

Brockville Railway Tunnel



Market Assessment Study

Final Report

February, 2014

TCI Management Consultants



99 Crown's Lane, Toronto, Canada, M5R 3P4 • Fax: (416) 515-1255

February 17, 2014

City of Brockville
1 King. St. West
Brockville, ON
K6V 5V1

Attention: David LeSueur
Chair, Brockville Railway Tunnel Committee

Re: Brockville Railway Tunnel Market Assessment Study – Final Report

We are pleased to provide to you and the rest of the members of the Tunnel Committee our Final Report, which outlines the market potential for the Tunnel attraction. The results show that the attraction can be a significant community asset and generate economic benefit to the area. As well, as the Report outlines, there is some potential for the tunnel project itself to act as a catalyst to encourage additional development in the north end of its reach, which will also contribute materially to community betterment.

On behalf of the entire study team, we wish the best success in your on-going efforts.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Jon Linton', is written over a light blue circular stamp or watermark.

Jon Linton

Director, TCI Management Consultants

(416) 515-0815, jlinton@consulttci.com

c.c. Glen Loo, Greg Young, TCI Management Consultants

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Brockville Railway Tunnel Project, Market Assessment Study

Executive Summary

In August 2013, following a public tendering process, TCI Management Consultants was retained to undertake a market assessment study for the Brockville Tunnel, Canada's first railway tunnel and a key historical asset of the City of Brockville. The assignment was to undertake a market assessment review of the tunnel as an attraction and determine the broad financial implications of use of the facility by the target markets identified. The project was split into two parts: a first phase which was to undertake a preliminary review the market potential and determine whether there appeared to be sufficient justification for further investigation, and a second phase (assuming the answer to the first phase was a 'go'), which was to undertake a more detailed review of market potential and investigate the implications of developing and operating the tunnel as a market attraction.



Exterior View of Tunnel, South End, Looking North



Interior of the Tunnel

The first phase of the analysis demonstrated that the tunnel attraction could be a worthwhile community asset, and generate economic benefit to the community, but that there would be a need for some on-going subsidy and operating funding if the 'tunnel project' was seen just as an end in itself. However, if the tunnel is seen as a catalyst for the development of the property around its north end, then the entire project could generate net benefit to the municipality. Specifically the additional tax

benefits generated by development at the north end would largely offset the operating deficit of the tunnel attraction. Phase 2 of the project was devoted in part to exploring this possibility in greater detail.

The entire 'tunnel project' was seen to comprise six elements:

1. the **restored tunnel** itself (in this context, 'restored' means that the tunnel is made open to the public, with a proper base suitable for walking, cycling and a trolley; lighting; security [closed at night]; and that there is some historical interpretation along its length);
2. **improvements to the park at the south end** of the tunnel;
3. **development at and around the 'north portal'**, which would comprise both public and private sector components;
4. a **trolley operation**, which would connect the north and south ends of the tunnel as well as connect the tunnel to other attractions in the downtown;
5. **development of the 'north gorge' area** (i.e. a trail extension running from the north portal through a second tunnel under the existing CN railway tracks); and,
6. trail and public transit **extensions to the rest of the community**.

Given that there is already considerable momentum and activity on the tunnel project, it is envisaged that the entire 'build-out' of all components could take on the order of 5 to 6 years to complete – i.e. to 2020. The Report suggests a staged sequence of activities between now and then.

Considering this entire 'tunnel project' specific findings from the assessment were:

- the operating surplus to the municipality was estimated to be on the order of **\$35,000 per year**¹ – however this was assuming that part of the revenues accruing to the municipality as a result of eventual development at the north end would be used to subsidize the overall development
- if this were not to be the case (i.e. no offset from development at the north end) then an operating subsidy from the municipality would be required – this was estimated to be **\$33,000 per year**
- usage of the restored tunnel itself was estimated conservatively to be **30,000 visitors per year** – this comprises local and regional residents, as well as tourists and visitors to the community – 'users of the tunnel' are seen to comprise people who walk or cycle through all or part of the tunnel, those participating in special events held at the tunnel, and those riding the trolley on that part of its journey through the tunnel
- the tunnel and its various components were estimated to engage **19,000 tourists per year**, most of whom would be 'tunnel users' in the manner described above
- the additional economic impact associated with this tourism was estimated to be **\$1.1 million per year** (the assumption underlying this estimate is that even if the tunnel does not draw a significant number of new visitors to the community, it will encourage them to stay for a longer period of time in Brockville, and thus spend more than they otherwise might have in the City)

¹ Note all costs are measured in terms of 2014 dollars.

- this additional tourist expenditure in the community will generate an additional **\$704,000 of gross domestic product (GDP)** in Leeds and Grenville County, which can be thought of as the value of additional goods and services associated with the tourism expenditure – this additional activity would be associated with **12 full-time job equivalents**

Thus the overall 'tunnel project' has the potential to create significant economic benefit in Brockville. One way of looking at the leverage effect of the overall project is that every dollar spent by the community in subsidizing the overall 'tunnel project' generates an additional \$21 in GDP in the County².



Wedding Event at Tunnel

In addition to these economic benefits, of course, the tunnel project will result in the revitalization and celebration of a significant community asset, which can be a source of pride and achievement for City residents (as well as the preservation and interpretation of a unique and fascinating historical asset).

The Phase 1 work focused upon an overall analysis of the market potential and financial implications to the City of the 'tunnel project' as an attraction. Phase 2 was to undertake a more in-depth assessment of the market potential and recommend a series of next steps for the Tunnel Committee.

There are two recommended streams of action that emerged from this second phase. The first is for the Tunnel Committee itself and relates to carrying on the momentum of the tunnel project, securing funding, etc. The second stream of activity is to municipal staff, in terms of encouraging development at the north end of the site that, as mentioned, may be critical to the financial sustainability of the overall project. Each of these streams of activity is discussed in turn.

Stream 1: Continue Momentum on the Tunnel Project

Rather than break the 'tunnel project' into a series of discrete phases (as was the original idea in Phase 1) the Tunnel Committee has determined that the overall project would have more critical mass (and funding potential) if it is treated as an integrated and single whole. The recommended next steps presented here assume then that the project is a unified development, consisting of the restored tunnel, the south portal tunnel park, the trolley operation, and a small parkette development at the north end (as opposed to the longer-term larger north end development subsequently discussed, which is a separate stream of activity).

Considering the integrated tunnel as described above, the capital and operating costs and revenues for the four key components would be as shown on the chart below.

² Calculated by dividing the additional GDP generated in the County (\$704,000) by the amount of the City subsidy (\$33,000). Of course it must be recognized that it is the City that is incurring the expense, and the businesses throughout the County that are seeing the additional benefits (i.e. the additional GDP) but nonetheless, this analysis does show the potential for significant community betterment.

Cost of 'Integrated' Tunnel Project

Component	Capital Cost	Operating Cost	Operating Revenue	Net Operating Position
1) Restored Tunnel: a) 'regular visitors'	- \$2.2 million refurbishment for tunnel (Stantec estimate)	- assume annual security, lighting, repair costs of \$50 per linear metre (half typical trail standard) = tunnel is 550 metres long, so cost is, say, \$27,000	- assume 5% of users donate average of \$2 each towards tunnel cost = \$2,000	- annual cost to City of \$25,000 per year
b) special events	-	-	- assume tunnel is rented to community groups and organizations 10 times per year @\$300	- annual revenue generated of \$3,000
2) South Portal Tunnel Park: a) park component	- some landscaping cost (say \$50,000 out-of-pocket; existing municipal staff used for labour)	- no incremental cost for park area; existing staff used (e.g. tourist information) and exhibits stand-alone	- assume two food / snack bar kiosks; rental rate of \$2,000 each for operating season (June – Sept.)	- annual revenue generated of \$4,000 per year
b) public facilities use building	- assume 3,000 sq. ft. facility - @\$300 per sq. ft. = \$900,000	- seasonal operation; 1 summer staff position (say \$10,000) - some cost for exhibit refurbishment, development (say \$5,000 / yr.)	- 10,000 visitors; assume donation - 5% donate an average of \$2 each = \$1,000	- annual cost to City of \$14,000 per year
3) North Portal Precinct b) public component	- city acquires one acre for public amenities and parking area (order of 8,000 sq. ft.) – cost = \$200,000 - city acquires and fits out 2 used train boxcars @ \$100,000 each	- one boxcar used for public programming - cost of \$5,000 / yr. - other boxcar operating and maintenance cost of \$1,000 / yr.	- second boxcar rented to private sector boutiques, etc. for \$5,000	- net cost of \$1,000 / yr.
4) Trolley Operation	- City assumes some cost for stop posts, signage, etc. (say \$20,000) - private operator assumes cost of trolley purchase and operation	- no operating cost to City – only obligation will be to monitor / evaluate operator	- review of most trolley operations elsewhere shows that operations are often subsidized by the municipality (in return for tourism benefits) and that	- assume municipality is able to break even on operations (i.e. no significant cost incurred; private operator is able to sustain the operation on their own)
Operating Costs to City of Brockville		approximately \$48,000 annually	approximately \$15,000 annually	subsidy of approximately \$33,000 annually

Note that the costs estimated here are assumed to be 'arms length' or 'market-based' (in other words, representing purely commercial transactions). However, there are two factors that could reduce the actual capital and construction costs incurred by the City. The first of these is that local labour and materials could be provided on a voluntary or in-kind basis. Given that the 'tunnel project' has enjoyed widespread community awareness and positive support, this scenario is quite likely. The second factor is that some of the maintenance costs and materials could be supplied by the municipality as an extension of the city's existing activities, using manpower, equipment and supplies that it already has access to. (Thus, while there will still be some cost, this would not necessarily be directly attributed to the tunnel project itself.) Because of these two factors, the costs presented here could be considered as being in a sense 'maximum theoretical' costs that the municipality would incur if it were dealing solely with arm's length private suppliers, and that actual costs might well be considerably less than this.

Specific next steps for the Tunnel Committee to pursue in this stream of activities are:

- a) secure **Council approval in principle** for the directions outlined in this Report – specifically an endorsement for the Tunnel Committee to explore grant and funding options for the tunnel project itself, and secondly, direction to municipal staff to explore the possibilities for re-zoning and incentivizing the development of the north end parcel of land (see Stream 2, overleaf);
- b) the Tunnel Committee has already formed a **fundraising subcommittee** to pursue government, foundation and community fundraising – this group should, with the City Department of Economic Development, explore the possibilities for grants and fundraising for the integrated tunnel project and use this information contained in this report as appropriate;
- c) an **updated specifications and costing study** is a logical next step as well, in order to update the construction cost estimates for the tunnel and related project elements – this should be undertaken as soon as possible;
- d) prepare a **specific plan and timetable** for the development of the integrated project as described here;
- e) once a development plan and timetable is in place, **begin negotiations with potential tour tram operators** (the Tunnel Committee already has had preliminary conversations with at least one potential operator in this regard) – to be seen as an open and transparent process, the City may need to go to tender for operators – this should be widely advertised throughout the community as well; and
- f) once sufficient funding is in place to make a powerful start on the integrated project – *with a priority element being the restored tunnel* - overseeing the Tunnel Project itself will require **specialist contractor** who will take responsibility for the entire project (as opposed to a piecemeal development) – the City, with the advice and input from the Tunnel Committee, should spearhead this responsibility

The ‘integrated tunnel’ project itself is do-able assuming the City is willing to find the capital costs and subsidize operation to the tune of \$33,000 per year. There are significant economic and socio-cultural benefits from the project to the community overall that may make such subsidy sustainable in the minds of City decision-makers. However, the overall project has the opportunity to contribute even more to community well-being by acting as a catalyst to development to the north. The set of activities relating to pursuing this opportunity is appropriately a City responsibility, and is described as ‘Stream 2’, below.

Stream 2: Encouraging Development at the North End

One of the key implications coming out of Phase 1 was that for the overall tunnel project to work with a minimal deficit, development at the north end would need to proceed, and the surplus tax

revenues generated from this development be conceptually 'earmarked' to help subsidize the overall costs of the operating costs of the project. If this were not to be the case, and development at the north end were not to proceed, then the overall annual costs to the City would approximate \$33,000. With the City's other on-going priorities and obligations (e.g. Aquarium) this may not be seen to be sustainable, despite the tourism benefits outlined earlier. Accordingly, a conclusion of this market assessment is that development of the property at the north end may be essential to the success of the overall project.

At present, the property on both sides of the north end of the tunnel portal is designated M3 – restricted industrial (shown by way of the arrows on the diagram below). The larger parcel on the right [designated M3-X2-1] is actually a 'Special Exception Zone', which is a more restrictive category.)



This designation significantly limits the nature and type of development that can occur on the site, and relates primarily to the past use of the site rather than its future strategic potential. However, it is within the City's brownfield envelope, meaning that there are certain Community Improvement Plan (CIP) incentives that could potentially apply to development on the site (which would include remediation of any contamination on the property but also some form of development towards a higher and better use). A further complication is that the property is in private hands, which somewhat reduces the City's ability to determine the future course of development there.

However, given the strategic importance of the property, the City should consider a number of proactive courses of action to encourage the positive development of the site. (While these are beyond the direct mandate of the Tunnel Committee, that group could support and provide some impetus to the City getting this done.) These actions include:

- in the current zoning review (underway at present through the Planning Department) consider re-designation of the lands from M3 to C (commercial) which would facilitate the kinds of synergistic development that would support the tunnel project (by providing activities of interest to tunnel users that would create additional incentive to come to the north end, well as generate the tax revenues to the municipality that could offset development costs);
- review the current CIP status of the site to determine whether there are ways and means of increasing the degree to which development on this strategic site can be 'incentivized' through an enhanced Brownfield CIP;
- assess the implications of commercial development of the site upon surrounding land uses and traffic flow – this would entail a traffic study (including projected traffic volumes along Stewart Blvd./William St. and well as traffic generated from the developed site itself) which would consider the need for signalization on the to enable safe access into the site – also to be considered would be the impact of traffic and noise upon the residential areas to the immediate south;
- initiate discussions with the property owner regarding the development possibilities of the site, with a view to encouraging the owner to develop the site in the longer term, as a commercial development in alignment with the overall tunnel development plan developed here;
- should the owner not be receptive, the City should explore ways and means of acquiring the property (either through sale or expropriation) given its strategic importance to the tunnel project specifically and the community overall.

The restoration of the tunnel itself, and the various ancillary improvements made to the south end, the north end parkette and the trolley operation, should be seen strategically in part as an investment or catalyst to this north end development. A key and positive point of differentiation for developer and commercial tenants on the site will be the access to the tunnel and the unique linkage it provides to the downtown.

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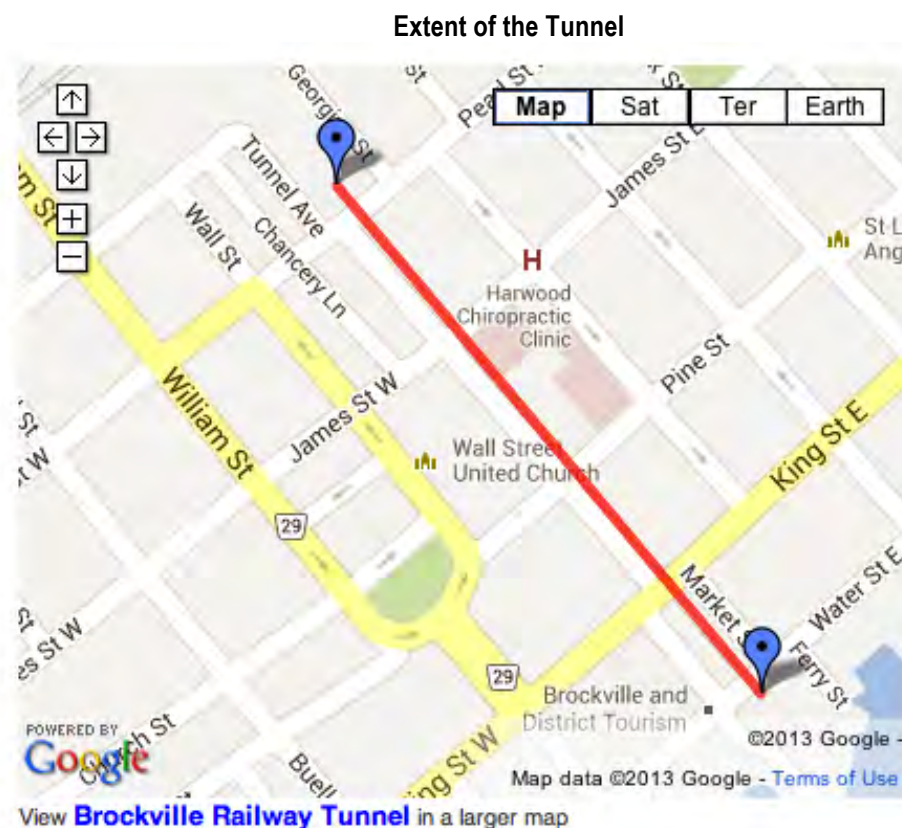
Conclusion: The Brockville Railway Tunnel Project has the potential to create community benefit in Brockville in a number of ways: as the restoration and interpretation of a significant community and national asset; as a contributor to Brockville's growing list of attractions; as a generator of positive economic impact in the community; as a source of community pride; and as an element in the redevelopment of a strategic property in the community. The two recommended streams of action presented in this Report would help to realize this significant potential.

1. Introduction

In August 2013, following a public tendering process, TCI Management Consultants was retained to undertake a market assessment study for the Brockville Tunnel, Canada's first railway tunnel and a key historical asset of the City of Brockville. The assignment was to undertake a market assessment review of the tunnel as an attraction. The work was split into two parts: a first phase which was to undertake a preliminary review the market potential and determine whether there appeared to be sufficient justification for further investigation, and a second phase (assuming the answer to the first phase was a 'go'), which was to undertake a more detailed review of market potential and investigate the implications of developing and operating the tunnel as a market attraction. This Report deals with the results of both phases.

1.1 The Tunnel Project Overall

The Brockville Railway Tunnel, completed in 1860, was Canada's first railway tunnel. It was built by the Brockville and Ottawa Railway Company to connect the Brockville waterfront to the main railway system in Ontario at the time, linking the City to Toronto, Ottawa, Montreal and other points in southern Ontario and Quebec. The most direct route to the main system was directly north through the City and the hill in its middle, rather than a more costly roundabout route, so the tunnel was constructed. (Work began in 1854 and was completed in 1860.) The tunnel itself is 515 metres long, passing underneath Brockville City Hall and 3 blocks of City Streets. Used until 1969, the tunnel was acquired by the City of Brockville from Marathon Realty, the real estate arm of CN, in 1983.



Since that time there has been much discussion about the tunnel as a historical attraction. The City has undertaken structural assessment and historical integrity work on the tunnel, and has cost estimates in place regarding repairs and restoration. Some monies (\$300,000) have been set-aside for this purpose. A Tunnel Committee has been formed to assess and help shape the opportunity, and has undertaken this



Interpretive Panels at South End

assessment. This Committee will also become involved in fundraising activities for tunnel restoration if and when these are appropriate.

At present, the tunnel is only partially accessible as an attraction. The first 85 feet at the tunnel's south end are open to the public, with wooden planking on the floor and various interpretive panels at its entrance. These give a brief overview of the story and provide a sense of what the tunnel experience might be like (i.e. a sense of what the cool and dark interior of the tunnel).

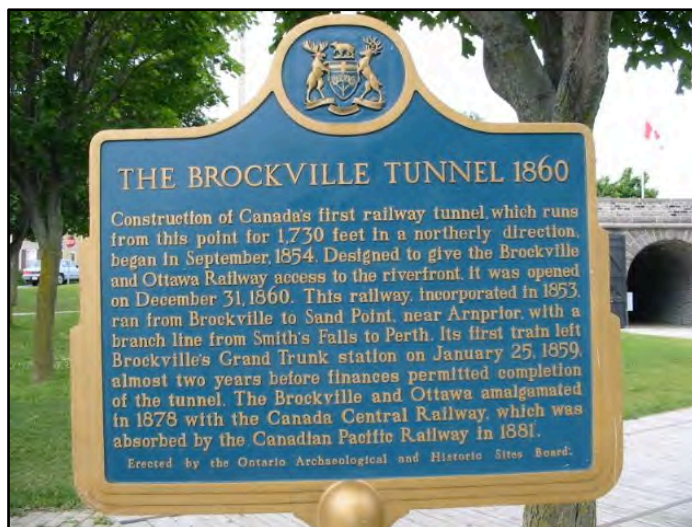
1.2 This Assessment

This project is a **market assessment study** for the Tunnel Project. Its purpose is to outline the market potential for the tunnel attraction only, and not specifically assess the financial feasibility of the project in detail. However, some general sense that the degree of market interest and involvement overall will help support the tunnel project is clearly critical to the project proceeding further.

The assignment undertaken by TCI Management Consultants was split into two phases. The first phase was to undertake a general review of the project, develop a specific concept that could be tested against the market, and then to undertake a preliminary market assessment of that concept. If this first phase appeared to indicate that there was solid and demonstrable market interest in the attraction, then the next stage was to move into a second phase where the overall attraction was to be developed in further detail. The second phase was to assess on an overview basis specific utilization projections and the implications of these in terms of financial operating projections, governance and operating plan, and economic impact upon the community.

The **first phase** document reported on the findings and conclusions from the following key tasks:

- a review of relevant background documents
- interviews with key stakeholders
- best practice review of selected tunnel attractions elsewhere
- further delineation of the concept components
- preliminary projections of utilization
- preliminary estimates of economic impact



Plaque Outside Tunnel at South End

The first phase supported an overall conclusion that there would be sufficient market interest and support to warrant moving into the second phase of the work.



Group of Engineering Students from Queen's University Exploring Tunnel

The **second phase** of the work explored in greater detail the markets, cost and revenues of the various components of the development. This involved a more in-depth review of key components of the project (to test various assumptions and cost estimates) as well as further discussions with municipal staff (planning, and economic development) in order to obtain a better understanding of some of the key implementation implications.

There are several caveats and assumptions that should be kept in mind in reviewing this Report. These are:

- 1) The analysis presented here assumes that direct and immediate economic gain is not the sole driving force behind the City's interest in the project, but that it is rather a balance between restoration and interpretation of a significant national and community historical asset, with responsible financial management.
- 2) The analysis presented at this stage is very preliminary in nature, driven by certain simplifying assumptions, that, while reasonable in the view of the consultants, need to be tested more rigorously going forward.
- 3) Some basic parameters upon which this market assessment is based (such as the size of the tourist market and the attendance at other attractions in the region) is based upon information contained within other reports and has not been independently tested.
- 4) The approach taken here assumes 'business as usual' in the City of Brockville. Were some extraordinary or unforeseen event to occur that would require municipal funds be spent elsewhere

on emerging necessities or priorities higher than the restoration of the tunnel, the extent to which this project could be undertaken, or the overall timing, could be significantly affected.



Cave-Like Environment Inside Tunnel

2. Data Collection

In this section of the Report we present the summary results from the background investigations undertaken that were necessary to complete this review. The tasks involved here were: a review of background documents, the initial interviews, a review of basic market and demographic data, and the benchmark reviews of other tunnel attractions. Each of these investigations is reported upon in turn.

2.1 Background Documents

Here we present various relevant background documents and the key findings from each.

Document	Key Findings and Conclusions
Brockville Railway Tunnel Committee, Summary Comments , October, 2013	<ul style="list-style-type: none"> - these comments were in response to a set of initial questions and observations made by the consultants early in the project – they were instrumental to the shaping of the concept as it is described in Section 3.1 of this report
Inspec-Sol Engineering Solutions, Brockville Railway Tunnel Condition Inspection , January, 2013	<ul style="list-style-type: none"> - this review examined the condition of the tunnel from a number of perspectives: geotechnical (subsoil) conditions; bedrock conditions; masonry conditions; and groundwater flow - the conclusion was that the tunnel could be stabilized and made safe for visitors after considerable remedial improvement has been made - the cost of these improvements was estimated as: <ul style="list-style-type: none"> - rock mass stabilization: \$350,000 - masonry restoration: \$465,000 - earthworks for water drainage: \$75,000 - anchoring and reinforcements and brick / chimney consolidation: \$70,000 - for a total of \$970,000 (with a variance of -25% to + 75%) - however, these costs excluded: electricity, water and lighting throughout the tunnel; interior finished such as boardwalk, exhibits, etc.; engineering and other costs
Brockville Railway Tunnel Committee, Business Plan for the Brockville Railway Tunnel , March, 2012	<ul style="list-style-type: none"> - this document outlines the various components of the attraction, which were seen to be the following: <ul style="list-style-type: none"> - south portal - site plans and illustrative drawings - signage, lighting and maintenance at south portal - geotechnical work - refurbishing / recondition of tunnel - north tunnel exit - revitalization of area between tunnel's north portal and the CN main line - purchase of lands between Tunnel Street and south of the CN main line - north property remediation with parking lot - dining car restaurant near south portal - service building by south portal and rail restaurant - tour train replica - train station replica at north parking lot - train display at north parking lot - a schedule of events, from early 2012 to final completion in mid-2014 was proposed - (note that this document was not so much a business plan as a listing of the various components of the project and a schedule)

<p>Stantec-Mining, Brockville Railway Tunnel Review Assessment, November, 2011</p>	<ul style="list-style-type: none"> - this report on the results of a visual review of the tunnel by Stantec personnel and their order-of-magnitude estimate of costs to refurbish and recondition the tunnel for visitor use - the cost of these improvements was estimated as: <ul style="list-style-type: none"> - establish floor: \$500,000 - bedrock work: \$200,000 - re-mortaring and patching brickwork: \$175,000 - clean & coat bricks: \$125,000 - install lighting: \$100,000 - install guard area: \$75,000 - further engineering and setup work: \$180,000 - contract administration and supervision: \$325,000 - with a few smaller items and a 20% contingency overall, the total estimated cost was on the order of \$2.2 million
<p>WCM in association with MMM Market Group, Brockville Economic Development Strategy, endorsed in March 2010</p>	<ul style="list-style-type: none"> - several strategic directions were outlined: <ol style="list-style-type: none"> 1) retention and expansion of existing businesses 2) business attraction 3) tourism industry expansion 4) entrepreneur attraction 5) entrepreneur development 6) workforce development 7) meet education and skills development needs 8) preventative education and skills development 9) development of sustainability goals and targets - strategy #3 is likely the most relevant to this initiative - here the City outlined support for a) events creation; b) tourism entrepreneur attraction; c) downtown revitalization; d) business partnering; e) cultural tourism; and f) ecotourism - clearly the tunnel initiative fits well with many of these strategic directions, particularly a, c, d, and e
<p>Brain Trust Marketing and Communications, Premier-Ranked Tourism Destination Project, Brockville and District, 2008</p>	<ul style="list-style-type: none"> - this report identified the tunnel project as one having significant potential for the community - "Railway Tunnel as a future tourist icon associated with Brockville, the significant interest and appeal of this heritage attraction has the potential to draw a significant number of visitors because of its uniqueness and its role in the history of Brockville as a shipping centre in days gone by." (p.46)
<p>The Economic Planning Group, An Anchor Attraction for Brockville, The Maritime Discovery Centre and Other Waterfront Enhancements, Final Report, July 2007</p>	<ul style="list-style-type: none"> - this was the original feasibility study for what was then known as the <i>Maritime Discovery Centre</i> and has since become called <i>Aquarium</i> - the analysis examined the market for the Maritime Discovery Centre under two scenarios: just by itself, and with 'enhancements' which would be packaged and sold as part of the overall experience - the base cost for the Marine Discovery centre facility was \$10 million - these 'enhancements' included a Tunnel Attraction, which was a heritage attraction associated with the rail tunnel - the Tunnel Attraction would consist of a passenger coach and caboose at the tunnel entrance; a 3-D film inside the tunnel telling the story of Brockville and Canadian rail heritage; and light and sound effects throughout that would simulate the experience of rail travel in the past - estimates of attendance to the Marine Discovery Centre were 26,000 without enhancements and 37,000 with enhancements - report also contains useful information regarding market and economic impact - the financial projections for the operation showed an operating loss of \$492,000 in year 1 growing to \$638,000 in year 5; a fundamental conclusion was that the attraction was feasible only with financial assistance from higher levels of government

Note that while there were earlier documents relating specifically to the Railway Tunnel attraction, these were deemed to be too dated for use in this current market assessment.

2.2 Themes from the Interviews

A number of individuals were interviewed regarding the overall tunnel project and their reactions to it (see the list of interviewees in Appendix 2). The interviews essentially focused upon the tunnel concept itself and any thoughts people had about the strengths, weaknesses, opportunities and threats they could see around the project. The main themes in this regard are presented below.

Note that 'strengths and weaknesses' refer to factors that are present today, while 'opportunities and threats' tend to reflect more future-oriented factors.

STRENGTHS	<ul style="list-style-type: none"> - tunnel represents a unique historical asset, representing a very interesting phase of Canadian history, and listed in the Canadian Railway Hall of Fame - tunnel is in remediable condition; not beyond repair - reportedly high degree of awareness and community interest associated with tunnel - tunnel location (on south end) is ideally situated with respect to tourist attractions in the downtown area and the downtown itself - \$300,000 already committed to tunnel restoration
WEAKNESSES	<ul style="list-style-type: none"> - significant costs associated with the restoration and rehabilitation of the tunnel - some risk and danger inherent in the tunnel as it is now: unsecured, unlit, dangerous - some negative association with the tunnel itself: dirty, dangerous, unsavory
OPPORTUNITIES	<ul style="list-style-type: none"> - opportunity to turn the tunnel into a performing tourism asset for the community - opportunity to package the tunnel with other attractions in the community - tunnel restoration / rehabilitation may be a catalyst to development in the north end of the City - tunnel restoration could contribute to on-going downtown revitalization in Brockville - tunnels can be associated with interesting packaged attractions (from the benchmarking assessment)
THREATS	<ul style="list-style-type: none"> - potential net deficit associated with Aquatarium (and obligation on part of municipality) may divert operating funds away from tunnel - considerable uncertainty regarding the degree of community support when it actually comes time to pay for tunnel enhancements beyond what has already been committed

2.3 Market Context Analysis

2.3.1 Permanent Resident Market

The background research also revealed key facts regarding the market context for the tunnel attraction. In terms of the resident market, the approximate market size figures (rounded to the nearest thousand) are as follows:

- 22,000 people live in the in City
- 17,000 more live in the in Census agglomeration - 39,000 in total
- 60,000 more live in the in Census division (United Counties of Leeds and Grenville) - 99,000 in total

This resident population base is essentially static – there has been very little change in population numbers over the most recent (2006 – 2011) census period.

2.3.2 Seasonal Resident Market

The City of Brockville itself has very few seasonal residents (i.e. cottagers). In the United Counties of Leeds and Grenville, about 4% of all households are seasonal (just over 400 dwellings). This implies that in the peak summer months, the resident population might increase by only another 1,000 or so persons (400 dwellings times the average household size of 2.5). Seasonal summer population is thus relatively small.

2.3.3 Tourist Market

Tourism on the other hand is relatively significant. The aforementioned Maritime Discovery Centre report (2007) analyzed tourism in some detail, concluding that the market consisted of some 300,000 visitors to Brockville³, and a further 400,000 other visitors to Leeds & Grenville overall. Based upon the recent data from RTO 9⁴ (2010, the most recent data available) the characteristics of tourists that are relevant to this market assessment are:

- 45% of all visits are for pleasure; a further 41% are to visit friends and relatives (VFR)
- 39% of all visits are in the summer; 20% are in the fall; 18% are in winter; and 23% are in spring
- 58% of all trips are day trips; 42% are overnight
- overnight visitors stay an average of 2.8 nights in the region (i.e. in the RTO area)
- the average party size is 2.6 persons
- activities engaged in (all visitors)
 - 9% visit national or provincial parks
 - 7% visit an historic site
 - 3% visit festivals or fairs
 - 4% visit cultural performances
 - 6% visit museum or art galleries
 - 25% engage in any outdoor or sports activities
 - 9% engage in boating activities
 - 5% engage in fishing
 - 2% golf
- average per person expenditure is \$117; average expenditure per overnight is \$193; average expenditure per person per overnight is \$70

2.3.4 Attendance at Other Local Attractions

As a 'reasonableness' measure for the attendance and utilization of the various components of the tunnel attraction, the table below shows the attendance associated with other attractions in the City and immediate area:

³ It is not known to what extent these visitors are spending significant amounts of time actually visiting the sights of Brockville, as opposed to, for example, pass by visitors on the highway who may stop in at the Walmart on the north end of town.

⁴ RTO 9, known as **The Great Waterway**, is the tourism region stretching from Prince Edward County to the Quebec border, hugging the eastern end of Lake Ontario, and the St. Lawrence River.

- Brockville Ribfest: 50,000
- Brockville Art Centre: 32,000
- Brockville Museum: 8,500
- Fulford Place: 7,000
- Brockville Doors Open: 2,500
- Tourist Information Office (located downtown) – walk-in inquiries: 30,000

2.4 Benchmark Tunnel Attractions

In the benchmarking component of this work, three comparable tunnel operations were examined, and one organization interviewed. These were:

- 1) **Lake Mead Historic Railroad Tunnel Trail, Boulder, CO** – Steve Daron, Cultural Resource Manager, Lake Mead National Recreation Area; Sky McClain, Interpretor, Lake Mead NRA
- 2) **Western and Atlantic Railroad Tunnel, Tunnel Hill, GA** – Thomas Scalf, Manager of Visitor Centres, Dalton, GA CVB
- 3) **Cal Park Hill Tunnel, Marin County, CA** – Dave Bernardi, Director of Public Works, and Project Manager, Marin County, CA; Rob Ruiz, Chief Park Ranger, Marin County; Stephen Petterle, Principal Planner, Parks
- 4) **Rails to Trails Conservancy** – Barry Bergman, Development Manager, Western Region, San Francisco; Jim Brown, Manager of Trail Development, Washington, DC

2.4.1 Benefits of Tunnels Generally

Key findings from the interview with the Rails to Trails Conservancy relating to the benefits of tunnels were as follows:

- Rails to Trails Conservancy in US represents 20,000 miles of rail-trail and 9,000 miles waiting to be built
- **Tunnels on Trails** (Amanda Eaken and Joshua Hart, authors) was a Rails to Trails study of 78 Tunnels on 36 Trails in US – focus on pedestrian and bicycle facilities. Key findings of this study were:
 - Opening old tunnels is considered an effective way of linking networks and routes in order to overcome barriers such as freeways, road, rivers, hills
 - Tunnels are considered generally functional and safe part of transportation network
 - Many US tunnels were abandoned in 1950s and 1960s; however, many (65%) were reopened in just the last 20 years
 - Many trails end at tunnels – the continuous flat grade makes them convenient and accessible to people of all ages, especially children, seniors, those with disabilities
 - Trails exist in a variety of land uses: rural areas (48%), followed by agriculture areas (15%), small towns (9%), residential areas (6%), mixed commercial residential (6%)
 - Trails can be found in a variety of shapes and sizes – tunnels from 100 feet to 2.3 miles – average 915 feet. Their width ranged from 10 feet to 60 feet.

- Older tunnels tend to be mined; newer ones are more likely to have used a “cut and cover” technology. Seven tunnels in the Rails to Trails Conservancy study used brick and stone masonry linings.
- Safety issues including resistance to falling rocks are of primary concern to engineers. However, overall tunnels tend to be more resistant to earthquakes than bridges because of their flexibility.
- Because they link important destinations, tunnels tend to be held in generally high regard. However, for some, they evoke negative images, conjuring up image of dark places, illegal activities, etc.
- The study concluded that despite negative images held by some, most tunnels do not impose undue safety or financial burdens, and tunnels on trails are generally quite safe.
- With proper design and management, tunnels can generally encourage greater trail use, stimulate non-motorized transportation, instill community pride, and a greater understanding of local history. They attract traffic and additional economic benefits, and link communities and create sustainable transportation networks.

This study is broadly supportive of the type of tunnel restoration project represented by this Brockville initiative.

2.4.2 Specific Tunnel Examples

Three diverse railroad tunnel / trail situations were examined, all primarily through-and-back, as opposed to being on a circuit. These were:

(1) Lake Mead Railroad Tunnel Trail – key facts about this operation are:

- residual from Hoover Dam construction in 1930s
- operated by National Park Service and Bureau of Reclamation – fairly minimal investment, maintenance
- built 1931 for construction of Hoover Dam (which created Lake Mead)
- tunnel through volcanic, igneous rock
- 500 visitors per week to Lake Mead tunnels
- 5 tunnels on historic RR trail, fire closed 5th tunnel in 70s – got funding in 90s to reopen – 1,200’ tunnels
- compacted surface

(2) Western and Atlantic Railroad Tunnel – key facts about this operation are:

- operated as a fairly low key tourism attraction, appeals to railroad and civil war enthusiasts, combined with a small heritage centre
- charges for admission (tunnel access included with heritage centre admission)
- built in 1880, reopened 2000, 1,477’
- local heritage, tourism attraction – combined with visitor centre
- links to Great Locomotive Chase (1862) and Civil War connections
- 7,000 visitors a year

- admission fees, low cost option

(3) Cal Hill Park Railroad Tunnel – key facts about this operation are:

- significant investment, more urban tunnel – adds to transportation infrastructure
- 1884 Pacific Northwestern RR, widened 1924, closed 1978, reopened 2010
- San Rafael to Larkspur, part of SMART (Sonoma-Marín Area Rail Transit) corridor
- 1-mile path, 1,100 feet of tunnel
- owned by Marin County and SMART
- part of commuting system
- a ‘high end’ model

General findings concerning these tunnel operations were as follows:

- there are different management structures in place: of the above, two are locally, and one federally, managed
- there are multiple objectives associated with tunnel preservation and operation; these include:
 - *Heritage preservation*
 - *Economic development*
 - *Sustainable, green, multi-modal transportation*
 - *Active recreation*
 - *Local and tourism users*
 - *Community pride*
 - *Add transportation capacity*
- a tunnel by itself is likely to have only a limited draw, but when packaged with other attractions the combined appeal can be significant
- tunnels generally have good support from local stakeholders: attendance:
 - Lake Mead (rural) – 500 / month
 - Tunnel Hill (rural) – 580 / month
 - Cal Park Hill (urban) – 3,000 / week
- security is typically an issue in all tunnels; they are generally closed and locked at night; lighting is present in all tunnels
- in longer tunnels, cell phone connectivity is an issue (e.g. Cal Park Hill) – *this may become a security issue (e.g. if in the middle Brockville Tunnel there is no reception a booster station may need to be established – the cost of this has not yet been determined)*
- events are frequently used as ways of animating tunnels and creating tunnel-based experiences:

- Lake Mead – marathons, etc.
- Tunnel Hill – civil war reenactments, ‘paranormals’
- Cal Park – events prior to opening

- tunnels show high variability in capital and operating costs:

- Capital costs variable - Main investment appears to be front-end capital expenditure
 - Tunnel Hill, GA \$2 m+ (\$1,700 / ft)
 - Cal Park Hill, CA, \$10 m+ (\$11,000 / ft)
- Multiple funding sources
 - Federal and local
 - Sponsorships (Cal Park Hill)
- Operating costs
 - Lake Mead, 1,000 hours a year (or. Approximately 60% of a full-time job equivalent)
 - Tunnel Hill, \$25,000 for the operation (\$17 / ft)
 - Cal Park Hill, \$140,000 a year (\$125 / ft)

2.5 Tourist Trolley Operation

A key element in the ‘tunnel package’ is the idea of having a tourist trolley operation that would have a circuit route through the downtown, including through the tunnel itself. The basic idea is that this operation would be on wheels; would have narrated interpretation of the interesting historical sights through the downtown (including, of course the tunnel); be operated according to an ‘on-off’ philosophy (where passengers would buy a day pass, and then be able to ride all day, hopping on and off as they so chose); and be affordable.



A Typical Tourist Trolley Operation

The research into other tourist trolley operations elsewhere has shown that there are many variables that affect the overall profitability (or lack thereof) of these types of businesses. Typically in larger communities where there is lots to see and do, where there are many tourists [who tend to be the major market for these operations, as opposed to residents], where parking downtown is relatively expensive, and where there is a reasonably long tourist season, these types of operations can be profitable. Often they are operated as an adjunct to the regular transit system in operation in the city, where they can take advantage to some extent of economies of scale with the

main public transit operation with respect to access to drivers, maintenance, parts, etc. (e.g. the Zurich Trolley Experience; St. John’s - The Trolley Line; the free Chicago Trolley Services which is subsidized by

major tourist attractions in the downtown). In other cases in larger cities, they may be fully privatized (e.g. Vancouver Trolley Co.; Boston Old Town Trolley Tours).

In smaller communities where there are fewer attractions and thus fewer tourists, such operations are typically more marginal. As well, downtown parking fees in smaller centres are less onerous than in big cities so there may be less motivation for tourists to utilize the services. And, in locations with a short tourist season, tourist trolleys can be relatively expensive to operate over a short period of time.

Despite these difficulties, in some smaller communities (as well as some larger ones) the municipality sees fit to subsidize a tourist trolley operation, recognizing this cost to be an investment in tourism. According to this view, even though a municipal subsidy may be required, the resulting additional expenditure generated in the community from increased tourism receipts is worth the subsidy. An example of this type of operation is the Moose Jaw Trolley.

A key dimension in offering a tourist trolley such as this is the extent to which the product is seen to be **transportation** (i.e. an efficient and effective and convenient way of getting about in the downtown area) or an **experience** (i.e. a not-to-be-missed attraction that also happens to move about in the downtown area). The more that the attraction is perceived to be an experience, the more profitable it may be (as the nature of the experience justifies a higher price point that the transportation alone would not).

In Brockville, a trolley operation with a unique 'tunnel element' would certainly position it more along the 'experience' dimension than a merely 'efficient transportation' dimension. This could justify a higher price for an operator. However, concerns relating to the overall size of the market and the relative shortness of the season would still be relevant.

At present the Tunnel Committee has embarked upon discussions with a potential operator to discuss ways and means of having an operation of some sort in Brockville, once the tunnel has been restored. (Initially there would be a small turnaround with a parkette located at the north end, until the larger development of the north end got underway.)

Given the uncertainties involved, it seems unlikely that the municipality would make a direct profit from a trolley operation (e.g. leasing out the tunnel for use, taking a percentage of the gross revenues, etc.). Any municipal fees or charges of this sort would only likely eat into what may already be a fairly thin profit margin for an operator. At the same time, though, we do not anticipate that the municipality would be willing to provide a subsidy to a potential operator. Accordingly, the trolley operation is assumed to operate at no cost or revenue to the municipality. It will, however, contribute to the overall tourist experience in Brockville, and thus to additional tourist expenditure in the area – which will generate positive economic impact in the City.

3. Approach to the Analysis

The preliminary approach to the analysis taken here first identifies the various components to the development, and next assesses potential market utilization for each. Based upon this market assessment, and reasonable assumptions, a preliminary review of costs and revenues is developed in order to determine whether or not the overall project appears to have the market performance to warrant proceeding further.

3.1 Structure of the Development

3.1.1 Six Components of the Development

Note: Initially in Phase 1 of the project we were to assess three alternative scenarios for the tunnel attraction: 1) historic site, 2) public enterprise, 3) commercial attraction. (This was the approach originally articulated in the proposal.) However, feedback from the Tunnel Committee suggested that we should be assessing **one vision incorporating all three of these elements**, staged over time. Accordingly, this was the primary focus of the Phase 2 work.

Based upon a review of the Business Plan (see Section 2.1 of this document) and discussions with the Steering Committee, six key components of the project were identified.

The following chart outlines the description for each of these components of the development, as well as the fundamental business model for each. (By 'business model' is meant the ways that each component earns revenue (from the market) as well as the costs incurred in its operation and maintenance.) In the next section of the report, preliminary assumptions are applied to the business model in order to determine, from a high-level perspective, what the market potential, and thus the feasibility, of the model might be. (This information is integral to the recommendation as to whether or not the project should proceed to the next phase.)

The six components of the development are:

Component	Description (Assumptions) ⁵	Business Model
1) Restored Tunnel <i>(historic site component)</i>	<ul style="list-style-type: none"> - walkway through tunnel with suitable base - periodic interpretive panels - security cameras and monitoring required - tunnel closed at night (e.g. from (say) 7 p.m. to 8 a.m.) - no fee for tunnel access; volunteer donation box - initially small parkette at north end with benches; interpretation - continued water flow through tunnel enabled, with gutters as required - initially, no public access at north end - historical integrity of tunnel maintained (e.g. no billboard advertising) - (possibly) stairs or elevator down from front area of City Hall as alternative point of access) - only approved vehicles would be allowed in tunnel – off-road, motorcycles, etc., not allowed 	<ul style="list-style-type: none"> - tunnel access would be a free public amenity - capital costs significant - operating costs likely significant also - volunteer donations could be solicited but will likely generate little revenue - may be occasional special events using tunnel (e.g. zombie night at Hallowe'en) as community fundraisers - major benefit will be economic impact of longer tourist stay in community (spending more time and money) - net result: public cost but community economic benefit - also could act as catalyst for larger North Portal Precinct development
2) South Portal Tunnel Park <i>(public enterprise component)</i>	<ul style="list-style-type: none"> - possibly re-brand area as 'Tunnel Park' - have public facilities use building (washrooms, ticket office), possibly some area for food service, retail, some exhibits - possible tourist information located there as well - small exhibit area in existing caboose - small children's play area - this will necessitate removal of some trees - will require site development plan for area 	<ul style="list-style-type: none"> - overall park access free - development cost for area - possibly some small admission fee for exhibitions area - rental for tourist information kiosk, retail, food service - overall operation will try to break even, but likely incur some operating deficit - possibly naming rights / sponsorship opportunities associated with facility - major benefit will be economic impact of longer tourist stay in community
3) North Portal Precinct <i>(commercial enterprise component)</i>	<ul style="list-style-type: none"> - north area is developed as commercial area - would contain themed commercial uses (retail, food service, possibly office) - a replica train station is envisaged, containing commercial functions - the replica train station may also contain a small 'railroad museum' - several rail boxcars may also be located on the site (possibly interconnected, and possibly part of the museum) – assume 2 boxcars - ticket station for summer trolley ride - metered parking would also be available on the site - separate site development plan would be prepared for the North Portal Precinct, incorporating development incentives 	<ul style="list-style-type: none"> - development of the North Portal Precinct has potential to be the economic generator for the entire project - City will incent development through development plan, tunnel amenity, etc. - portion of development fees or additional taxes generated through development can be 'earmarked' for operation of tunnel and Tunnel Park amenities
4) Trolley Operation <i>(commercial component)</i>	<ul style="list-style-type: none"> - trolley operation throughout the downtown, through the downtown, and connecting the north end - would be an on-off operation in summer months, connecting a number of stops in the downtown area into the trolley system - stops would be at (for example) Aquatarium, Brockville Art Centre, Brockville Museum, Tunnel Park, Rotary Park, North Portal Precinct, etc. (maybe 10 stops total) 	<ul style="list-style-type: none"> - would be commercial operation, contracted out to third party operator - assume zero net cost (or revenue) to City

⁵ As agreed to the by the Brockville Tunnel Committee, October, 2013.

Component	Description	Business Model
5) North End Gorge Development (public enterprise amenity component)	<ul style="list-style-type: none"> - a trail extension running north of the North End Precinct, through the 'second tunnel' under the existing CN tracks - initially this would be a pedestrian link, with some interpretation on the rail history of the time - possibly eventually could be an extension of the trolley tram operation 	- essentially public amenity; little revenue potential
6) Links to Rest of Community	<ul style="list-style-type: none"> - would link to the existing Brock Trail; signage along trail would promote the tunnel - re-configuration of bus routes to ensure connections at both ends of tunnel would be explored 	- essentially public amenity; little revenue potential

3.1.2 Stages of Development

The chart below outlines in a sense, the critical path for the development. While the approach taken and the overall market assessment need to be seen as an integrated whole (especially as the business model shows that the revenue from some components of the development are needed to offset the costs of other components) the practical reality is such that the entire project will not likely be undertaken at once. Accordingly, the analysis here shows what might be considered to be the critical path staging of the physical components of the project.

The logic of this approach is as follows: First, the restored tunnel and developments at the south end portal park are undertaken. This sends a strong signal to the community overall that things are happening and that the project is underway. Access to the north end thus is a stimulus to development of the north end and increases interest and perhaps value in that area. At the same time the tunnel throughway provides the catalyst for the trolley or transit system, and other links to the downtown area. Finally, with this momentum established, the north end gorge area can be connected in and other links to the wider community established.

This development path illustrates another context in which this development should be seen to be an integrated whole; the development of subsequent pieces of the project will be contingent upon earlier stages. It all starts with the development of the tunnel itself and the south end tunnel park area.

	Stage 1	Stage 2	Stage 3
<i>Sample Timeframe</i>	<i>3 years duration (now until 2016)</i>	<i>2 years duration (2017 - 2018)</i>	<i>5+ years duration (2019 and on)</i>
1) Restored Tunnel			
2) South End Tunnel Park			
3) North End Development Area			
4) Develop Links to Downtown			
5) North End Gorge area			
6) Develop Links to Rest of Community			

3.2 Preliminary Market Assessment

Note: In the first phase of the project the feasibility assessment was done at a very 'broad-brush' level in order to determine the basic costs and revenues associated with the overall vision. This led to a GO / NO GO point that determined the direction and scope of the second, more detailed phase of assessment. The first phased concluded that the overall concept had merit and that the second phase should proceed.

In the second phase, more detailed investigation was undertaken into the maintenance costs of the tunnel itself, the economics of the trolley operation, and the series of steps required to encourage development at the north end.

The market assessment undertaken in the first phase and refined in the second consisted of three components: first, projections of *utilization* for each of the components; second, the anticipated *economic performance* based upon this utilization; and third, the *economic impact* upon the community as a result.

3.2.1 Market Utilization

Component	Assumptions	Resulting Utilization
1) Restored Tunnel	<ul style="list-style-type: none"> - tunnel is promoted as one of the key things to see and do in downtown Brockville - assume 5% of annual tourists to Brockville visit⁶ (=15,000) - assume 1% of other tourists to Leeds & Grenville visit each year (=4,000) - assume 5% of regional residents will visit each year (=5,000) - assume 5 tunnel-themed events per year, each drawing 1,000 (=5,000) 	- (say) =30,000 tunnel and park visitors
2) South Portal Tunnel Park	<ul style="list-style-type: none"> - assume same level of visitation and use as tunnel - for museum component, assume same order-of-magnitude utilization as for Brockville Museum 	<ul style="list-style-type: none"> - 30,000 park visitors (as above) - 10,000 museum / exhibitions users
3) North Portal Precinct	<ul style="list-style-type: none"> - 2 acres of land available - assume zoned at 1x coverage = 87,000 sq. ft. - assume half is commercial (=44,000 sq. ft.) - assume parking area for 50 cars 	- to be determined
4) Trolley Operation	<ul style="list-style-type: none"> - assume 5% of tourists to Brockville will purchase ticket = 15,000 riders - assume 2% of regional residents will purchase tickets = 2,000 riders 	- 17,000 riders total
5) North End Gorge Development	<ul style="list-style-type: none"> - some additional users from those hiking through the tunnel from the south end - may open up the larger system to hikers from the north end - little if any tourist usage 	- may increase overall trail utilization by 10% (another 4,000 – 6,000 users)
6) Links to Rest of Community	<ul style="list-style-type: none"> - trail and bus connections, as well as signage, will link the tunnel project to the rest of the community 	- to be determined

These estimates of usage are quite reasonable and within the same order-or-magnitude seen in other attractions in the Brockville area (see Section 2.3.4 of this Report).

3.2.2 Economic Performance of Tunnel Components

Given this level of attendance and market utilization, the economic performance of each of the components can be estimated, again from a very top-line perspective. The following table shows the estimated capital and development costs associated with each of the components, as well as its operating cost and revenue implications.

⁶ Note that the market assessment statistics presented in Section 2.3.3 suggest that 7% of RTO 9 tourists visit one or more historical attractions, so this proportion may be conservative.

Economic Performance of Tunnel Components

Component	Capital Cost	Operating Cost	Operating Revenue	Net Operating Position
1) Restored Tunnel: a) 'regular visitors'	- \$2.2 million refurbishment for tunnel (Stantec estimate)	- assume annual security, lighting, repair costs of \$50 per linear metre (half typical trail standard) = tunnel is 550 metres long, so cost is, say, \$27,000	- assume 5% of users donate average of \$2 each towards tunnel cost = \$2,000	- annual cost to City of \$25,000 per year
b) special events	-	-	- assume tunnel is rented to community groups and organizations 10 times per year @\$300	- annual revenue generated of \$3,000
2) South Portal Tunnel Park: a) park component	- some landscaping cost (say \$50,000 out-of-pocket; existing municipal staff used for labour)	- no incremental cost for park area; existing staff used (e.g. tourist information) and exhibits stand-alone	- assume two food / snack bar kiosks; rental rate of \$2,000 each for operating season (June – Sept.)	- annual revenue generated of \$4,000 per year
b) public facilities use building	- assume 3,000 sq. ft. facility - @\$300 per sq. ft. = \$900,000	- seasonal operation; 1 summer staff position (say \$10,000) - some cost for exhibit refurbishment, development (say \$5,000 / yr.)	- 10,000 visitors; assume donation - 5% donate an average of \$2 each =\$1,000	- annual cost to City of \$14,000 per year
3) North Portal Precinct a) private component	- City re-zones and 'incentives' land development; actively promotes development opportunity (as part of larger 'Tunnel Park' plan) - private sector acquires and develops one acre of land	- using a conservative (high end of the ratio) for costs of community services ⁷ , 65% of the amount generated in taxes (see next column) would be municipal servicing costs (=\$145,000)	- at \$200 sq. ft. value of development on 1 acre would be \$8.8 million - according to Brockville tax calculator (on website) this will generate \$223,000 in municipal revenues and \$117,000 in school taxes	- annual tax revenue generated to City of \$78,000
b) public component	- city acquires one acre for public amenities and parking area (order of 8,000 sq. ft.) – cost = \$200,000 - city acquires and fits out 2 used train boxcars @ \$100,000 each	- one boxcar used for public programming - cost of \$5,000 / yr. - other boxcar operating and maintenance cost of \$1,000 / yr.	- second boxcar rented to private sector boutiques, etc. for \$5,000	- net cost of \$1,000 / yr.
4) Trolley Operation	- City assumes some cost for stop posts, signage, etc. (say \$20,000) - private operator assumes cost of trolley purchase and operation	- no operating cost to City – only obligation will be to monitor / evaluate operator	- review of most trolley operations elsewhere shows that operations are often subsidized by the municipality (in return for tourism benefits) and that	- assume municipality is able to break even on operations (i.e. no significant cost incurred; private operator is able to sustain the operation on their own)
5) North End Gorge Development	- some additional costs of development (to be determined) - say \$500,000 for tunnel restoration, landscaping	- some additional costs associated with maintenance of park / trail and interpretation - say (\$10,000 annually)	- little additional direct revenue potential; possible some visitors will stay longer in community to visit north end	- cost of \$10,000
6) Links to Rest of Community	- some cost to reconfigure bus routes, trail linkages, etc. - say \$50,000 for landscaping	- assume no additional cost for re-routing bus routes or linking trails	- no additional revenue potential	- no incremental cost
Operating Costs to City of Brockville		approximately \$203,000 annually	approximately \$238,000 annually	generates surplus of \$35,000 annually

⁷ See **Costs of Community Services (COCS)**, <http://urbanext.illinois.edu/lcr/cost.cfm>

As this very preliminary top-level analysis shows, the capital cost of the overall development is significant. Given the high degree of variation associated with the cost estimates (see Section 2.1 of this Report) it could well be higher. (The Tunnel Committee will be exploring ways and means of accessing funds through grant programs, fundraising, etc. to cover these costs.) However, after the capital and development costs have been dealt with, this analysis shows that the overall development does have the potential to generate some surplus to the municipality. However, this is contingent upon the tax revenues generated by the development at the north end; otherwise the overall development will cost the municipality a significant amount each year. (Note in this regard that the net tax revenue anticipated from development at the north end was anticipated to be on the order of \$78,000 per year, at a fairly broad-brush level of analysis.)

In Phase 2 of the analysis, a smaller-scale 'integrated tunnel' project was envisaged, consisting of the tunnel restoration (1 a and 1b, in the chart above), the development of more public amenities at the south end (2 a and 2b, in the chart), the parkette development at the north end (3b, in the chart) and the trolley operation (4, in the chart). The annual operating costs of this smaller scale project were \$48,000; annual revenues were \$15,000 and an annual deficit of \$33,000⁸ was envisaged. This 'integrated tunnel project' will be the basis for the fundraising and other immediate activities of the Tunnel Committee.

3.2.3 Economic Impact

The other major benefit to the development of the tunnel project will be from the economic impact of tourists spending additional time (and money) in the community. Based on the market assessment previously undertaken (see Section 2.3) the following reasonable assumptions are made regarding additional tourism expenditure:

- 19,000 tourists will visit the tunnel and related attractions (from above)
- on average each will spend an additional half day in the City
- average expenditure per day in RTO 9 is \$117 per person; half day expenditure will be \$58
- thus total additional expenditure in City is estimated to be **\$1.102 million**

One way to position this additional annual expenditure relative to the annual on-going cost of the entire project (as calculated in the previous section) is that every dollar of municipal subsidy generates an offsetting \$48 in additional tourism expenditure in the community⁹.

The Ontario Government's Tourism Regional Economic Impact Model (TREIM) was run to determine the impact of this additional injection of tourism expenditure into the local economy. (TREIM is a well-established economic impact model used for tourism projects across Ontario.)

Running the TREIM Economic Impact Model on this additional tourism expenditure revealed the following:

- the total project will generate GDP of \$704,000 in Leeds & Grenville
- this will be associated with 12 jobs
- labour income of \$416,000 will be associated with these jobs
- the additional taxes generated (to all levels of government) will be on the order of \$324,000

Not examined here is the impact of construction and operation of the attraction itself, which will add to the impacts assessed.

⁸ The actual annual deficit incurred may actually be somewhat less than this, if the municipality is able to take advantage of economies of scale with its existing maintenance staff and equipment, and if volunteer labour is donated to the overall project.

⁹ The calculation here is as follows: a \$23,000 annual cost to the municipality (as calculated in section 3.2.2) is associated with total additional expenditure of \$1.102 in the community (as calculated in section 3.2.3). \$1,102,000 divided by \$23,000 is \$48.

4. Recommendations and Next Steps

There are two recommended streams of action that emerged from the second phase of the project. The first relates to activities of the Tunnel Committee itself and focuses upon carrying forward the momentum of the tunnel project, securing funding, etc. Much of this relates to carrying on activity and research that is on-going at the present time.

The second stream of activity is for municipal staff, in terms of encouraging development at the north end of the site. As mentioned, may be critical to the financial sustainability of the overall project. The likelihood of positive development of the site will also be enhanced by the successful development of the integrated tunnel project itself.

Each of these streams of activity is discussed in turn.

4.1 Stream 1: Continue Momentum on the Tunnel Project

Rather than break the 'tunnel project' into a series of discrete phases (as was the original idea in Phase 1) the Tunnel Committee has since determined that the overall project will have more critical mass (and funding potential) if it is treated as an integrated and single whole. The recommended next steps presented here assume then that the project is a unified development, consisting of the restored tunnel, the south portal tunnel park, the trolley operation, and a small parkette development at the north end (and not, for the moment, as the longer-term larger north end development subsequently discussed, which is a separate stream of activity).

Specific next steps for the Tunnel Committee to pursue in this stream of activities are outlined below. As mentioned, much of this activity reflects actions that are either already under way, or that are being planned for the very near future:

- a) secure **Council approval in principle** for the directions outlined in this Report – specifically an endorsement for the Tunnel Committee to explore grant and funding options for the tunnel project itself, and secondly, direction to municipal staff to explore the possibilities for re-zoning and incentivizing the development of the north end parcel of land (see Stream 2) – Council support in this regard will be a very positive assist to the on-going fundraising activities of the Committee (see b), below);
- b) the Tunnel Committee has already formed a **fundraising subcommittee** to pursue government, foundation and community fundraising – this group should, with the City Department of Economic Development, explore the possibilities for grants and fundraising for the integrated tunnel project and use the information contained within this Report as appropriate in on-going fundraising efforts;
- c) an **updated engineering study** is a logical next step as well, in order to update the construction cost estimates for the tunnel and related project elements – this should be undertaken as soon as possible so that an up-to-date and comprehensive cost estimate can be used and presented to Council, potential funders, and the general public ;

- d) prepare a **specific plan and timetable** for the development of the integrated project as described here – again, this will be useful in the on-going fundraising efforts to assure potential funders that the project is realistic and achievable;
- e) once a development plan and timetable is in place, **begin negotiations with potential tour tram operators** (the Tunnel Committee already has had preliminary conversations with at least one potential operator in this regard) – to be seen as an open and transparent process, the City may need to go to tender for operators – this should be widely advertised throughout the community as well; and
- f) once sufficient funding is in place to make a powerful start on the integrated project – *with a priority element being the restored tunnel* - overseeing the Tunnel Project itself will require **specialist contractor** who will take responsibility for the entire project (as opposed to a piecemeal development) – the City, with the advice and input from the Tunnel Committee, should spearhead this responsibility.

The ‘integrated tunnel’ project itself is do-able assuming the City is willing to find the capital costs and subsidize operation to the tune of \$90,000 per year. As delineated in Phase 1, there are significant economic and socio-cultural benefits from the project to the community overall that may make such subsidy sustainable in the minds of City decision-makers. However, the overall project has the opportunity to contribute even more to community well being by acting as a catalyst to development to the north. The set of activities relating to pursuing this opportunity is appropriately a City responsibility, and is described as ‘Stream 2’, below.

4.2 Stream 2: Encouraging Development at the North End

One of the key implications coming out of Phase 1 was that for the overall tunnel project to work with a minimal deficit, development at the north end would need to proceed, and the surplus tax revenues generated from this development could be conceptually ‘earmarked’ to help subsidize the overall operating costs of the project. In part, the logic of this is that the tunnel restoration itself could act in part as a catalyst to stimulate development at the north end. In turn, the surplus tax revenues generated at the north end (assuming reasonably that the tax revenues generated from commercial development of the site would exceed the on-going cost of servicing the land) could help cover the carrying costs of the rest of the tunnel project (i.e. the costs of maintenance, security, Lighting, etc.). Thus from a ‘holistic point’ of view, looking at all components of the development when seen from this perspective, the project is sustainable for the municipality. (Plus, of course, it is associated with the generation of significant expenditure from tourists and visitors to the community.)



North Portal of the Tunnel

If this were not to be the case, and development at the north end were not to proceed, then the overall annual costs to the City would approximate \$33,000. With the City's other on-going priorities and obligations (e.g. Aquatarium) this may not be seen to be sustainable in the short to medium term, despite the tourism benefits outlined earlier. Accordingly, a conclusion of this market assessment is that development of the property at the north end may be essential to the success of the overall project.

At present, the property on both sides of the north end of the tunnel portal is designated M3 – restricted industrial (shown by way of the arrows on the diagram below). The larger parcel on the right [designated M3-X2-1] is actually a 'Special Exception Zone', which is a more restrictive category.)



This designation significantly limits the nature and type of development that can occur on the site, and relates primarily to the past use of the site rather than its future strategic potential. However, it is within the City's brownfield envelope, meaning that there are certain Community Improvement Plan (CIP) incentives that could potentially apply to development on the site (which would include

remediation of any contamination on the property but also some form of development towards a higher and better use). A further complication is that the property is in private hands, which somewhat reduces the City's ability to determine the future course of development there.

However, given the strategic importance of the property, the City should consider a number of proactive courses of action to encourage the positive development of the site. (While these are beyond the direct mandate of the Tunnel Committee, that group could support and provide some impetus to the City getting this done.) These actions include:

- in the current zoning review (underway at present through the Planning Department) consider re-designation of the lands from M3 to C (commercial) which would facilitate the kinds of synergistic development that would support the tunnel project (by providing activities of interest to tunnel users that would create additional incentive to come to the north end, well as generate the tax revenues to the municipality that could offset development costs) – key considerations in any re-zoning to the property would be the likely impact upon (and reaction of) the residents immediately to the south of both properties;
- review the current CIP status of the site to determine whether there are ways and means of increasing the degree to which development on this strategic site can be 'incentivized' through an enhanced Brownfield CIP;
- assess the implications of commercial development of the site upon surrounding land uses and traffic flow – this would entail a traffic study (including projected traffic volumes along Stewart Blvd./William St. and well as traffic generated from the developed site itself) which would consider the need for signalization on the to enable safe access into the site – also to be considered would be the impact of traffic and noise upon the residential areas to the immediate south;
- initiate discussions with the property owner regarding the development possibilities of the site, with a view to encouraging the owner to develop the site in the longer term, as a commercial development in alignment with the overall tunnel development plan developed here;
- should the owner not be receptive, the City should explore ways and means of acquiring the property (either through sale or expropriation) given its strategic importance to the tunnel project specifically and the community overall. This is clearly not a step lightly taken but considering the strategic importance of the area to not only the tunnel project but also the entire possibility of development of that north end (which is currently a dangerous and blighted area) this could represent a wise investment in the future.

The restoration of the tunnel itself, and the various ancillary improvements made to the south end, the north end parkette and the trolley operation, should be seen strategically in part as an investment or catalyst to this north end development. A key and positive point of differentiation for developer and commercial tenants on the site will be the access to the tunnel and the unique linkage it provides to the downtown.

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Conclusion: The Brockville Railway Tunnel Project has the potential to create community benefit in Brockville in a number of ways: as the restoration and interpretation of a significant community and national asset; as a contributor to Brockville's growing list of attractions; as a generator of positive economic impact in the community; as a source of community pride; and as an element in the redevelopment of a strategic property in the community. The two recommended streams of action presented in this Report would help to realize this significant potential.

Appendix 1 – List of Documents Reviewed

(in chronological order, starting with most recent)

- Brockville Railway Tunnel Committee, **Summary Comments**, October, 2013
- Inspec-Sol Engineering Solutions, **Brockville Railway Tunnel Condition Inspection**, January, 2013
- Brockville Railway Tunnel Committee, **Business Plan for the Brockville Railway Tunnel**, March, 2012
- Stantec-Mining, **Brockville Railway Tunnel Review Assessment**, November, 2011
- City of Brockville, **Business Retention and Expansion with Focus on Human Capital**, November 2010
- WCM in association with MMM, **Economic Development Strategy, City of Brockville**, March 2010
- Brain Trust Marketing and Communications, **Brockville and District, Premier-Ranked Tourism Destination Project**, January 2008.
- The Economic Planning Group, **An Anchor Attraction for Brockville, The Maritime Discover Centre and Other Waterfront Enhancements, Final Report**, July 2007
- City of Brockville, **Community Improvement Plan for Downtown Brockville**, June 2007
- City of Brockville, **Community Vitality Initiative, Phase 1 Summary Report**, June 2007

Appendix 2 – Persons Interviewed

- **Ann Weir**, Regional Economic Development Officer, United Counties of Leeds and Grenville and Board Member of RTO 9
- **Dave Paul**, Economic Development Officer, City of Brockville
- **Maureen Pascoe Merkely**, Director of Planning
- **Bill Rogertson**, Executive Director, Aquatarium
- **Steve Clark**, MPP (and past Mayor)
- **David Henderson** (current Mayor)
- **Andy Neeteson**, boat cruise operator
- **Steve Weir**, Tourism Manager, Brockville and District Chamber of Commerce
- **Anne MacDonald**, Executive Director, Brockville and District Chamber of Commerce
- **Brenda Clarke**, Downtown BIA
- **Gary Brett**, Tourism Advisory Chair, Great Waterway
- **Lyne Roberge-Henderson**, Riverquest
- **Libby Smith**, Executive Director, RTO 9, The Great Waterway

Appendix 3 – Comparable Tunnels Examined

Tunnel Site:	History	Renovation	Length	Type of use	One way vs loop	Objective of redevelopment	Interpretive Panels	Local stakeholder perspectives	Administration	Attendance	Admissions Price / hours	Security	Maintenance	Capital funding	Operating Funding
Lake Mead Railroad Tunnel Trail, Boulder, CO	- built in 1931 for construction of Hoover Dam; tracks dismantled in 62 - site nominated to National Register of Historic Places 84	- tunnel 5 reopened in 2001	- 4.4 mile; 5 tunnels; - longest is 400 ft. 1200 ft tunnels total -- 25 ft in diameter ; parking lot to end of 5 th tunnel is 2.5 miles	- Pedestrian , bike	- One way	- Historical interpretation , ec dev., community pride, recreation, public edn; - push for outdoor recreation in NV	- maybe 5 to 9 along trail - they have an interpretive ranger who does tours	- No controversy	- NPS and Bureau of Reclamation	- 500 a month, fall to winter; less in heat of summer; some special events - Lake Mead NRA receives 14,000 visitors daily peak season, \$500,000 / day	No charge - 5 th tunnel closed at dusk - park open 24/7	- never had an issue; not sure if full cell coverage - have law enforcement with ranger and first aid	100 hours a year - get graffiti, new age circles		- all funding is federal - est 10 staff doing other things; maybe 1000 combined hours a year
Western and Atlantic Railroad Tunnel, Tunnel Hill north of Dalton, GA	- part of Western and Atlantic RR built in 1849	- reopened in 2000	1,477 ft long tunnel - lights every 50 ft - multi-seat golf cart	- Visitors to centre – motorized golf cart - some locals may use	- One way - limited access from other end	- Heritage preservation main focus - tourism attraction with Tunnel Hill Heritage Centre (museum) and Clisby Austin house - civil war history as well as Great Locomotive chase of 1862	- plaque associated with tunnel - heritage centre as part of experience	- state and private landowner donated RR - transportation grant of \$2 m	- Owned by Whitfield County and private landowner	- 7,000 visitors a year - targeting 10,000 next year	- \$7 adult; \$5 children/seniors - \$3 group rate (20+) - admission includes museum and tunnel - open 9 – 5 Monday - Saturday - tours of tunnel each hour - 30 min for	- gate is locked when closed - have had problems with graffiti, paranormal crowd		- \$2 m grant from GA Transportation - \$30,000 from GA ED - try to stuff for free	- get \$25,000 from admissions and souvenir sales - salary to manage charged at \$9,000 - \$20 to \$25K in overhead each year

Brockville Railway Tunnel – Comparables (cont).

Tunnel Site:	History	Renova-tion	Length	Type of use	One way vs loop	Objective of redevelopment	Interpretive Panels	Local stakeholder perspectives	Administration	Attendance	Admissions Price / hours	Security	Mainten-ance	Capital funding	Operating Funding
Cal Park Hill, Marin County, CA	- originally constructed 1884 for Northwest Pacific - widened in 1924 - sealed 1978 - pedestrians and cyclists between Larkspur and San Rafael - part of future SMART corridor - redwood timbers had to be removed and replaced with steel	- reconstruction from 1998 to 2010 - opened Dec 2010 - rail was double track - second half will be transit, still under construction	- pathway is 1 mile - tunnel is 1.100 ft - part of a 25 mile system	Pedestrian, bike - second component will be transit	One way	Adds capacity; enhanced connection to congested SF ferry service from Larkspur - reduced carbon footprint	- are some panels	- good support from several partners - strong lobby from cyclists	- owned by Marin County and SMART (Sonoma Marin Area Rapid Transit)	- est. 200 – 400/day weekdays - 800 / day weekends - 7,000 a day week days - 10,000 a day weekends	- open 7 days a week; 5 am to midnight	- closed from midnight to 5 am - homeless community a problem - occasional bike accidents with bollards - tunnel has cell phone connectivity - fire suppression system - panic call system doesn't work well (moisture)	- maintained by Marin County	- \$10 million for the cycling, pedestrian side - \$27 to \$29 m total; excludes rail installation - \$11,000 per foot	- \$137,450 - ongoing maintenance \$69,950 - periodic supplementary maintenance \$15,000 - professional service \$45,000 - utility costs \$7,500 Total \$137,450 \$125 per foot