Arterial Road Operations
- Maintain speed limit – 80 km/h
- Design speed – 100 km/h

Bicycle Safety/Pedestrian Safety
- Accommodate physical space

Accommodate Future Growth
- Traffic increase on Television Road
- Comprehensive Transportation Plan Recommendation

Highest Value
(Outside of circle)

Balanced Value (Inside Circle)

Baseline (current design)

Desirable

26
Next Steps

• Environmental Inventories
• Hydraulic Modelling
• Alternative Generation
• PIC 1 – Present Short Listed Alternatives
  – (Possible FN PIC to follow public event based on interest)
• Analysis and Evaluation of Alternatives
• PIC 2