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3 **INTRODUCTION AND SUMMARY OF QUALIFICATIONS**
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5 **Q.1. Please state your name, occupation and business address**
6

7 A.1. My name is Edgar Baum. I am the Managing Director, North America, for
8 Brand Finance (Canada) Inc. in Canada and I am the lead representative in
9 North America for Brand Finance plc, the parent corporation. Brand Finance has
10 previously conducted Brand Valuations and similar engagements for the City of
11 Seoul, Department of Foreign Affairs of the Government of Canada, Government
12 of the United Kingdom, Government of Ghana, Government of South Africa
13 amongst others. Brand Finance also publishes an annual Nation Brands report
14 for the purposes of determining and evaluating contribution of national brands
15 toward economic prosperity.
16

17 I have led numerous brand valuation exercises for Brand Finance including a
18 nation brand assessment for Foreign Affairs and International Trade Canada.
19

20 I sit on the International Standards Committee ISO/TC 289 for Brand Evaluation
21 as Vice Chair for Canada's participation. I am also an Advisor on the American
22 Marketing Accountability Standards Board pertaining to reporting standards for
23 Intangible Financial Reporting (IFR).
24

25 I have regularly lectured on Brand Valuation at numerous universities across
26 North America including Northwestern, Hult Business School, NYU-Stern,
27 University of Toronto and Queens University. I am presently developing a post-
28 graduate course on brand measurement for the University of Toronto and will
29 begin lecturing in September 2015.
30

31 Prior to joining Brand Finance, I had 12 years of experience in credit risk
32 analysis, corporate valuation, and brand analysis in private practice, at Procter &
33 Gamble, and Merrill Lynch. My detailed resume is attached at **Appendix A**.
34
35

36 My address is: Edgar Baum, Managing Director, Brand Finance (Canada) Inc.,
37 18 King St. East, Mezzanine Level, Toronto, Ontario M5C 1C4.
38

39 **Q.2. Have you previously testified before the National Energy Board?**
40

41 A.2. No.
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43

44 **Q.3. Do you submit the contents of this document and the Appendices as**
45 **as your written evidence?**
46

1 A.3. Yes, this is my written evidence.
2

3 I was assisted in the preparation of this evidence by Bryn Anderson, a Senior
4 Valuation Director and the Chief Operating Officer for Brand Finance plc. Mr.
5 Anderson leads Brand Finance's development and reporting of the GIFT™
6 report, a decade plus long study of the contribution of intangibles and brands to
7 enterprise value. He is also Brand Finance's lead author and valuator of the
8 Nation Brands Study, an annual publication from Brand Finance that evaluates
9 the contribution of nation brands to their respective economies.

10
11 Mr. Anderson has participated in hundreds of brand valuations for corporations,
12 nations, and municipalities and Bryn was the lead valuator for Brand Finance on
13 City of Seoul, Great Britain, Government of South Africa, and Government of
14 Ghana brand valuation engagements.

15
16 A detailed resume for Mr. Anderson is attached as **Appendix B**.

17
18 **Q.4. What is the purpose of your evidence in this proceeding?**

19
20 A.4. The City of Vancouver has retained Brand Finance (Canada) Inc. to
21 conduct an independent assessment of the Brand Value of the City of Vancouver
22 brand and to determine what impact, if any, an oil spill in the Metro Vancouver
23 area (defined as the City of Vancouver, surrounding municipalities, and bordering
24 water bodies of the Pacific Ocean and Fraser River) would have on this Brand
25 Value from an economic standpoint.

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28 **SUMMARY OF CONCLUSIONS**

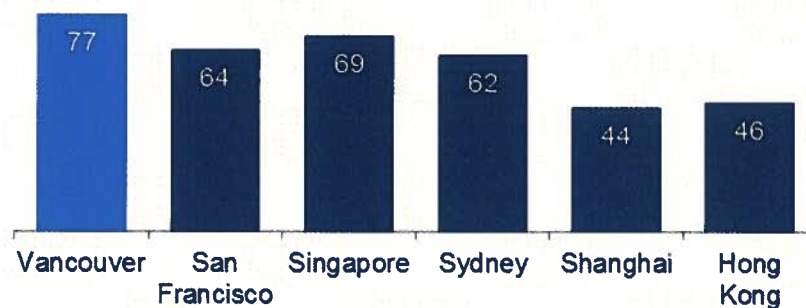
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30 **Q.5. Please summarize your conclusions:**

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32 A.5. My conclusions are summarized in the following paragraphs.

- 33
34 a. The City of Vancouver brand was valued using a brand strength
35 assessment (the "Brand Strength Index (BSI)"). The BSI is a balanced
36 scorecard framework that was used in this study to determine the overall
37 strength of the brand of a municipality relative to its five other competitor
38 municipalities on the following components of brand strength: (1)
39 Municipal investment in infrastructure and other municipal assets,
40 programs and services (referred to as "**Brand Investment**"); (2)
41 Perceptual and behavioural equity based on independent market research
42 (referred to as "**Brand Equity**"); and (3) Economic performance of the
43 municipality including, for example, GRDP per capita, crime rate and
44 energy consumption (referred to as "**Brand Performance**").
45

- 1 b. Brand Investment and Brand Performance data were sourced from Oxford
2 Economics, Statistics Canada, Conference Board, OECD, Bloomberg and
3 other publicly available sources. Each of these components represent
4 25% of the city's overall BSI score.
5
6 c. To determine the Brand Equity component of the BSI, Brand Finance
7 commissioned an independent market research study to determine the
8 brand strength and perceptual brand equity of the City of Vancouver brand
9 relative to six other cities in the study.
10
11 d. Brand Equity represents the relative perceptions and resulting behaviours
12 amongst stakeholders (business leaders, students, tourists and residents)
13 that generate financial value for the City of Vancouver and the comparable
14 cities. The Brand Equity score was compiled based on the responses from
15 1100 participants worldwide to a number of market research questions
16 which compared the City of Vancouver to five other international cities.
17 The relative Brand Equity scores for each of the six cities are summarized
18 in Figure 1 below. The Brand Equity score for the City of Vancouver is 77
19 out of 100.

Figure 1: Brand Equity Scores



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21
22 e. The responses from a significant majority of respondents to the
23 independent market research study demonstrated that the City of
24 Vancouver brand is associated with the environment, 'green' living, and
25 environmental leadership that was discernably ahead of that of the five
26 other city brands studied (Figure 2). For example, with Q4d, What is your
27 overall impression of the following cities as a place for sustainability?
28 Vancouver significantly outperformed the rest of the competition leading to
29 a score of 5.
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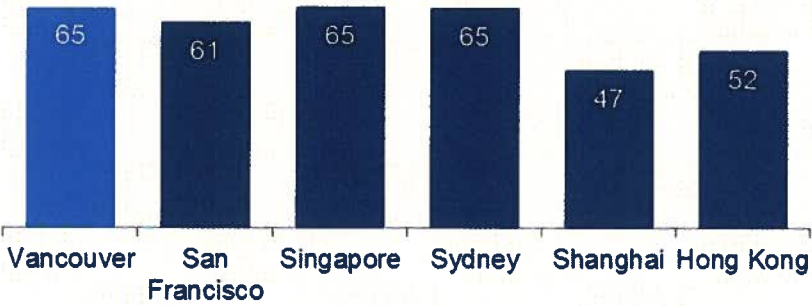
Figure 2

Figure 2						
Metric list	Question	Vancouver	SF	Singapore	Sydney	Shanghai Hong Kong
Overall impression for sustainability	Q4d. What is your overall impression of the following cities as a place for sustainability?	5.00	4.06	2.10	2.41	1.31 1.00
Associations with clean technology or green / sustainable	Q8.8. Thinking about the industries in [CITY], how would you rate [CITY] as a place for...?	5.00	3.57	3.04	3.49	1.15 1.00
Natural scenery	Q7.1. Thinking about the things to do and see in [CITY], how would you rate [CITY] on its...?	5.00	4.80	2.42	4.80	1.00 1.61
Exists in harmony with its environment	Q6.15. And please indicate how strongly you agree with the following statements about [CITY].	5.00	3.46	3.38	4.15	1.00 1.38
Protective of its environment	Q5.4. How would you rate [City] on the following	5.00	3.18	3.84	4.05	1.36 1.00
Consider to be 'green' or eco-friendly	Q6.10. And please indicate how strongly you agree with the following statements about [CITY].	5.00	3.90	3.39	3.90	1.00 1.00

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f. Combining the Brand Equity score with the Brand Investment and Brand Performance scores, Brand Finance determined a relative brand strength score (the BSI) for the City of Vancouver of 65 out of 100. The BSI scores for all six comparator cities is summarized in Figure 3 below.

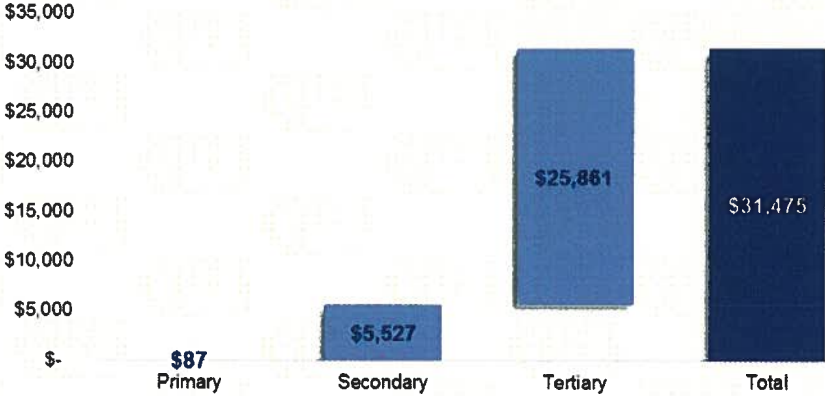
Figure 3: Overall Brand Strength



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g. Brand Finance applied the BSI score for the City of Vancouver to the forecast GRDP using a Royalty Rate Methodology and calculated the Brand Value of the City of Vancouver on this basis. The City of Vancouver's Brand Value is valued at \$31 billion¹ as at January 31, 2015. Figure 4 below breaks the total Brand Value figure into the brand contribution from each sector of the economy as follows: (1) Primary (resource) - \$87 million; (2) Secondary (manufacturing and labour) - \$5,527 million; and (3) Tertiary (knowledge & services) - \$25,861 million. A detailed breakdown of the valuation is attached at **Appendix C**.

Figure 4: Vancouver Brand Value (\$millions)



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¹ All figures were calculated in USD

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- h. As part of the independent market research, the survey respondents were also asked to provide feedback regarding the changes in their perceptions of and behaviours toward each of the six cities in the event of an oil spill. Respondents were asked questions based on three degrees of severity: small spill, medium spill and large spill. These study results informed the assessment of the Brand Equity score for the City of Vancouver and the potential impairment of the overall brand in the event of an oil spill.

- i. Table 1 summarizes the impact of a small, medium and large spill on the City of Vancouver’s Brand Equity using three different levels of perceived impairment: conservative, mid-level, and aggressive. The different levels of perceived impairment were assessed as follows:
 - 1. The conservative assessment applied a 40% reduction to the respondent’s survey scores where the respondent’s overall impression of the city’s brand was “significantly lower” in the event of an oil spill and a 20% reduction was applied where the respondent’s overall impression of the city’s brand was “somewhat lower”.
 - 2. The mid-level assessment applied a 50% reduction to the respondent’s survey scores where the respondent’s overall impression of the city’s brand was “significantly lower” in the event of an oil spill and a 25% reduction was applied where the respondent’s overall impression of the city’s brand was “somewhat lower”.
 - 3. The aggressive assessment applied a 66% reduction to the respondent’s survey scores where the respondent’s overall impression of the city’s brand was “significantly lower” in the event of an oil spill and a 33% reduction was applied where the respondent’s overall impression of the city’s brand was “somewhat lower”.

The results of this assessment of the potential impairment of the City of Vancouver’s Brand Equity in the event of an oil spill are set out in Table 1 below.

Table 1: Brand Equity impairment on various oil spill scenarios				
Score (/100)	Base	Conservative	Mid Level	Aggressive
Small Spill	77	63	59	55
Medium Spill	77	57	52	47

Large Spill	77	47	42	35
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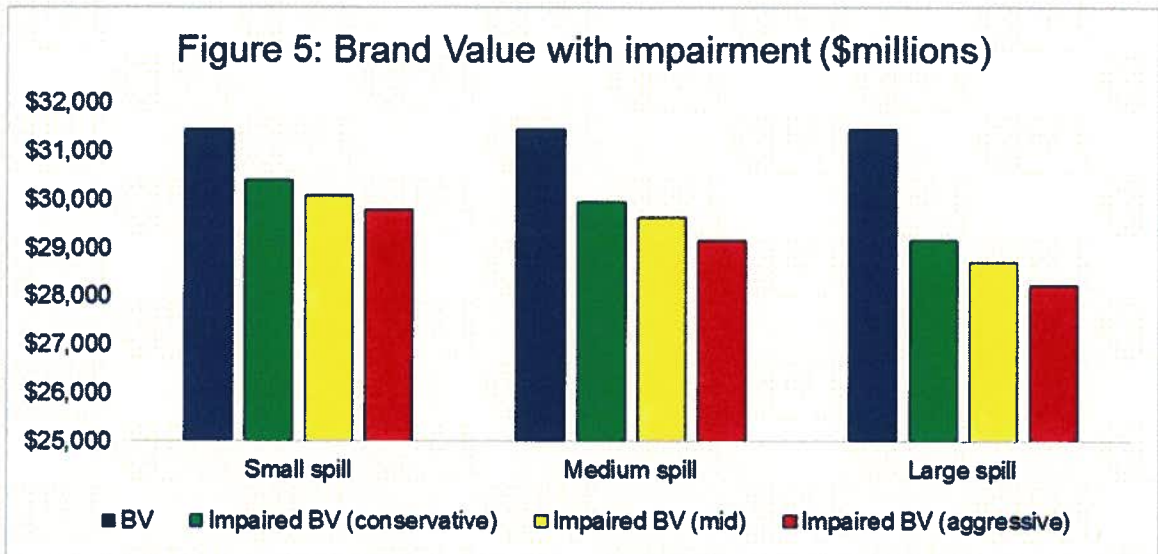
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- j. The Brand Equity assessment is one component of the Brand Strength Index (BSI). The changes in Brand Equity in the event of an oil spill (Table 1) were used to determine the overall impairment to the BSI score for the City of Vancouver under the different spill scenarios. The resulting BSI scores are summarized in Table 2. Looking at the mid level assessment, the City of Vancouver’s BSI score was lowered to a score of 55 in the event of a small spill and was reduced to 46 in the event of a large spill.

Table 2: Overall Brand Strength impairment under various oil spill scenarios			
Small Spill – BSI score changes			
Vancouver baseline	Conservative	Mid Level	Aggressive
65	56	55	53
Medium Spill – BSI score changes			
Vancouver baseline	Conservative	Mid Level	Aggressive
65	53	52	49
Large Spill – BSI score changes			
Vancouver baseline	Conservative	Mid Level	Aggressive
65	49	46	43

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- k. Brand Finance was able to calculate the impairment of a small, medium and large oil spill to the overall Brand Value of the City Vancouver based on the changes to the BSI score (Table 2). Looking at the mid level assessment, a small spill would result in a \$1.3 billion reduction in Brand Value, a medium spill would result in a \$1.8 billion reduction and a large spill would result in a \$3 billion reduction in Brand Value. The results of the Brand Value impairment calculations are summarized in Figure 5 below.



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I. In conclusion, Brand Finance has determined that an oil spill would result in the impairment of the City of Vancouver brand and a reduction in Brand Value ranging between \$1.3 billion and \$3 billion for the mid-level assessment, depending on the size of the spill.

SUMMARY OF ANALYSIS CONDUCTED

Q.6. Please provide a summary of the analysis that you conducted in order to carry out the assessment described above.

A.6. This study had two objectives. First, to conduct a behavioural and financial assessment of the strength and value of the City of Vancouver brand. Using this behavioural and financial assessment as a baseline, the second objective was to determine what, if any, impact an oil spill in the Metro Vancouver area (the “GVA”) would have on the value of the City of Vancouver brand.

The study was conducted in accordance with the ISO:10668 (2010) standards for Brand Valuation to establish a financial and behavioural benchmark for the City of Vancouver brand and overall GRDP value. The ISO:10668 standards for Brand Valuation are attached as **Appendix D**.

This benchmark valuation was then used to conduct a sensitivity analysis to determine the financial impact, if any, of an oil spill on the perceptions and behaviours of those stakeholders (business leaders, students, tourists and residents) that generate GRDP and tax revenue within the GVA.

This study did not calculate the potential economic benefit of the proposed Trans Mountain Pipeline Expansion Project (the “TMEP”) to the Vancouver economy as

1 there was insufficient information available to determine economic benefit
2 specific to the GVA.

3
4 This study also did not evaluate the risk of an oil spill in the GVA as such an
5 evaluation is outside the scope of Brand Finance's expertise.

6 7 *Definition of Terms*

8
9 *Nation brand:* In its annual global *Nation Brands Report*, Brand Finance defines
10 a 'Nation brand' as the word mark and trademark iconography associated with a
11 country in combination with all of the country's product and corporate brands.
12 This is consistent with the language used for defining a trademark under
13 ISO:10668 (2010) guidelines.

14
15 *Municipal brand:* Applied in municipal context, a 'Municipal brand' represents the
16 totality of intangible assets connected to the perception of a municipality's image
17 by external stakeholders. It also includes the same associated word and
18 trademark iconography as a Nation Brand but within a smaller geographic locale.

19
20 The brand definition used in this study is the definition for Municipal brand set out
21 above.

22 23 **Q.7. How did Brand Finance establish the benchmark brand value of the** 24 **City of Vancouver brand?**

25
26 A.7. The City of Vancouver brand was valued using a brand strength
27 assessment (the "Brand Strength Index (BSI)"). The BSI is a balanced scorecard
28 framework that was used in this study to determine the overall strength of the
29 brand of a municipality relative to its five other competitor municipalities on the
30 following components of brand strength:

31
32 1. Municipal investment in infrastructure and other municipal
33 assets, programs and services (referred to as "**Brand**
34 **Investment**"). Brand Investment is defined as a collection of
35 recognizable investment activities and policies that inform
36 perceptions of a brand and behaviours, financial and otherwise,
37 toward a brand. Brand Investment is weighted at 25% of the
38 overall BSI score based on Brand Finance's experience in deriving
39 overall brand strength. Brand Investment data was sourced from
40 Oxford Economics, Statistics Canada, Conference Board, OECD,
41 Bloomberg and other publicly available sources.

42
43 2. Perceptual and behavioural equity based on independent
44 market research (referred to as "**Brand Equity**"). Brand Equity is
45 defined as a collection of perceptual and behavioural qualities
46 relating to a brand that inform financial and non financial decision

1 making. Brand Equity is weighed at 50% of the overall Brand
2 Strength score based on historic experience where, in a non-
3 catastrophic environment, perceptions and behaviours toward a
4 brand do not radically change on a year-over-year basis. The Brand
5 Equity data was sourced from the Luth market research study.

6
7 Luth Research is a collaborative approach driven research firm that
8 results in knowledge that drives insights to market-led products and
9 services for companies—and the communities they serve.

10
11 In 2000, Luth launched SurveySavvy.com, the online component to
12 Luth Research, which offers worldwide market research services.
13 Clients range from large multinational corporations to small
14 boutique research firms. SurveySavvy.com has more than three
15 million members.

16
17 Luth Research is based in San Diego and has the 2nd largest
18 respondent panel in North America with a global panel population in
19 excess of 3 million panelists.

- 20
21
22 3. Economic performance of the municipality including, for
23 example, GRDP per capita, crime rate and energy consumption
24 (referred to as “**Brand Performance**”). Brand Performance is
25 defined as a collection of financial (i.e. GRDP/capita) and non-
26 financial (i.e. literacy rates, carbon dioxide emissions, % of
27 population with post secondary education) results that demonstrate
28 the activities of stakeholders that interact with the brand. Brand
29 Performance data was sourced from Oxford Economics, Statistics
30 Canada, Conference Board, OECD, Bloomberg and other publicly
31 available sources.

32
33 The cities that were identified as comparable cities to the City of Vancouver were
34 Hong Kong, San Francisco, Shanghai, Singapore and Sydney. These
35 comparable cities were selected on the basis that they all have the following
36 common qualities:

- 37
38 1. Natural harbours
39 2. Significant air travel
40 3. Recognized education systems
41 4. Business centres
42 5. Shipping industry

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44
45 Data for the brand value assessment was obtained from the following sources:
46

- 1 1. Oxford Economics
- 2 2. Global City Databank
- 3 3. Publicly available financial statements
- 4 4. OECD (Organization for Economic Co-operation and Development)
- 5 5. Conference Board
- 6 6. City of Vancouver
- 7 7. ktMine (ktMine is one of the leading databases globally of commercial
- 8 royalty agreements.)
- 9 8. Brand Finance's historic databases
- 10 9. Independent market research conducted by Luth Research.

11

12 **Q.8. How was the independent market research conducted?**

13

14 A.8. Luth Research is a San Diego based, independently held market research
15 firm specializing in general public and consumer focused research. The objective
16 of the market research was to determine what perceptions and behaviours the
17 various respondents had toward each of the cities amongst respondents that
18 were familiar with at least two of the cities in the comparative set. The survey
19 was conducted between November 2014 and February 2015. Specific responses
20 were sought from business leaders, tourists and students (the "Stakeholders")
21 who expressed interest in conducting business in, traveling to, or studying in at
22 least two of the six cities.

23

24 Over 1,000 individuals in countries and regions with ready access to Vancouver
25 (i.e. Canada, Western United States, mainland China, select metropolises in Asia
26 and Europe) responded to the survey with a margin of error of 3.5% 19 times out
27 of 20. The respondents were not made aware of which city commissioned the
28 study.

29

30 Each respondent's answers for each city were compared to a common
31 classification of brand equity oriented questions as outlined in the survey
32 attached as **Appendix E**. Some questions were adapted to seek a behavioural
33 response appropriate to each Stakeholder group (business leaders, tourists, or
34 students). The weight of the responses to perceptual questions was then tested
35 using statistical means (r^2) to confirm the importance of the answer to each
36 question attribute based on a financially impactful dependent variable that
37 determined whether there would be a change in financial contribution to the GVA.

38

39 *Example:* For business leaders a unique question was posed as to
40 whether they would invest in the city they were evaluating, for
41 students, whether they would study in the specific city they were
42 evaluating, and for tourists, whether they would travel to the city they
43 were evaluating.

44

45 **Q.9. How were the three components of the Brand Strength Index**
46 **assessed?**

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A.9. For the first component Brand Investment (weighted at 25% of BSI), a number of comparable Brand Investment measures were assessed under six broad categories: economic, healthcare, education, safety, infrastructure and environment. These measures with the results are listed in Table 3. The data for each of these elements was obtained from the sources identified in answer 7 above, excluding market research, and is benchmarked for all six cities. The Brand Investment score for the City of Vancouver is 48 out of 100.

Table 3: Brand Investment scores			Vancouver	San Francisco	Singapore	Sydney	Shanghai	Hong Kong
Brand Investment (inputs) (25%)	Economic	Property taxes	4.98	5.00	1.81	4.99	5.00	1.00
		Tax rates (corporate)	3.30	1.00	4.91	2.70	3.55	5.00
		Government spending (budgets)	1.00	1.40	3.90	4.07	5.00	1.31
	Healthcare	Number of hospital beds per 1000 people	1.05	1.00	1.04	1.18	1.19	5.00
		Number of doctors per 1000 people	1.49	2.37	1.53	5.00	1.00	2.04
		Number of Nurses per 1000 people	4.48	4.53	3.11	5.00	1.00	3.81
	Education	Number of primary education classrooms per 1000 people	4.31	4.28	2.39	5.00	1.00	2.51
		Number of primary education teachers per 1000 people	4.16	4.12	1.81	5.00	1.00	1.95
		Number of secondary school classrooms per 1000 people	3.70	2.99	1.78	5.00	1.00	2.11
		Number of secondary school teachers per 1000 people	3.45	2.61	1.18	5.00	1.00	1.57
		Number of colleges and universities	3.40	3.08	4.84	1.00	4.84	5.00
	Safety	Annual police budget 2014	1.00	1.35	5.00	3.81		2.90
		Number of police officers per 10,000 people	1.16	3.13	1.36	1.00	4.31	5.00
		Number of police stations per 1000 people	1.73	1.84	1.33	4.98	1.00	5.00
	Infrastructure	Number of telephone mainlines	1.00	1.52	1.53	1.55	5.00	3.27
		Infrastructure spending per capita	1.13	1.00	5.00	2.66	3.44	3.16
	Environment	% of area dedicated to parks / greenspace	1.82	2.31	5.00	4.91	1.00	4.46
	TOTAL SCORE / 100			48	48	53	71	41

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The second component, Brand Equity (weighted at 50% of BSI), was assessed using the following categories: overall impression, economic, healthcare, education, safety and security, recreation, social, governance and environment. The data for each of these elements was obtained from the market research data conducted by Luth Research and is benchmarked against the six cities. The results of the Brand Equity assessment are attached as **Appendix F**. The Brand Equity score for the City of Vancouver is 77 out of 100.

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The third component, Brand Performance (weighted at 25% of BSI), was assessed under seven categories: economic, healthcare, education, safety, social, infrastructure, and environment. The measures and results that were used to assess Brand Performance are listed in Table 4. The data for each of these elements was obtained from the sources identified in answer 7 above, excluding the market research, and is benchmarked for all six cities. The Brand Performance score for the City of Vancouver is 59 out of 100.

Table 4: Brand Performance Scores			Vancouver	San Francisco	Singapore	Sydney	Shanghai	Hong Kong
Brand Performance (outputs) (25%)	Economic	Unemployment rate	1.00	2.39	5.00	1.78	3.17	3.87
		Consumer spending per capita	3.35	5.00	2.54	4.27	1.00	2.89
		Average household disposable income	2.12	5.00	3.37	2.94	1.00	3.74
		GDP*	1.00	5.00	3.52	3.71	4.70	3.26
		GDP* / capita	3.00	5.00	3.18	3.89	1.00	2.29
		GDP / Forecasted growth rate	1.00	3.22	2.93	1.81	5.00	2.89
		Total retail sales per capita	3.22	5.00	1.10	3.04	1.00	2.38
		Office employment	3.68	4.73	5.00	4.52	1.00	3.11
		Cost of living	2.90	1.42	1.00	1.15	5.00	2.27
	Healthcare	Life expectancy	4.29	1.00	3.92	3.73	3.21	5.00
		Infant mortality (deaths under 1 year old, per 1000 live births)	1.00	2.26	5.00	1.31	3.52	4.37
		Mortality rates	1.00	1.77	5.00	2.78	4.76	2.18
	Education	% graduated high school	5.00	4.10	1.30	3.75		1.00
		% post secondary	4.87	5.00	2.73	4.99		1.00
		literacy rates	5.00	5.00	2.75	5.00	3.73	1.00
	Safety	Violent crime rate per 100,000	4.16	3.30	5.00	1.00	3.65	4.38
		Overall Crime rate per 100,000	3.44	1.00	4.92	2.49	5.00	4.13
	Social	% of population under age 30	3.08	3.70	2.85	5.00	2.86	1.00
		% of population over 65	1.43	1.83	5.00	1.74	2.87	1.00
		% of working age population (15-64)	2.57	1.59	4.24	1.00	5.00	3.42
		Birth rate (per 1000 people)	1.00	2.89	1.16	5.00	4.44	4.19
		Net migration	1.53	1.13	1.60	1.00	5.00	1.13
	Infrastructure	Number of passenger cars per capita	3.96	3.84	1.52	5.00	1.01	1.00
		Number of mobile phone subscriptions per capita	1.00	2.77	3.13	1.96	2.30	5.00
		Number of internet users divided by the population	5.00	4.67	3.45	4.65	1.00	3.29
	Environment	Energy consumption per US\$ GDP* (L/US\$m)	4.96	5.00	4.23	3.57	1.00	4.61
		Water consumption per person per day (liters)	1.33	1.00	5.00	4.97	3.21	3.91
		Water system leakages (%)	3.44	3.98	5.00	4.31	3.63	1.00
CO2 emissions per person (tonnes/person)		5.00	3.21	4.20	1.00	3.63	4.70	
TOTAL SCORE / 100			58	66	69	63	57	58

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Brand Finance then weighted each of the three BSI components and arrived at an overall Brand Strength Index of 65 out of 100 for the City of Vancouver.

Q.10 How were the Brand Strength Index results used to value the City of Vancouver Brand?

1 A.10 Brand Finance follows the Royalty Relief methodology when valuing
 2 brands. The Royalty Relief methodology can be summarized into a four step
 3 process.
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Royalty relief summary

Brand Finance uses the 'Royalty Relief' methodology to value brands. A derivative of the royalty rate method is applied to determine regional brand value.



8
 9 Step 1 is to estimate future GRDP for Vancouver. Brand Finance used
 10 Conference Board and Oxford Economic forecasts to project GRDP over the next
 11 five years, and into perpetuity.

12
 13 Step 2 is to determine the strength of the brand in question. Brand Finance uses
 14 market research and publicly available data as the basis for the Brand Strength
 15 Index which compares Vancouver against its key competitors.

16
 17 Step 3 is to determine a royalty rate range applicable for Vancouver. The royalty
 18 agreements were sourced by ktMINE.² The data from these agreements was
 19 used to determine the overall brand royalty by industry, as set out in Table 5.
 20 Industry royalty ranges were then adjusted to take into consideration the City
 21 Brand influence on each of the three industry sectors: primary, secondary and
 22 tertiary. Brand Finance applies a 25%, 20%, and 15% "City Brand Influence" to
 23 these ranges for primary, secondary, and tertiary industries respectively (Table
 24 6). For example, in secondary industries, royalty rates for corporations are

² ktMINE is one of the leading databases globally of commercial royalty agreements which contains details of over 30,000 intellectual property agreements.

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typically between 4% and 8%, the “City Brand Influence” is 20% of this range, becoming 0.8% to 1.6%.

Table 5: Royalty Rates by sector

	Agriculture, forestry & fisheries;	Extraction	Manufacturing	Utilities	Construction	Services
	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Min	2.0%	Min 2.0%	2.0%	2.0%	2.0%	2.0%
	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
	4.0%	4.0%	Min 4.0%	Min 4.0%	Min 4.0%	4.0%
	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Max	6.0%	Max 6.0%	6.0%	6.0%	6.0%	Min 6.0%
	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
	8.0%	8.0%	Max 8.0%	Max 8.0%	Max 8.0%	8.0%
	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%
	10.0%	10.0%	10.0%	10.0%	10.0%	Max 10.0%

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Table 6: Royalty Range for City influence

	City			City			City
	Agriculture, forestry & fisheries;	Extraction	Manufacturing	Utilities	Construction	Services	
% Influence allocation		25%				20%	15%
Min 2.0%	Min 2.0%	0.5%					
			Min 4.0%	Min 4.0%	Min 4.0%	0.8%	

Max 6.0%	Max 6.0%	1.5%					Min 6.0%	0.9%
			Max 8.0%	Max 8.0%	Max 8.0%	1.6%		
							Max 10.0%	1.5%

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Step 4 is to use the Brand Strength Index to place Vancouver within the royalty ranges. As an example, Vancouver’s brand strength score is 65, applying this to the secondary industry range of 0.8% to 1.6%, Vancouver’s effective royalty rate becomes 1.32%.

Brand Finance then applied this brand royalty to the forecast GRDP, explicitly for five years and in perpetuity using long term growth rates (Oxford Economics and Conference Board forecasts) for the GVA and discounted it to January 1, 2015 dollars to determine the brand value of the City of Vancouver brand.

The City of Vancouver brand was valued at \$31 billion as at January 1, 2015, representing 24% of the value of the GRDP of the Greater Vancouver area. A detailed calculation and the royalty rates are attached in **Appendix C**.

Q.11 How was the impact of an oil spill on Brand Value assessed?

As part of the market research conducted by Luth, the respondents to the survey were asked to provide an overall score for each city that they provided responses for. Subsequently, the survey respondents were asked to rate how their overall score for each city would change in the event that there was a small, medium, or major oil spill in the general vicinity of the city.

The size of the spill (small, medium or large) was defined by how easy or difficult it would be to clean the spill and whether there would be a lasting environmental impact or not, using the following descriptions:

- i. The spill would only cause a short-term negative impact on the city, its ecosystem, wildlife, and pollution levels with no major lasting effects on its environment and businesses in the area.
- ii. The spill would need a cleanup that required moderate resources. The result would be minor long term negative impacts on the city, its ecosystem, local businesses, wildlife, and pollution levels.

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- iii. The spill would need a cleanup that required abundant resources. The result would be significant long term negative impacts on the city, its ecosystem, local businesses, wildlife, and pollution levels.

7 The survey results demonstrated that the impact of an oil spill on the City of
8 Vancouver brand was consistent across all Brand Equity measures, as illustrated
9 in Tables 7 to 9.

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11 *Small Spill*

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13 A small spill results in an immediate impact to all Brand Equity categories of the
14 City of Vancouver brand. Vancouver maintains leadership, relative to the
15 comparator cities, across Healthcare and Environmental measures, however in
16 an aggressive scenario that leadership is lost. A score of five indicate absolute
17 leadership in the category relative to the other competitive cities based on
18 perceptions. A score of one indicates the brand perception is the worst among
19 the competitor cities.
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Table 7: Equity impairment with a small spill		Vancouver baseline	Conservative	Mid	Aggressive
Equity (50%)	Overall Impressions	4.58	4.05	3.88	3.60
	Economic	3.28	2.48	2.34	2.11
	Healthcare	5.00	5.00	5.00	4.66
	Education	4.36	3.35	3.09	2.67
	Safety and Security	5.00	4.10	3.87	3.49
	Infrastructure	3.31	2.11	1.81	1.41
	Recreation	3.70	3.03	2.88	2.70
	Social	4.27	3.70	3.53	3.29
	Governance	4.45	4.19	4.03	3.78
	Environment	5.00	5.00	5.00	4.95

Score (/100)	77	63	59	55
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Medium Spill

A medium spill results in an immediate and much more rapid impact to all Brand Equity categories of the City of Vancouver brand. Vancouver loses its relative leadership across Healthcare and Environmental measures even under a conservative assessment, however under an aggressive assessment Vancouver drops to last on some measures.

Table 8: Equity impairment with a medium spill		Vancouver baseline	Conservative	Mid	Aggressive
Equity (50%)	Overall Impressions	4.58	3.71	3.43	2.90
	Economic	3.28	2.20	2.03	1.83
	Healthcare	5.00	4.85	4.42	3.70
	Education	4.36	2.84	2.49	2.02
	Safety and Security	5.00	3.65	3.31	2.74
	Infrastructure	3.31	1.53	1.25	1.00
	Recreation	3.70	2.76	2.62	2.43
	Social	4.27	3.40	3.15	2.74
	Governance	4.45	3.88	3.65	3.26
	Environment	5.00	4.99	4.87	4.51
Score (/100)		77	57	52	47

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Large Spill

1 A large spill results in a significant impairment to the Brand Equity categories of
 2 the City of Vancouver brand. Vancouver risks losing more than half of its brand
 3 equity under an aggressive assessment.
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Table 9: Equity impairment with a large spill		Vancouver baseline	Conservative	Mid	Aggressive
Equity (50%)	Overall Impressions	4.58	2.94	2.46	1.99
	Economic	3.28	1.85	1.67	1.50
	Healthcare	5.00	3.76	3.06	1.89
	Education	4.36	2.06	1.74	1.38
	Safety and Security	5.00	2.79	2.24	1.32
	Infrastructure	3.31	1.02	1.00	1.00
	Recreation	3.70	2.44	2.25	1.94
	Social	4.27	2.77	2.37	1.71
	Governance	4.45	3.29	2.91	2.28
	Environment	5.00	4.54	4.11	3.39
	Score (/100)	77	47	42	35

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 9 Using these Brand Equity scores, Brand Finance then recalculated the BSI for
 10 the City of Vancouver brand and the results of that calculation are summarized in
 11 Table 10.
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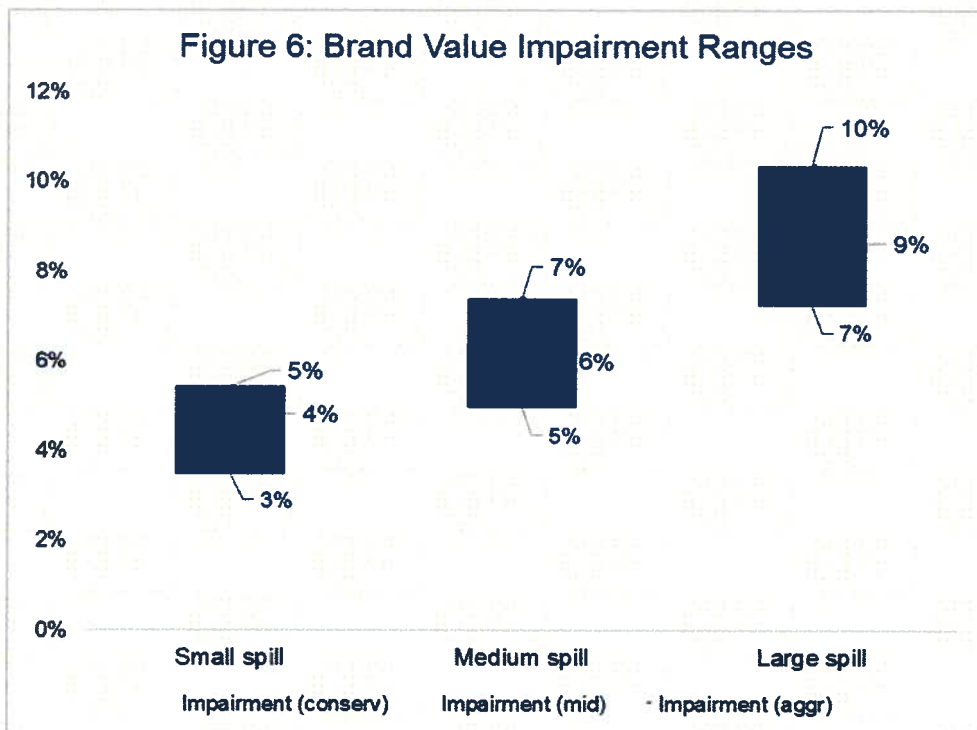
Table 10: Overall Brand Strength impairment under various oil spill scenarios				
Small Spill – BSI score changes				
Vancouver baseline	Conservative	Mid Level	Aggressive	

65	56	55	53
Medium Spill – BSI score changes			
Vancouver baseline	Conservative	Mid Level	Aggressive
65	53	52	49
Large Spill – BSI score changes			
Vancouver baseline	Conservative	Mid Level	Aggressive
65	49	46	43

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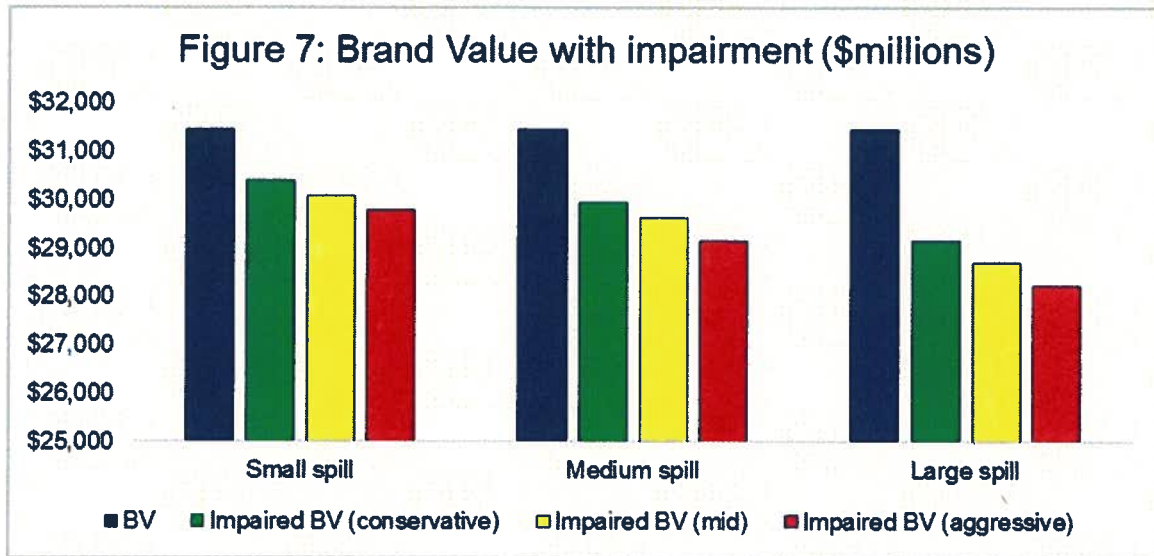
Brand Finance was then able to apply its Royalty Relief Methodology using the new BSI scores for the small, medium and large spill scenarios to determine the impact on the City of Vancouver’s Brand Value.

Applying the above valuation, Brand Finance concluded that the value of the City of Vancouver brand would be at risk should an oil spill occur. The impairment on the brand value is between \$1 billion to \$1.7 billion in a conservative assessment; \$1.5 billion to \$2.3 billion in a mid-level assessment; and \$2.3 billion to \$3 billion in an aggressive assessment. The estimated economic impact is demonstrated in Figure 6 and Figure 7. A detailed calculation of the mid-level assessments can be found in **Appendix G**.



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The financial impact demonstrated in these graphs indicates the financial impact in the event of an oil spill. It does not, in any way, reflect the likelihood of any of the three sizes of oil spill occurring in any of the six cities for which this exercise was conducted. Brand Finance was not provided any data to evaluate the likelihood of a spill happening.

The Brand Value impact of the oil spill did not include any change in GRDP that may result in the event of an oil spill and Brand Finance had insufficient data to predict this. The Brand Value assessment also did not include the GRDP uplift of constructing and operating a new pipeline. Oxford Economics forecasts did not include this uplift, and Brand Finance had insufficient data to predict this.
