



Victoria as a Port-of-Call: the Costs and Benefits of Cruise Ship Visits

A report prepared for the James Bay Neighbourhood Association

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Victoria as a Port-of-Call: the Costs and Benefits of Cruise Ship Visits

Executive Summary

This study investigates the costs and benefits of cruise ship visits to the Ogden Point terminal in Victoria, British Columbia. The study takes as given that the stakeholders whose costs and benefits are of concern are the commercial and industrial firms whose businesses depend upon cruise ship calls, the Greater Victoria Harbour Authority (GVHA) as owner of the Ogden Point terminal, all residents living in Greater Victoria whose lives are affected by cruise ship related activities, and (whenever government revenues and/or expenses are attributable to the activities of the cruise tourism industry) municipal, provincial, and federal taxpayers. For the most part, economic benefits accrue to the business community and to GVHA, while social and environmental costs are incurred by affected residents and by various orders of government (and therefore by tax-payers). Economic benefits are generated by cruise line, passenger, and crew member expenditures that are associated with cruise tourism, while social and environmental costs result from marine effluents, traffic congestion, traffic noise, road repairs, infrastructure subsidies, and atmospheric emissions from both cruise ships and transportation vehicles.

Chapter One of this study provides a descriptive picture of cruise ship activity scheduled at the Ogden Point terminal during the summer of 2009. The pattern of activity in 2010 is quite similar. Estimates are provided of cruise tourism impacts on local traffic volumes. Chapter Two provides an assessment of the economic benefits of cruise tourism activities. These benefits result from the local direct expenditures of cruise ship passengers, crew members, and cruise lines in Greater Victoria. However, while local direct expenditures are a measure of the economic output impact of cruise tourism, they are an overstatement of the associated economic benefits because input costs incurred in the provision of services to cruise ship passengers and the industry itself need to be deducted.

Chapter Three compares and contrasts the impacts of cruise tourism expenditures between “home ports”, where passengers originally embark or finally disembark, and “ports-of-call”, where passengers just visit while the cruise ship itself remains their hotel. Partly because of accommodation stays, and partly because of ship provisioning, the economic output impact per cruise ship call at home ports is almost an order of magnitude larger than at ports-of-call. Seattle, Vancouver, and San Francisco are the home ports for Alaska-bound cruise ships, while Victoria and various other coastal ports serve as ports-of-call. Victoria is the principal Canadian port-of-call for cruise ships that home port in Seattle.

Chapter Four provides an assessment of the social and environmental costs of cruise tourist activities as they impact upon Victoria. Not all of these costs can be measured in monetary terms, but in most instances judgement calls can be made to put reasonable bounds on estimated costs. The costs are, however, largely borne by those who do not stand to benefit from cruise tourism activities. Chapter Five brings the economic benefits of cruise tourism together with the social and environmental costs and assesses these from a Triple Bottom Line perspective. Various solutions to the people movement problem associated with the cruise tourism industry are considered. The need for ongoing monitoring, and real

time reporting, of cruise ship air-shed emissions, with particular emphasis on sulphur dioxide emissions, is identified.

A number of conclusions and recommendations emanate from this study. These are identified as follows.

1. The number of cruise ship visits to Ogden Point, on a seasonal basis, now exceeds the limits of acceptable change.
2. The socio-environmental costs of cruise ship activity, at its current levels, are at least as large as the local financial benefits.
3. The local costs and benefits of cruise ship activity are most unevenly distributed. Those who gain from cruise ship activity are much fewer in number than those who lose.
4. Port-of-call visits generate far less direct economic output than home port visits (as occur at both Seattle and Vancouver). Local outlays on ship provisioning, and passenger expenditures on hotel accommodation and other services, generate about 8.5 times the economic output at home ports in comparison to ports-of-call.
5. The weekly pattern of cruise ship calls at Ogden Point appears, for the most part, to be dictated by next day disembarkations and embarkations at the industry's home port of Seattle. A high proportion of the Victoria calls are evening calls of less than six hours duration.
6. The companies that operate the Ogden Point terminal for GVHA and run the downtown shuttle bus service are wholly owned subsidiaries of a Seattle-based enterprise. Their profits, along with those of the cruise ship industry, flow south.
7. Both the City of Victoria and the Greater Victoria Harbour Authority (GVHA) should become less subservient to the Seattle-based cruise ship industry.
8. Divestiture of Transport Canada's harbour management responsibilities to GVHA would not be possible unless GVHA's governance model were radically altered to become compatible with the port authority template outlined in the *Canada Marine Act*.
9. The people movement problem needs to be resolved, using a wider and more imaginative range of modes for transporting cruise ship passengers from Ogden Point to Victoria's downtown, and elsewhere in the Capital Regional District. Large highway-sized buses need to be replaced by more environmentally friendly and neighbourhood appropriate vehicles and watercraft.
10. Ongoing monitoring, and real time reporting, of cruise ship air-shed emissions should be established and made permanent.
11. The sulphur content of fuels used by cruise ships when they are berthed in port, and within twelve nautical miles of port, should be reduced in compliance with best-practice international standards, namely to the 1.5% sulphur fuel content standard, in transition to the Emission Control Area (ECA) 1.0% sulphur fuel content standard, and to the 0.5% sulphur fuel content standard for auxiliary engines.

12. GVHA, through contractual power, could require its cruise ship industry clients to use low sulphur fuels as per best-practice standards.
13. The City of Victoria should use the powers granted to it under the Community Charter to regulate GVHA's Ogden Point activities through performance based zoning or other measures.
14. Canadian and B.C. taxpayers are providing large capital subsidies to build infrastructure in support of a foreign industry that generates billions of dollars in profits for its owners, and imposes substantial social and environmental costs on the local community
15. Regulations with respect to marine effluent discharges should be updated and made at least as stringent as those in place in Alaska.
16. Seattle is out-competing Vancouver as a home port and, as a result, port-of-call activity in Victoria has increased. The economic activity loss in Vancouver is about 8.5 times larger than the economic activity gain in Victoria. Hence, the B.C. economy as a whole loses significantly as this shift occurs.
17. The polluter pay principle suggests that British Columbia impose an Alaska-style passenger levy of perhaps \$25 per head on each Pacific Coast cruise that calls in at a B.C. port. One should be careful to limit the size of a passenger levy, because any such levy provides ammunition to the cruise ship lobby that already presses for the repeal of the U.S. Passenger Vessel Services Act (PVSA), thereby permitting Alaska-bound cruises to avoid calling at a B.C. port.
18. Revenues raised through the passenger levy should be used to place a Coastal Ranger (or environmental monitor) on each cruise ship as it plies Canadian waters, and to reimburse, on a pro-rata basis, those B.C. communities which host cruise ship visits for the socio-environmental and infrastructure costs that are imposed upon them.
19. The cruise ship business in Greater Victoria will only be sustainable if (a) the number of cruise ship calls is reduced to a reasonable level, and (b) it respects the interests of residents whose neighbourhoods are adversely impacted by cruise tourism, doing whatever it can to mitigate these impacts.
20. The balance between benefits and costs would be enhanced if the Ogden Point terminal became the home port for some cruise ships. However, the socio-environmental costs would increase due to provisioning transportation unless the overall number of cruise ship calls were significantly reduced.

Chapter One: A Descriptive Picture

(a) Introduction

This study investigates the costs and benefits of cruise ship visits to the Ogden Point terminal in Victoria, British Columbia. The study takes as given that the stakeholders whose costs and benefits are of concern are the commercial and industrial firms whose businesses depend upon cruise ship calls, the Greater Victoria Harbour Authority (GVHA) as owner of the Ogden Point terminal, all residents living in Greater Victoria whose lives are affected by cruise ship related activities, and (whenever government revenues and/or expenses are attributable to the activities of the cruise tourism industry) municipal, provincial, and federal taxpayers. For the most part, economic benefits accrue to the business community and to GVHA, while social and environmental costs are incurred by affected residents and by various orders of government (and therefore by tax-payers). Economic benefits are generated by cruise line, passenger, and crew member expenditures that are associated with cruise tourism, while social and environmental costs result from marine effluents, traffic congestion, traffic noise, road repairs, infrastructure subsidies, and atmospheric emissions from both cruise ships and transportation vehicles.

The study is organised into five chapters. In the remainder of this chapter, a descriptive picture is provided of cruise ship activity scheduled at the Ogden Point terminal during the summer of 2009. In addition, the impact of cruise ship activity on traffic volumes along the Dallas Road – Erie Street corridor in James Bay is assessed. This is one of two routes along which large tourist buses and other vehicles travel between downtown Victoria (and other destinations) and Ogden Point, the other being the Dallas Road – Douglas Street corridor. Smaller vehicles also use interior streets within James Bay. Cruise tourism generates a people movement problem for neighbouring communities.

Chapter Two provides an assessment of the economic benefits of cruise tourism activities. These benefits result from the local direct expenditures of cruise ship passengers and crew members, and the local direct expenditures of cruise lines in Greater Victoria. However, while local direct expenditures are a measure of the economic output impact of cruise tourism, they are an overstatement of the associated economic benefits because input costs incurred in the provision of services to cruise ship passengers and the industry itself need to be deducted. Economic benefits are essentially measured by the producer surplus (or economic profits) generated by the use of resource inputs in the provision of these services, a surplus which is above and beyond the returns these resources could earn in their next best alternative use.

Chapter Three compares and contrasts the impacts of cruise tourism expenditures between “home ports”, where passengers originally embark or finally disembark, and “ports-of-call”, where passengers just visit while the cruise ship itself remains their hotel. Seattle, Vancouver, and San Francisco are the home ports for Alaska-bound cruise ships, while Victoria and various other coastal ports (Prince Rupert, Nanaimo, Campbell River, and Port Alberni in BC, and Ketchikan, Juneau, Skagway, and other ports in Alaska) serve as ports-of-call. The chapter also provides a comparison of port charges among major Pacific Coast centres, and a description of the Alaska cruise ship passenger levy. Government subsidies for infrastructure development projects are also discussed.

Chapter Four provides an assessment of the social and environmental costs of cruise tourism activities. The chapter separates out cruise ship waste product impacts from the traffic-related impacts associated with the problem of moving up to 400,000 visitors to tourist destinations while the cruise ships are in port. The traffic-related impacts include traffic congestion, traffic noise, vehicle emissions, and road repairs, while the cruise ship waste products impacts relate to solids and recycling, liquids and bio-hazards, marine effluents, and air-shed emissions. Difficulties associated with measuring these social and environmental costs are identified and discussed within the chapter, which ends with an overview of pending legislative and regulatory changes.

Chapter Five brings the economic benefits together with the social and environmental costs, and assesses these from a Triple Bottom Line perspective. The chapter also assesses the distribution of benefits and costs among the various stakeholders, and finds this to be quite uneven. Various solutions to the people movement and other environmental problems associated with the cruise tourism industry are considered. These solutions could involve regulation, mitigation, compensation, and/or combinations thereof. The arguments for and against the possible implementation of an Alaska-style social levy per cruise ship passenger are discussed. The chapter ends with various conclusions and recommendations.

(b) Cruise Ship Visits: Summer 2009

During the summer months of 2009, the cruise ship terminal at Victoria's Ogden Point was scheduled to receive 226 port-of-call cruise ship visits. These visits ordinarily last for a few hours. A high proportion of these visits are from cruise ships that use Seattle as their home port for Alaska-bound cruises. Usually Victoria port-of-call visits occur the day or evening before passengers disembark in Seattle at the end of their cruise. There are no passenger overnight stays in Victoria generated by these port-of-call visits; the tourist hotel is the cruise ship itself.

Two major cruise industry players own the vast majority of the cruise ships that are scheduled to call at Ogden Point: Carnival Corporation with 137 visits (Holland America Line 70, Princess Cruise Lines 60, and Carnival Cruise Lines 7), and Royal Caribbean Cruise Lines with 57 visits (Royal Caribbean International 27, and Celebrity Cruise Line 30). In addition to this, 20 cruise ship visits are scheduled by Norwegian Cruise Line, 8 by Silversea Cruises, and 4 by other cruise lines. Carnival Corporation generates 61% of the Ogden Point visits through three subsidiary companies, while Royal Caribbean Cruise Lines generates 25% of the visits through two subsidiary companies. Norwegian Cruise Line, Silversea Cruises, and other cruise lines generate the remaining 14% of the visits. These percentages are not markedly different from each company's share of the overall North American market: Carnival 53%, Royal Caribbean 27%, Norwegian 13%, Other Lines 7%.

(i) Schedule and weekly patterns

Table One depicts the weekly pattern of scheduled cruise ship port-of-call visits at Ogden Point during 2009. Cruise ship visits are heavily concentrated on Wednesdays, Thursdays, Fridays and Saturdays. 92% of cruise ship visits occur on these four days of the week, with Thursdays and Saturdays being the days with heaviest traffic. Most of the days when three or four cruise ships visit are Thursdays or Saturdays. The preponderance of Friday and Saturday visits are in the evening hours, between 5 p.m. or 6 p.m. and midnight,

from cruise ships that arrive from Alaska and depart for Seattle, where passengers disembark to be replaced by new one-week cruise tourists. The weekly pattern of arrivals and departures during the 2010 cruise ship season is quite similar to the 2009 pattern.

The source of the underlying data in Table One is Western Stevedoring Co. Ltd. (www.westeve.com), which operates the Ogden Point terminal on behalf of GVHA (www.gvha.v3.ca). It should be noted that although 226 cruise ships were scheduled to call at Ogden Point, one cruise ship stayed for three days, so that the total number of ship-days is equal to 228. Modest changes occurred to these numbers over the cruise ship season. In fact, due to weather conditions, only 219 cruise ship visits to Ogden Point took place.

Table One: Cruise Ship Daily Distribution Frequencies, April 23 to October 14, 2009

	Number of days 'N' cruise ships in port					Ship-Days		Days	Average
	N=0	N=1	N=2	N=3	N=4	Number	%		
Sunday	19	5	1	0	0	7	3	25	0.28
Monday	19	4	2	0	0	8	4	25	0.32
Tuesday	22	3	0	0	0	3	1	25	0.12
Wednesday	4	12	6	3	0	33	15	25	1.32
Thursday	2	4	1	14	4	64	28	25	2.56
Friday	4	1	16	3	1	46	20	25	1.84
Saturday	2	2	1	17	3	67	29	25	2.68
Ship-Days	0	31	54	111	32	228	100	175	1.30
Percent	0	13	24	49	14	100			
Day Total	72	31	27	37	8			175	
Percent	41	18	15	21	5			100	

Source: Western Stevedoring Co. Ltd. (www.westeve.com)

The forecast for the 2011 cruise ship season is for 210 calls at Ogden Point, of which 161 (77%) have Seattle as their next stop, and 134 (64%) are short evening-only calls of under six hours duration. The vast preponderance of mid-season (May 20 to Sept 17) cruise ship calls will again occur on Thursdays (*Amsterdam*, *Rhapsody of the Seas*, and *Celebrity Infinity*), Fridays (*Westerdam*, and *Golden Princess*), and Saturdays (*Oosterdam*, *Sapphire Princess*, and *Norwegian Pearl*), with only *Rhapsody of the Seas*, and occasionally *Amsterdam*, calling during the day-time for more than six hours. A regular Monday call (*Carnival Spirit*) lasts for just four and one-half evening hours. During the mid-season, all of these nine ships sail in from Alaska (five from Ketchikan, three from Skagway, and one from Juneau), and sail out to Seattle, accounting for 150 of 177, or 85%, of mid-season calls.

(ii) Arrivals and departures

The pattern of cruise ship port-of-call visits to the Ogden Point terminal is outlined in Table Two, which again pertains to the 2009 cruise ship season. This table identifies where cruise ships arrive from, along with their destinations once they leave Victoria. 186 of the 226 port-of-call visits are from cruise ships returning from Alaska, and 163 of these visits

occur immediately prior to the arrival of the ships in Seattle. The other 23 ships returning from Alaska depart for Vancouver (8), San Francisco (14) or other continental U.S. ports (1), this being largely a late season pattern.

There are 19 arrivals from San Francisco and continental U.S. ports (other than Seattle), with 8 of these being from San Francisco. These arrivals tend to be concentrated in the early season as cruise ships sail to Seattle or Vancouver as their home port for Alaska-bound cruises during the summer months. The remaining 21 arrivals are from Seattle (6), Vancouver (7), and other B.C. ports (8).

In total, there are 176 Victoria departures bound for Seattle (78% of all departures), 21 departures bound for Vancouver, 24 departures bound for San Francisco and continental U.S. ports (other than Seattle), with 17 of these heading to San Francisco, and 5 departures bound for other ports. From these data, one may conclude that Victoria's main port-of-call role is to service the Seattle-based Alaska-bound cruise ship industry, with rather smaller service to the San Francisco-based industry.

In summary, Table Two clearly demonstrates the extent to which Victoria's Ogden Point cruise ship terminal serves as a last-night-on-board port-of-call for Seattle-based cruise ships on their return from Alaska. 163 (or 100+46+17) of the 226 cruise ship visits relate to this feature. To a lesser extent, Victoria serves as a port-of-call for San Francisco-based cruise ships on route to Seattle (7 visits), and on their return from Alaska (14 visits). In addition, a few Vancouver-based cruise ships use Victoria as a port-of-call as these ships arrive from the continental U.S. (8 visits), and as they return from Alaska (8 visits).

Table Two: Ogden Point, Victoria, as a Port of Call: Summer 2009

<i>Cruise Ships Arrive From:</i>	<i>Cruise Ships Depart To:</i>						<i>Total</i>
	Seattle	San Francisco	Other Cont. US	Vancouver	Other B.C.	Alaska	
Seattle	0	0	0	3	3	0	6
San Francisco	7	0	1	0	0	0	8
Other Cont. U.S.	1	0	1	8	1	0	11
Vancouver	0	2	4	0	0	1	7
Other B.C.	5	1	0	2	0	0	8
Ketchikan	100	1	0	1	0	0	102
Juneau	46	3	0	0	0	0	49
Skagway	17	6	0	2	0	0	25
Other Alaska	0	4	1	5	0	0	10
Total	176	17	7	21	4	1	226

Source: Western Stevedoring Co. Ltd. (www.westeve.com)

Note: Other Alaska includes Sitka, Wrangell, and Haines. Other B.C. includes Prince Rupert, Nanaimo, Campbell River, and Port Alberni. Other continental U.S. includes Astoria, Port Angeles, San Diego, Los Angeles, Long Beach, and Unknown. The single ship leaving Victoria for Alaska heads for Ketchikan, and is the smallest cruise ship that calls in at Ogden Point. The largest cruise ship calls at Victoria on route from San Francisco to Seattle.

(iii) Service to Seattle-based cruise ships

Although the frequency of port-of-call visits to Ogden Point may relate to the attractiveness of Victoria's environment, ambience and amenities to cruise ship passengers, the number of visits derives importantly from the U.S. Passenger Vessel Services Act of 1886, which states that: "No foreign vessel shall transport passengers between ports or places in the United States, either directly or by way of a foreign port, under penalty of \$2 for each passenger so transported and landed." This Act has been amended on several occasions, with the current penalty being \$300 per passenger so transported.

Regulatory amendments to the Passenger Vessel Services Act (PVSA) now allow foreign-flagged cruise ships making round-trip cruises from a U.S. port to visit other U.S. ports as long as the ship also stops at a foreign port. Canadian ports are included in Alaska-bound cruises from Seattle, San Francisco or other continental U.S. ports because they serve as the foreign port. Victoria is the principal port-of-call service centre for these Alaska-bound cruises, almost all of which involve foreign-flagged vessels. The ubiquitous use of foreign flags of convenience reflects the cost-reduction strategy of the cruise ship industry with respect to labour costs, registration costs, taxes payable and liabilities avoided. It also reflects the avoidance of tougher labour laws and environmental standards.

Seattle and Vancouver obtain most of the home port advantages from the Alaska-bound cruise ship business. Embarking and disembarking passengers ordinarily require hotel accommodation in these cities either before or after their cruise. These two ports are in direct competition with each other. As will be demonstrated later in this report, for a variety of reasons, including the introduction of newer ships that can travel faster, Seattle has been out-competing Vancouver, which has systematically been losing market share to Seattle over the past decade. By serving as the main foreign port-of-call for cruise ships that home port in Seattle, as required under the PVSA, Victoria is helping the competitive position of Seattle versus that of Vancouver. The Vancouver-based cruise ships that are bound for Alaska are not required to call at another non-U.S. port.

(c) The People Movement Problem

When up to 400,000 passengers and a large number of crew members descend on a City neighbourhood over the course of the summer months, a people movement problem is inevitably generated. Shore visits to Victoria's downtown core, to Beacon Hill Park, to Butchart Gardens, and to other major tourist attractions require the use of a number of transportation modes. Some of these modes of transportation, such as large tour buses that run through residential neighbourhoods, are more disruptive than other modes to the quality of life within these neighbourhoods. Small motor vehicles, horse-drawn carriages, pedi-cabs, pedestrians, and marine transit modes are less disruptive to the lives of residents.

Traffic statistics compiled during the summer of 2007 by Trans Tech Data Services in conjunction with the James Bay Air Quality Study were analysed statistically by BriMar Consultants Ltd. The data analysis led to the conclusion that, on average, each cruise ship that calls at Ogden Point generates an additional 317 vehicle movements along the Dallas Road – Erie Street corridor. The overall daily average traffic volume along this corridor during the two weeks in which monitoring occurred (June 28 to July 4 on Dallas Road, and

July 31 to August 6 on Erie Street) was 4,563, whereas it averaged 4,200 on days with no port-of-call visits and 5,150 on days with three port-of-call visits.

When three cruise ships are in port, as happened on most Thursday and Saturday evenings during the 2009 summer period, an additional 950 vehicle movements are generated. On average, one additional vehicle traverses the Dallas Road – Erie Street corridor in each direction every minute of the eight hour evening period (4 p.m. to midnight). A considerable proportion of the additional vehicles are not motor cars. Rather they are large highway tour buses. Many of these traffic movements occur late at night as passengers return to their cruise ships prior to the scheduled departure time from Ogden Point, frequently 11:59 p.m.

The basic regression equation from which the 317 additional vehicle movements per cruise ship port-of-call estimate is derived uses individual observations generated by the division of the 18-hour period from 6 a.m. to midnight into a 10-hour morning period (6 a.m. to 4 p.m.) and an 8-hour evening period (4 p.m. to midnight). An alternative daily split into two 9-hour periods using 3 p.m. as the break point provided almost identical results. Indeed, the 317 additional vehicle movements per cruise ship result is exactly replicated on this alternative daily split. Details about the basic regression equation are provided in Table Three. The estimated coefficients of the regression equation are all highly significant, and the overall regression fit is quite robust.

Table Three: The Effect of Cruise Ship Activity on Traffic Counts in James Bay

One-directional traffic count = $847 + 353 \text{ (if day time)} + 158.4 \times \text{(cruise ship number)}$
 Standard deviations: (34.22) (42.70) (22.94)
 Significance levels: (24.75) (8.27) (6.90)
 Number of observations: 52
 Overall coefficient of determination: R-squared = 0.6225

The two-directional traffic count on an 18-hour basis (6 a.m. to midnight) becomes:

Two-directional traffic count = $4,094 + 317 \times \text{(cruise ship number)}$,

where 317 is twice 158.4, and 4,094 is twice the sum of $847 + 353$ for the daytime period and 847 for the evening period.

The coefficient of determination indicates that five-eighths of the variance in one-directional traffic counts is explained by the regression equation. The 95% confidence band for the point estimate of 158.4 one-directional vehicle movements per cruise ship visit runs from 113 to 204, and for the point estimate of 317 two-directional movements per cruise ship visit runs from 226 to 408. One can be 95% confident that the number of vehicle movements per cruise ship visit lies within these bands.

Source: BriMar Consultants Ltd., *Vehicle Traffic Counts in James Bay and Cruise Ship Activity*, August 2008.

The traffic statistics provided above indicate one dimension of the people movement problem that is associated with cruise ship activity . The Community Survey undertaken by the James Bay Neighbourhood Association during the summer of 2009, to which there were

573 respondents, clearly indicates that a reduction in traffic volumes, noise and emissions has become a major priority for residents of James Bay. The use of large highway buses to transport cruise ship passengers even short distances, and during the evening hours, is a major part of the problem. This theme is revisited later in this report.

CVS Cruise Victoria, a passenger transportation service owned by Western Stevedoring Co. Ltd., has indicated that about 230,000 tickets were distributed for return trips from Ogden Point to downtown Victoria during the 2010 cruise ship season. Many other vehicles picked up about 92,000 passengers at Ogden Point, while providing a variety of local tours. Large highway-sized buses are used by both CVS Cruise Victoria and a variety of other tour companies, even when the mileages traveled are quite short. CVS Cruise Victoria charges \$7.00 return for its shuttle bus services from Ogden Point to downtown Victoria, and charges about \$48.00 including entrance fees for each adult who purchases a tour to Butchart Gardens. City tours are offered from \$22.00 for each adult, while lower tour prices apply for youths and children.

(d) Methodology

The methodology used in this study is that of cost-benefit analysis. However, to the extent that it is not possible to monetise all relevant costs and benefits, the methodology generalises into a multiple accounts approach, where a triple bottom line perspective is quite centrally involved. The relationship between these methodological approaches is outlined in Table Four. Essentially, under each approach there is a financial account, which may have separate public sector and private sector components, a social account, and an environmental account. Whenever the elements in each of the accounts can be enumerated in monetary terms, whether positive or negative, net social benefits may be calculated by summing across the accounts. The resulting sum in the net benefits account serves as an overall impact bottom line for the project or activity, and may turn out to be either positive or negative.

Table Four: Multiple Accounts, Cost-Benefit Analysis, and the Triple Bottom Line

Multiple Accounts Approach

Net Benefits Account	Government Finances Account	Economic Development Account	Social Well-Being Account	Environmental Account
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Cost-Benefit Analysis Approach

Net Social Benefits	Net Gov't Revenues	Net Social Surplus to Firms	Net Social Surplus to Households	Net Externality Benefits to Third Parties or Nature
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Triple Bottom Line Approach

Overall Impacts	Financial or Economic	Financial or Economic	Social	Environmental
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Source: Author's Lecture Notes

However, what needs to be assessed in each of the accounts may not always be quantifiable, let alone measureable in monetary terms. In this case, it is not possible to sum across the various accounts, because the implied “unit of measurement” in at least some of the accounts will differ from dollars and cents. It also follows that qualitative analysis is sometimes required. Nevertheless, the triple bottom line perspective necessitates the measurement (whether quantitative or qualitative) of the financial, social and environmental impacts of any given activity, or programme of activities. The triple bottom line perspective also involves an assessment of the trade-offs among these impacts, since any of the bottom line elements may be either positive or negative.

In Table Four, the notion of social surplus appears under both the private sector economic development account and the social well-being account. Social surplus always involves a netting of costs from benefits. It follows that the economic output impact for any firm that supplies services to the cruise ship industry will ordinarily be less than the revenues that the firm receives from the expenditures of cruise ship passengers and crew members, and/or from the expenditures of the cruise ship operators themselves. Revenues overstate benefits unless there are no other gainful uses for the resource inputs (including labour, capital and materials inputs) used up in providing the service. Although much of the rent earned by the Ogden Point facility when cruise ships visit may take the form of social surplus because cruise ship visits may be the “highest and best value use” for the facility, this is clearly not the case for tour company revenues because these companies incur various input costs in the provision of passenger transport services, even if their vehicles might otherwise lie idle.

With respect to its Ogden point terminal, GVHA reports its 2009/10 cruise ship and cruise ship support revenue to be Can\$3.03 million (see Greater Victoria Harbour Authority, *Annual Report 2010*), which results in large part from a cruise ship passenger levy of Can\$8.00 per person. Against this were operating expenses of Can\$2.88 million, of which property taxes paid to the City of Victoria were approximately Can\$0.52 million. Although only 60% of the operating expenses were directly attributable to the Ogden Point site, it is clear that, under current conditions, the rental value of the site is not enormous. Completion of the Master Re-Development Plan, coordinated by CH2M Hill, could considerably enhance the rental value of the Ogden Point site.

The comparable cruise ship and cruise support revenue numbers for the 2010/11 fiscal year are estimated to be about Can\$4.40 million, of which Can\$1.07 million is paid directly to Western Stevedoring Co. Ltd., on its port management contract, leaving about Can\$3.33 million with GVHA. (About 50% of GVHA’s operating revenues relate to shipping services, while about 29% relate to marinas and attractions, and 21% to property services.) Cruise ship and cruise support revenues are expected to increase in 2011/12 to about Can\$3.49 million (after contracted service fees are paid to Western Stevedoring Co. Ltd.), despite a modest reduction in the number of cruise ship calls, as a result of a passenger levy increase of about Can\$1.00 per person. The passenger levy generates revenues for GVHA of about Can\$17,000 per average-size cruise ship call. Other moorage and docking charges also apply.

In cost-benefit analysis, the wages paid to employ labour on a project should always be treated as a cost. The fact that an activity may generate employment does not get counted

as a benefit. However, if the activity involves the payment of wage rates that are higher than those that the workers could earn under alternative circumstances, then there will be an element of producer surplus to set against the project wage bill. Gains associated with increased labour incomes are a cost offset, rather than a project benefit. It follows that the employment of previously underemployed or unemployed labour gives rise to an increase in social surplus, which is usually included under the social, or household account.

Environmental externalities that are imposed upon neighbourhood residents may either be recorded as a reduction in social surplus under the social, or household account, or they may be recorded as a negative element in the environmental account. It is customary to include these externality costs as a negative element under the social, or household account if they can be monetised (for example, through a measureable reduction in property values), while, if they cannot be monetised, a qualitative judgement should be made about their size under the environmental account. Quantification in non-monetary units may underlie the qualitative judgement, for example if the volume of air-shed emissions from cruise ships has been measured.

In addition to the financial benefits that may (or may not) accrue, as social surplus (or profits), to the private sector under the economic development account, the public sector may also receive revenues from the taxation or licensing of industry participants. However, the public sector may also incur expenditures associated with infrastructure repairs and/or subsidies, environmental clean-up costs, and the health care requirements of residents adversely affected by pollution. These revenue and expenditure impacts are recorded in the government finances account, which may also have a positive or negative bottom line.

Financial benefits cannot, however, be measured without starting from the local expenditures made by cruise ship passengers and crew members, and by the cruise ship operators. These expenditures generate the economic output impact of the cruise ship industry. Although the economic output impact necessarily overstates the associated economic, or financial benefits, because input costs need to be deducted, the following chapter provides an overview of the economic output impact of Alaska-bound cruise tourism for various Pacific Coast ports, particularly including Victoria.

It is important to note that both cost-benefit analysis, and multiple accounts analysis, frequently treat costs and benefits as if they are proportional to the volume of activity. However, such an assumption is difficult to maintain in the current context. Although economic output impacts, and therefore local economic benefits, may be roughly proportional to the volume of cruise ship activity, local environmental and social costs are clearly not. In particular, on a per unit basis, these costs increase with the volume of activity. This is because, in any relatively confined ecological space, the absorptive capacity of the environment for various forms of pollutants is limited. It is also the case that, from a social perspective, there are limits of acceptable change. The limits of acceptable change concept is explained in detail at the beginning of Chapter Four of this report. But it is important to recognise, up front, that the incremental social and environmental costs associated with cruise tourism are an increasing function of the volume of this activity. This fact suggests that there may be a level of cruise tourism activity that should not be exceeded if society's net benefits from this activity are to remain positive, and this level of activity may well be significantly smaller than has been experienced in recent years.

Chapter Two: Economic Output Impacts

(a) Local Expenditures of Passengers and Crew

This chapter provides an assessment of the economic output impacts within local communities that may be generated by cruise ship activities. These impacts arise from the expenditures made directly by the cruise ship industry on local goods and services, and by the expenditures incurred by passengers and crew members in association with on-shore activities that they may, or may not, undertake while their cruise ship is in port. Since the nature and amount of these expenditures will differ between home port visits and port-of-call visits, the potential economic impacts of these two kinds of visits should be compared.

In this section, various estimates are provided of the expenditures incurred by passengers and crew members. These estimates are based upon data generated for Cruise Lines International Association, Inc. (www.cruising.org), and for the North West Cruise Ship Association (www.nwcruiseship.org) by *Business Research and Economic Advisors (BREA)*, a Pennsylvania-based consulting company (www.breanet.com, principal: Andrew Moody); data generated for the Port of Seattle by *Martin Associates*, another consulting company based in Pennsylvania (www.martinassoc.net, principal: John Martin); and data generated for Port Metro Vancouver by InterVISTAS Consulting Inc., a Vancouver-based consulting company (www.intervistas.com, principal: Michael Trethaway).

Table Five: BC Cruise Ship Expenditures: Passengers and Crew, 2007 and 2008

Passengers	Vancouver		Victoria		Other BC Ports		Total BC	
	2007	2008	2007	2008	2007	2008	2007	2008
<i>Pass. Visits (000s)</i>	725	854	308	379	124	117	1,157	1,350
<i>Lodging (\$m)</i>	58.5	70.4	0.0	0.0	0.0	0.0	58.5	70.4
<i>Food/Beverages</i>	42.4	51.1	2.3	2.9	0.8	0.8	45.5	54.8
<i>Other Retail</i>	47.4	57.4	7.5	9.4	2.7	2.7	57.6	69.5
<i>Tours/Transportation</i>	23.3	28.4	7.3	9.3	3.2	3.1	33.8	40.8
<i>Total (\$m)</i>	171.6	207.2	17.1	21.5	6.7	6.6	195.5	235.4
<i>Total per pass. (\$)</i>	237	243	56	57	54	56	169	174
Crew	Vancouver		Victoria		Other BC Ports		Total BC	
	2007	2008	2007	2008	2007	2008	2007	2008
<i>Crew Visits (000s)</i>	242	285	108	133	44	50	393	467
<i>Food/Beverages (\$m)</i>	6.1	7.3	2.7	3.4	1.1	1.3	9.9	12.0
<i>Other Retail</i>	6.5	7.9	2.9	3.7	1.2	1.4	10.6	12.9
<i>Tours/Transportation</i>	0.7	0.8	0.3	0.4	0.1	0.1	1.1	1.3
<i>Total (\$m)</i>	13.2	16.0	5.9	7.4	2.4	2.8	21.5	26.2
<i>Total per crew (\$)</i>	55	56	55	56	55	56	55	56
Passengers & Crew	Vancouver		Victoria		Other BC Ports		Total BC	
	2007	2008	2007	2008	2007	2008	2007	2008
<i>Total Ship Visits</i>	275	259	163	201	89		549	
<i>Pass. & Crew (\$m)</i>	184.8	223.2	23.0	28.9	9.1	9.4	217.0	261.6
<i>Pass. & Crew/Visit</i>	672k	862k	141k	144k	106k		477k	

Table Five provides data generated by *BREA* for the North West Cruise Ship Association. Within this table, the category, Other BC Ports, includes Prince Rupert, Nanaimo and Campbell River. By far the largest expenditures, by passengers at least, occur in Vancouver, which, for the most part, is a home port rather than a port-of-call. In particular, there are no expenditures on lodging associated with port-of-call visits. During the 2008 cruise ship season, Victoria had 37% of the total cruise ship visits to BC, versus 47% for Vancouver. Victoria also had 28% of the passenger visits, versus 63% for Vancouver. The difference here doesn't relate to cruise ship size. It relates to the fact that Vancouver caters to both one-way and round-trip cruise ship passengers. Passengers may be counted as visiting the home port as they embark at the beginning of their cruise, while other passengers may be counted as visiting the home port as they disembark at the end of their cruise. In contrast, port-of-call passenger visits are counted just once.

On-shore expenditures per passenger visit are much lower for port-of-call visits than for home port visits, an estimated \$57 per passenger visit in Victoria, versus an estimated \$243 per passenger visit in Vancouver, which is over four times higher. Moreover, not all passengers leave the cruise ship during port-of-call visits. Combining the effect of lower expenditures per passenger visit with the effect of lower passenger visits per cruise ship visit, passenger expenditures per cruise ship visit during 2008 are estimated to be, at most, \$107,000 for Victoria (\$21.5 million divided by 201), versus \$800,000 for Vancouver (\$207.2 million divided by 259). As a result, during the 2008 cruise ship season, Victoria received 9% of the estimated passenger expenditures, versus 88% for Vancouver, and 3% for Other BC Ports.

It should be pointed out that the passenger expenditures have probably not been netted of the roughly-estimated 40% of tour revenues from on-shore excursions that are retained by the cruise ship companies when these excursions are booked through these companies. Roughly speaking, only the residual 60% of tour revenues are passed on to the on-shore excursion delivery agents. However, the *BREA* estimates are silent on this important point, leaving a question mark over the **absolute size** of the local economic output impact from cruise ship passenger expenditures. Nevertheless, this lack of clarity may not affect the **relative size** of per passenger expenditures made in Vancouver versus Victoria.

It should also be pointed out that the *BREA* estimates are model-based, rather than generated by new sample surveys, where the model itself has largely been calibrated from U.S. data. This leads to a serious question as to the relationship between the *BREA* data and local empirical reality. The *BREA* model also makes two unrealistic assumptions, namely that crew visits are equal to about 35% of passenger visits, and that, except at home ports, crew expenditures per crew member visit are approximately equal to those of passengers per passenger visit. Moreover, since crew members ordinarily do not purchase on-shore excursions, the second assumption leads to the apparent anomaly that crew members make on-shore expenditures on food and beverages that are over three times higher than passengers do.

These two assumptions are clearly erroneous when one considers the low wage rates that crew members typically receive, the short duration of most cruise ship visits to Victoria, and the fact that these visits are usually repeated many (up to twenty) times over the cruise ship season. Given their onboard duties, few crew members are able to leave the ship during

short six hour visits, and the first choice of crew members for off-duty time is ordinarily to sleep. Those crew members who do, on some visits, leave the ship are as likely as not to visit thrift stores, such as Value Village, to buy small items of clothing, etc., for themselves and their families, rather than more expensive stores and/or up-scale restaurants. They are also unlikely to visit tourist attractions like Butchart Gardens.

Accordingly, a coherent case can be made that the on-shore expenditures of crew members are seriously over-estimated for both Victoria and Other BC Ports, and probably for Vancouver as well. **In consequence, the \$144,000 estimate for combined passenger and crew member expenditures per cruise ship visit to Victoria during 2008 is most likely to be over-stated and, indeed, significantly so. About \$120,000 per cruise ship visit would be a better estimate for combined passenger and crew expenditures.** The implicit *BREA* assumptions (a) that crew members all get off the ship, even during short five hour evening visits, so that no one is left to man the ship while in port, (b) that they disembark every time the same ship comes into the same port, and (c) that they have as much money to spend as passengers are all unrealistic.

According to Kevin D'Costa, president of D'Costa Ports of Call Inc., which arranges on-shore tours in Victoria, the number of guests and crew disembarking cruise ships *"can only be ascertained once the guests + crew actually disembark the vessels that call in port. It is incorrect to take the cruise ship schedule and tally up the total ship's corresponding berth capacities (including triple occupancy cabins) and advise the community of how many guests + crew will be disembarking/pouring onto the streets in the given time period."* (D'Costa e-mail, May 13, 2009)

D'Costa also states that *"It is absolutely impossible for all the crew to disembark, disembarking crew during daytime visits are minimal (given the total # of crew onboard) and evening visits, it is only after the late seating dinner that the crew may actually be able to disembark. First choice for a crew member (whether in port or not) when he or she gets some free time is to "sleep" (believe it or not). As an FYI, I have spent 10 and ½ years of my life onboard cruise ships so this information is as accurate as it gets."* Moreover, *"Cruise ships are now destinations in themselves and therefore there is quite a number of guests that actually stay onboard to enjoy the ship when in port....Tour participation has been dropping steadily for the last two years now. This year with the prevailing price structure for Alaska cruises we will see even fewer people taking shore excursions."* (Ibid.)

Data that compare Seattle experience with that of Vancouver are presented in Table Six. The Seattle data are compiled from *BREA* and *Martin Associates*, while the Vancouver data are compiled from *BREA* and *InterVISTAS Consulting Inc.* Table Six also includes data that pertain to the direct expenditures of the cruise lines, in addition to the on-shore expenditures of passengers and crew members.

Table Six demonstrates that there is considerable similarity in the overall economic impact of cruise ship visits in Seattle and Vancouver. However, there has recently been a tendency for the Seattle-based Alaska cruise industry to grow, while the Vancouver-based Alaska cruise industry has declined, at least in relative terms. (Indeed, Carnival Cruise Lines, Royal Caribbean, and Norwegian Cruise Lines have announced that, for the 2010 season, they will each relocate one of their ships away from the Vancouver to Alaska run.) Victoria's Ogden Point terminal has clearly been of considerable assistance to the Seattle-

Table Six: Economic Impacts of Cruise Ships: Seattle and Vancouver

All dollar numbers in	Seattle		Vancouver	
	U.S. \$		Canadian \$	
Cruise season	2007	2008	2007	2008
Consulting Company	BREA	Martin Assoc.	Inter Vistas	BREA
Number of cruise ship visits	190	211	275	259
(a) home port		187		249
(b) port of call		24		10
Total cruise passengers (000s)			961	1,053
Passenger visits to city (000s)	772	800	725	854
Crew visits to city (000s)		339	242	285
Passenger expenditures (\$m)		180	172	207
Expenditure per passenger		225	237	243
Crew expenditures (\$m)		19	13	16
Expenditure per crew member		56	55	56
Total pass. & crew expenditures (\$m)	189	199	185	223
Pass. & crew expend. per ship visit	995k	943k	672k	862k
Cruise line expenditures (\$m)	213	333	337	385
Cruise line expend. per ship visit	1,121k	1,578k	1,225k	1,485k
Total expenditures (\$m)	402	532	522	608
Total expenditures per ship visit	2,116k	2,521k	1,898k	2,347k
Indirect business taxes (\$m)				34
Direct output impact (\$m)				574
Direct output impact per ship visit				2,215k

Note One: The data compiled above have been derived from three sources: *Business Research and Economic Advisors (BREA)*, a Pennsylvania-based consulting company (www.breanet.com, principal: Andrew Moody), which works directly with the Cruise Lines International Association (www.cruising.org), and the North West Cruise Ship Association (www.nwcruiseship.org); *Martin Associates*, another consulting company based in Pennsylvania (www.martinassoc.net, principal: John Martin), which works directly with the Port of Seattle; and *InterVISTAS Consulting Inc.*, a Vancouver-based consulting company (www.intervistas.com, principal: Michael Trethaway), which works directly with Port Metro Vancouver.

Note Two: In the 2008 *BREA* data for Vancouver, an estimated \$14 million of travel agent commissions paid by BC residents on cruise bookings anywhere in the world have been omitted since these expenditures do not relate to actual cruise ship visits to Vancouver. In addition, the airline-related expenditures of cruise ship passengers who fly into SeaTac Int'l Airport (\$113 m in 2008), or Vancouver Int'l Airport (\$166 m in 2007, and \$183 m in 2008), have also not been included in the totals.

based industry, serving as the major foreign port-of-call for the Seattle-based cruise ships. This assistance has been largely at the expense of the Vancouver-based industry.

Table Six also indicates that there is some consistency between the *Martin Associates* and *InterVISTAS Consulting Inc.* estimates and the *BREA* estimates. However, on the passenger and crew expenditure side, the *Martin Associates* and *InterVISTAS* estimates are not independent of the *BREA* estimates. Again, the *BREA* estimates appear to be model-based rather than based on newly-collected information from local surveys. In addition to this, the quoted numbers for Seattle and Vancouver are most likely to be upwards biased, probably including a serious upwards bias in crew member expenditures. **In fact, based upon 2010 data, the Port of Seattle uses US\$1.9 million as a measure of the local economic impact of each home port ship that docks in Seattle, while Port Metro Vancouver uses just over Can\$2.0 million as an equivalent measure for home port stops. These numbers appear to be more realistic than the model-based bottom line numbers that appear in Table Six.**

(b) Local Direct Expenditures of Cruise Ships

Table Seven provides a breakdown of BC expenditures by cruise ships during the 2008 season. The data related to passenger and crew expenditures are repeated from Table Five. Passenger and crew expenditures are much higher for Seattle and Vancouver than for Victoria and Other BC Ports (Prince Rupert, Nanaimo and Campbell River) because passengers embarking or disembarking in Seattle or Vancouver usually spend at least one night on shore before and/or after their Alaska cruise. Expenditures per passenger port-of-call (rather than home port) visits to Victoria and Other BC Ports are assumed to be similar to those for Seattle and Vancouver port-of-call visits, or about \$56 per passenger visit. Expenditures per crew member port-of-call visits are assumed to be similar to those for passenger port-of-call visits, but (as previously explained) crew expenditures are significantly over-stated.

In Table Seven, it is important to note that an estimated \$11.8 million of shipbuilding and repair expenditures in the Victoria area have not been included in the estimates. These expenditures are related to the retrofit costs for the small number of cruise ships that occasionally make use of the Esquimalt Graving Dock (EGD) for this purpose. (The EGD is a federally-owned, solid bottom, dry dock facility, located in Esquimalt harbour and originally opened in 1927, within which a number of independent contractors, such as Victoria Shipyards Co. Ltd., can provide ship repairs and retrofitting services.) These expenditures are largely independent of cruise ship visits at Ogden Point, and are quite variable from year to year. Indeed, given the uniquely large size of the Esquimalt Graving Dock, it is not clear that shipbuilding and repair activities would disappear even if fewer or no cruise ships called in at Ogden Point, with the implication that retrofit costs should not be added into the “per cruise ship visit” numbers.

In short, the Esquimalt Graving Dock (EGD) is an independent facility whose operations pre-date the expansion of cruise ship activity at Ogden Point. The facility generates its own revenue sources which are in no way derivative from cruise ship calls at Ogden Point. Moreover, as clearly stated by PriceWaterhouseCoopers (PwC) in its report, *Esquimalt Graving Dock Economic Impact Analysis* (October 2009): “Cruise line companies

hire foreign sub-contractors ... to work on their vessels at EGD”, as well as providing some of their own labour for this work, and bringing in much of their own supplies, while the dry dock provides the space and support personnel. *Radiance of the Seas* will get a make-over at EGD in the spring of 2011.

Table Seven: Breakdown of BC Expenditures by Cruise Ships, 2008

<i>Passengers&Crew Expenditures</i>	<i>Vancouver</i>	<i>Victoria</i>	<i>Other BC Ports</i>	<i>Total BC</i>
<i>Ship Visits</i>	259	201	89	549
Passenger Expenditure (\$m)	207.2	21.5	6.6	235.4
Crew Expenditure (\$m)	16.0	7.4	2.8	26.2
Passenger and Crew (\$m)	223.2	28.9	9.4	261.6
Pass/Crew Exp per Ship Visit	862k	144k	106k	477k
<i>Cruise Ship Expenditures</i>	<i>Vancouver</i>	<i>Victoria</i>	<i>Other BC Ports</i>	<i>Total BC</i>
Professional Services (\$m)	123.1	0.0	0.0	123.1
Food and Beverages (\$m)	62.5	0.0	0.0	62.5
Bunker Fuels (\$m)	41.1	0.0	0.0	41.1
Other Non-Manufacturing (\$m)	63.1	0.0	0.0	63.1
Agric., Utilities, Construction (\$m)	10.9	2.6	0.4	13.9
Transport and Storage (\$m)	44.3	11.8	0.4	56.5
Other Manufacturing (\$m)	39.5	12.0	2.3	53.8
Total Cruise Ship Expenditure (\$m)	384.6	26.3	3.1	414.0
Cruise Expend. per Ship Visit	1,485k	131k	35k	754k
<i>Total Expenditures</i>	<i>Vancouver</i>	<i>Victoria</i>	<i>Other BC Ports</i>	<i>Total BC</i>
Total Expenditures (\$m)	607.8	55.2	12.5	675.6
Total Expend. per Ship Visit	2,347k	275k	141k	1,231k
Less Indirect Taxes (\$m)	34.1	2.5	0.4	36.9
Direct Output Impact (\$m)	573.8	52.7	12.2	638.6
Output Impact per Ship Visit	2,215k	262k	137k	1,163k

Source: Data originally compiled by *Business Research and Economic Advisors (BREA)*.

The *PwC* study also indicates that, during 2008, three percent of the gross revenues of the five main ship-building and repair companies that operate at the EGD facility, and of the EGD facility itself, resulted from work completed, on four ships, for cruise ship companies. (68% of gross revenues were generated by the Canadian Navy and the Coast Guard, 11% by BC Ferries, 18% by commercial vessels, barges, and other ships, and 3% by cruise ships.) Since the gross revenues of the five companies amounted to \$114.5 million, and of the EGD itself to \$6.4 million to which *PwC* study adds \$2.2 million in EGD capital investments, the overall gross revenue total is \$123.1 million. Three percent of this total, or \$3.69 million, is attributable to cruise ship repairs and retrofits. To this should be added \$0.86 million of estimated local expenditures of foreign contractors working at EGD, and

\$1.0 million in customs brokerage revenues accruing to companies such as King Brothers Ltd. Thus, the total economic impact of cruise ship repairs and retro-fits at the Esquimalt Graving Dock during 2008 would amount to about \$5.55 million, or about one-half of the *BREA* estimate. **Neither the *BREA* estimate, nor the estimate based upon the *PwC* study, should be included in measuring the economic output impact of cruise ship calls at the Ogden Point terminal.**

The Esquimalt Graving Dock operates at a loss, in part because the rental rates that it charges to ship-building and repair companies have not, until recently, been adjusted since 1995. This loss is covered by an annual contribution from Public Works and Government Services Canada, which amounted to \$6.1 million during the fiscal year ending March 31, 2008, and \$9.0 million during the following fiscal year. On the other hand, activities associated with EGD and the five main ship-building and repair companies generated tax revenues of about \$14.6 million, of which \$8.0 million were federal taxes, \$5.7 million were provincial taxes, and \$0.9 million were municipal taxes.

Returning to Table Seven, in addition to the exclusion from the *BREA* data of an estimated \$11.8 million of shipbuilding and repair costs in the Victoria area, \$14.0, \$10.8, \$4.6, and \$29.4 million in **travel agent commissions have also been excluded** from the *BREA* data, respectively, for Vancouver, Victoria, Other BC Ports, and Total BC. These commissions relate to cruise ship bookings no matter where in the world the cruise occurs, and bear little relationship to cruise ship activity in Vancouver, Victoria and Other BC Ports. There are no incoming and out-going flight-related expenditures for port-of-call visitors to Victoria and Other BC Ports, unlike home port visitors to Seattle and Vancouver. Moreover, for the most part, indirect taxes flow through to the federal and provincial governments, and do not accrue locally.

One of the notable features of Table Seven is that Professional Services, Food and Beverages, Bunker Fuels, and Other Non-Manufactured goods and services are only purchased and/or taken on board in Vancouver. **It is typical of the cruise ship industry that home ports are the supply base for re-provisioning cruise ships. Ports-of-call do not, by and large, serve this purpose.** However, as will be explained in Chapter Four, significant amounts of waste products, including recyclable solid wastes, liquid wastes, and bio-hazards are off-loaded from the cruise ships at Ogden Point.

Table Seven indicates that the overall economic output impact of the average cruise ship visit to Ogden Point generates about \$262,000 in local economic activity. This is comprised of an upwards-biased estimate of \$144,000 in passenger and crew expenditures, an estimate of \$131,000 for direct cruise ship expenditures, less an estimated \$13,000 in indirect tax accruals to senior orders of government. The corresponding figures for Vancouver are \$862,000, \$1,485,000, and \$132,000, respectively, leading to a total generation of local economic activity per average cruise ship visit of \$2,215,000. For Other BC Ports, the corresponding figures are \$106,000, \$35,000, and \$4,000, respectively, leading to a total generation of local economic activity per average cruise ship visit of \$137,000. **Thus, the economic output impact of home port cruise ship calls in Vancouver is 8.5 times the economic output impact of port-of-call visits in Victoria, and 16 times the economic output impact of cruise ship visits in B.C.'s smaller ports-of-call.**

(c) Total Economic Output Impacts

Table Eight compares the total expenditure data generated by *BREA* for All BC Ports (Vancouver, Victoria, Prince Rupert, Nanaimo, and Campbell River) for 2008 with those for 2007. Percentage changes between 2007 and 2008 are also calculated. These data clearly demonstrate that the *BREA* passenger and crew expenditure data for 2008 do not result from a new survey. The 2007 numbers have simply been escalated by a combination of the increase in passenger (and crew) visit numbers and an inflation factor applied to per passenger (and per crew member) expenditures. The cruise ship expenditures have probably been re-estimated, although the data come directly from the carriers themselves, rather than from survey information.

Indirect taxes, travel agent commissions, shipbuilding and repairs (which apply only to Victoria), and airline-related expenditures (which apply only to Vancouver) have again been excluded. The first category of expenditure accrues to senior orders of government, the second is spread around the world, and the third is generated by the Esquimalt Graving Dock and related shipyards. **None of these expenditure categories pertains to the local economic impact of cruise ship terminal operations themselves.** Airline-related expenditures have been excluded because one does not know whether the Alaska cruise was additive to a planned visit to Vancouver, or whether the visit to Vancouver was additive to a planned Alaska cruise. One also does not know whether the airline-related expenditures relate to travel by Vancouver-based and other BC residents to take up cruises elsewhere in the world, in which case these expenditures would have nothing to do with activity at Vancouver's cruise ship terminals, let alone activity at other BC ports, including Victoria.

One should again stress that the lion's share of the All BC Ports expenditures and, therefore, of the direct output impact, accrues to BC's only home port, Vancouver, with only modest shares accruing to Victoria and to Other BC Ports, which serve only as ports-of-call. **90% of the 2008 direct output impact of \$638.6 million accrues in Vancouver, 8% in Victoria, and 2% in Other BC Ports.** The corresponding numbers (from Table Seven) are \$573.8, \$52.7, and \$12.2 million, respectively. Although there are those who would want to add indirect output impacts to these numbers, it should be pointed out that a good part of the direct output impact already spills out of the local communities when the import content of purchased products is considered. Considerable portions of the goods purchased by passengers, crew members and the cruise ships are produced elsewhere in the world. **Applying multipliers of dubious validity to the direct output impacts should be eschewed by anyone preparing a cost-benefit analysis. Indeed, multiplier effects do not belong in cost-benefit analysis, when properly applied.**

The overall economic output impact of cruise ship activity for the whole of British Columbia during 2010 is estimated by Cruise BC to be equal to \$469.0 million, down from \$638.6 million in 2008. The reduction in economic output impact reflects the considerable reduction in cruise ship home porting in Vancouver (see Table Ten in the next chapter). Of the \$469 million, \$149 million is attributable to passenger spending, and \$320 million is attributable to cruise ship expenditures.

Table Eight: Overall BC Cruise Ship Expenditures, 2007 and 2008

Passenger and Crew Expenditures	2007	2008	% change
Passenger Visits (000s)	1,157	1,350	16.7
Lodging (\$m)	58.5	70.4	20.3
Food and Beverages (\$m)	45.5	54.8	20.4
Other Retail (\$m)	57.6	69.5	20.7
Tours and Transportation (\$m)	33.8	40.8	20.7
Total (\$m)	195.5	235.4	20.4
Total per passenger (\$)	169	174	3.0
Crew Visits (000s)	393	467	18.8
Food and Beverages (\$m)	9.9	12.0	21.2
Other Retail (\$m)	10.6	12.9	21.7
Tours and Transportation (\$m)	1.1	1.3	18.2
Total (\$m)	21.5	26.2	21.9
Total per crew (\$)	55	56	1.8
Total Passenger and Crew (\$m)	217.0	261.6	20.6
Total per Ship Visit (\$000)		477	
Cruise Ship Expenditures	2007	2008	% change
Professional services (\$m)	108.1	123.1	13.9
Food and Beverages (\$m)	46.9	62.5	33.3
Bunker Fuel (\$m)	42.9	41.1	- 4.2
Agric., Utilities, Construction (\$m)	11.5	13.9	20.9
Transport and Storage (\$m)	56.2	56.5	0.5
Other Operating Expenses (\$m)	77.4	116.9	51.0
Total Cruise Ship Expenditures (\$m)	343.0	414.0	20.7
Total per Ship Visit (\$000)		754	
Total Expenditures	2007	2008	% change
Total Expenditures (\$m)	560.0	675.6	20.6
Total per Ship Visit (\$000)		1,231	
Less Indirect Taxes (\$m)	32.9	36.9	12.2
Direct Output Impact (\$m)	527.1	638.6	21.2
Output Impact per Ship Visit (\$000)		1,163	
Information Items	2007	2008	% change
Shipbuilding and Repairs (\$m)	11.5	11.8	2.6
Travel Agent Commissions (\$m)	27.0	29.4	8.9
Airline-related Expenditures (\$m)	166.3	182.9	10.0

Source: Data originally compiled by *Business Research and Economic Advisors (BREA)*.

In the case of Victoria, the outside estimate of the direct output impact of a typical cruise ship visit is \$262,000. This implies that, for a 210-visit cruise ship season, the total direct output impact would amount to no more than \$55.0 million. This is approximately the same level of direct output impact that is generated over the course of a year by the operation of the MV Coho ferry service from Port Angeles to Victoria, which is operated by the Black Ball Ferry Line (www.CohoFerry.com). A direct comparison of MV Coho operations during 2006 with cruise ship operations during 2008 is provided in Table Nine. **On an annual basis, one relatively small, but long-serving, car ferry, brings as much economic activity to Victoria as all of the cruise ship visits, in combination, to Ogden Point.** This is an outstanding conclusion which demonstrates the economic importance of MV Coho operations to Victoria. It also demonstrates why Victoria should not accept exaggerated industry estimates of the economic importance of cruise ship operations to Victoria.

Table Nine: Cruise Ship vs. Coho - Impacts on Victoria's Economic Output

	<i>Coho</i> \$million		<i>Cruise Ships</i> \$million	\$000 per ship visit	Percent
Foot passengers	17.0	Passengers	21.5	107	41%
Vehicle passengers	44.0	Crew	7.4	37	14%
Coho operations	2.0	Cruise ship operations	26.3	131	
Less:		Less:			
Indirect taxes*	6.3	Indirect taxes*	2.5	13	
		Net cruise ship	23.8	118	45%
Total	\$56.7	Total	\$52.7	\$262	100%

Note One: The Coho data relate to annual direct expenditures for 2006 as outlined in Brock Smith, *MV Coho Economic Impact Study*, November 15, 2007. The Cruise Ship data relate to annual direct expenditures for 2008 as outlined in Business Research and Economic Advisors (BREA), *British Columbia Cruise Sector Economic Impact Model*, January 13, 2009. The methodology underlying the BREA data for 2008 is explained in BREA, *The Economic Contribution of the International Cruise Ship Industry in Canada 2007*, March 2008. **Again, there are good reasons for believing that crew expenditures are over-stated.** There were 201 cruise ship visits to Ogden Point in 2008.

Note Two: For the most part, indirect taxes flow through to the provincial and federal governments, and do not accrue locally. The table does not include travel agent commissions of \$10.8 million, which relate to cruise bookings made by BC residents no matter where the cruise occurs. These do not belong in the Victoria-based estimates. The table also does not include shipbuilding and repairs outlays of \$11.8 million, which refer to the activities of the Esquimalt shipyard facilities. These outlays do not relate in any direct way to cruise ship visits at Ogden Point.

Cruise ship visits are by no means the top contributor to the viability of Victoria's tourism industry, which is estimated to have an annual economic output impact of approximately one billion dollars within the Greater Victoria area. **In particular, cruise ship visits generate no positive benefits for providers of accommodation and lodging services in Victoria.** Non-cruise visitors are estimated to spend \$123 per person per day.

Chapter Three: Home Port versus Port-of-Call Impacts

In the previous chapter, the economic, or overall output, impacts of cruise ship activity have been investigated for Seattle, Vancouver, Victoria, and Other BC Ports. It is clear that the economic output impacts for home ports, per cruise ship visit, are almost an order of magnitude larger than the economic output impacts for ports-of-call. Cruise ships get provisioned and fuelled at home ports, and passengers require accommodation there, but neither of these activities takes place at ports-of-call.

(a) Seattle

The Port of Seattle has recently been in the process of expanding its facilities for handling cruise ship visits. In addition to its original Bell Street terminal (Terminal 66), the Port of Seattle has added a newer Smith Cove terminal (Terminal 91). Currently, cruise ships belonging to Norwegian Cruise Line and Celebrity Cruise Line normally embark from Terminal 66, while cruise ships belonging to Holland America Line, Princess Cruise Lines, and Royal Caribbean Cruise Lines normally embark from Terminal 91. Carnival Cruise Lines relocated one of its cruise ships to the Alaska route in 2010. Both cruise ship terminals are located within a 20-30 minute taxi ride from Sea-Tac Int'l Airport.

As indicated in Table Ten on the following page, the growth in cruise ship activity at the Port of Seattle has been rapid, from 6 vessels in 1999, to 148 vessels in 2004, and to 223 vessels in 2010. Growth in the number of passengers has at least kept pace with growth in cruise ship visits because cruise ship capacities have also been expanding. Because Alaska-bound cruises that originate in Seattle (or San Francisco) are essentially domestic from the perspective of U.S. residents, these cruises may have increased in popularity relative to farther-away cruises in the aftermath to the 9/11 disaster in 2001. New U.S. passport rules may also have increased the popularity of Alaska-bound cruises originating in Seattle over those originating in Vancouver.

The growth of Seattle as a home port may also have been hastened by an inadequate supply of airplane seats from the U.S. into Vancouver, with bussing from Seattle being less desirable. Newer ships may also be faster, thereby facilitating embarkation on Alaska cruises with seven-day turnaround from a home port further south. Nevertheless, in recent years, growth in the number of cruise ship visits to the Port of Seattle has begun to level off, perhaps due to the state of the U.S. and international economies, or perhaps due to simple market saturation.

The 2008 data provided in Table Six indicate that the overall output impact of cruise ship activity in the Port of Seattle contributed about US\$532 million to the Seattle economy or, on average, about US\$2.5 million per cruise ship visit, although the Port of Seattle suggests that US\$1.9 million per cruise ship visit is a more accurate estimate. Five-eighths of the overall output impact relates to the direct expenditures of the cruise ship industry, while the remaining three-eighths relates to the expenditures of embarking and disembarking passengers, as well as crew members, while in Seattle.

Table Ten: Passenger Numbers and Cruise Ship Visits at Pacific North-West Ports***Passenger Numbers (000s)***

Year	Vancouver	Victoria	Other BC	Total BC	Seattle
1995	579	39			
1996	693	32			
1997	796	34			
1998	872	22			
1999	924	40			7
2000	987	52			120
2001	1,019	118			167
2002	1,077	160			245
2003	940	186	4	1,130	345
2004	912	262	61	1,235	562
2005	910*	269	113	1,292	687
2006	838	352	83	1,273	751
2007	961	324	131	1,416	781
2008	854	379	117	1,350	886
2009	890	396	n/a	n/a	875
2010	575	441	62	1,078	932

Cruise Ship Visits

Year	Vancouver	Victoria	Other BC	Total BC	Seattle
1999		34			6
2000		45			36
2001		77			52
2002		110			75
2003		118			99*
2004		139			148
2005		142			169
2006		184			196
2007	275	163			190
2008	254*	201	89	544	210*
2009	264	226	n/a	n/a	218
2010	177	228	32	437	223

Notes: Due to the fact that these data have been drawn from a variety of sources, there may be some minor inconsistencies. The Port Metro Vancouver passenger number estimate of 910,000 in 2005 is larger than the BREA (and InterVISTAS) estimate of 888,000, while the actual number of cruise ship visits to Vancouver in 2008, as recorded by Port Metro Vancouver, is 254, rather than the preliminary BREA estimate of 259. In either case, 10 of these visits were port-of-call visits, rather than home port visits. During 2003, 13 of the cruise ship visits to Seattle were port-of-call visits, whereas 24 were port-of-call visits in 2008. The actual passenger numbers and cruise ship visit numbers for Seattle during 2009 include two cruise ships, *Carnival Splendor* and *Mariner of the Seas*, which were diverted from Mexico during the influenza scare in the spring of 2009. These visits have also been included in the Victoria cruise ship visit numbers. However, in each of 2009 and 2010, due to adverse weather, only 219 cruise ships were able to dock at Ogden Point.

The Port of Seattle is a special purpose municipal corporation which is governed by a Port Commission. The Port Commission consists of five members, all of whom are elected by the citizens of King County at the time of regular civic elections. The Port Commission has the statutory power to appoint a Chief Executive Officer who is responsible to the Commission for the over-arching administration of port operations. The Port Commission holds regular meetings (frequently three times a month) which are open to the public except when dealing with sensitive personnel, financial, legal, or national security matters.

Environmental protections at the Port of Seattle are governed by a Memorandum of Understanding, dated April 20, 2004, between the State of Washington's Department of Ecology, the Port of Seattle, and the Northwest Cruise Ship Association (NWCA), whose members consist of the major cruise ship companies using the Port of Seattle as a base for Alaska-bound cruise tourism. In addition, all ships berthing at the Port of Seattle are required to comply with a set of best-management practices dealing with various forms of waste products. Some of these practices are described in Chapter Four of this report. The Port of Seattle has also banded together with the Port of Tacoma, and with the Vancouver Port Authority (Port Metro Vancouver), to implement a Northwest Ports Clean Air Strategy, as outlined in a joint document dated December, 2007. Shore power now appears to be available at the newer Smith Cove terminal (Terminal 91).

The best-management practices outlined in the Memorandum of Understanding (MOU) attempt to improve upon the marine pollution (MARPOL) standards of the International Maritime Organisation (IMO). Although the MOU is revised each year, there appears to be little monitoring or enforcement to ensure that cruise ships actually do comply with the MOU's best-management practices. However, some progress does seem to have been made through the auspices of the Northwest Ports Clean Air Strategy (see *Northwest Ports Clean Air Strategy, 2009 Implementation Report*, July 2010.)

From 2010 onwards, the strategy's main performance targets limit all ocean going vessels that participate in the strategy to using fuel **with 1.5% sulphur content or less for their main drive engines and for diesel electric engines while at berth, and to using fuel with 0.5% sulphur content or less for their auxiliary engines while at berth**. Alternatively, shore power, where available, can be used by ships that are appropriately equipped. These targets are all part of what is now called the At-Berth Clean Fuels Vessel Program (ABC Fuels Program). According to the *Implementation Report*, cited above, a growing proportion of ocean going vessels that call frequently in Seattle appear to be complying with the strategy, and this appears to include the major cruise ships that frequent Seattle as either a home port or a port-of-call.

(b) Vancouver

Port activities in Vancouver come under the authority of Port Metro Vancouver, which was formed by a merger between the Vancouver Port Authority and the Fraser River ports authorities on January 1, 2008. Port Metro Vancouver is governed by a Board of Directors consisting of eleven members, who normally serve three year terms. Four of the directors are appointed representatives of the federal government, the provincial government, the municipal government, and the governments of the three Prairie provinces, whose exported products are shipped through Port Metro Vancouver.

The other seven directors are nominated by a committee of port users, defined as those who make commercial use of, or provide services to, the Port. However, those nominated cannot, in any direct way, be connected with these users, such as being an employee, officer, or director of a port user. All persons so nominated must be approved by the federal Minister of Transport. Essentially, through this route, Port Metro Vancouver remains responsible to the Minister of Transport, and through the Minister to the Governor-in-Council, under the terms of the *Canada Marine Act* (assented to on June 11, 1998). The Chief Executive Officer is appointed by, and is responsible to, the Board of Directors for the over-arching administration of port operations.

Port Metro Vancouver oversees the operations of two cruise ship terminals, the Canada Place Terminal with three cruise ship docks (the 507 metre East dock, the 328 metre West dock, and the 276 metre North dock, which is used less frequently than the two longer docks), and the Ballantyne Terminal with two cruise ship docks (the 366 metre East dock, and the 200 metre North dock, which is too short for berthing most of today's cruise ships). Recently, cruise ships belonging to Norwegian Cruise Line, Princess Cruise Lines, and Carnival Cruise Lines normally embark from the Canada Place East dock, cruise ships belonging to Holland America Line normally embark from the Canada Place West dock, and cruise ships belonging to Royal Caribbean Cruise Lines and Celebrity Cruise Line normally embark from the Ballantyne East dock. Some juggling of berths is inevitably necessary when three or four cruise ships are in port simultaneously.

As indicated in Table Ten, over the past few years the volume of cruise ship activity in Vancouver has fluctuated around a rather non-discernable trend. Port Metro Vancouver cites total embarking and disembarking passenger numbers that have fluctuated in the 838,000 to 961,000 range over the 2003 to 2009 period. The number of cruise ships visits scheduled for 2009 was 264, which is fairly consistent with other recent years. However, Royal Caribbean Cruise Lines announced that *Serenade of the Seas*, which made nineteen visits to Vancouver during the 2009 cruise ship season, would be re-deployed to the Caribbean area in 2010. In addition, Carnival Cruise Lines announced that *Carnival Spirit*, which made twelve visits to Vancouver during the 2009 cruise ship season, would be shifted to Seattle as its home port during 2010. Norwegian Cruise Line also suggested that it would be dropping one of its three ships (*Norwegian Star*, *Norwegian Sun* and *Norwegian Pearl*) from the Alaska run during 2010, although it was not clear at the time whether this would be a Vancouver-based or Seattle-based cruise ship.

Putting all this together, Port Metro Vancouver predicted a 30% drop in passenger traffic in 2010. In fact, the number of cruise ship calls fell sharply to 177. Some of this loss appears likely to be replaced by eighteen visits by Disney Cruise Line's *Disney Wonder* in 2011. Nevertheless, cruise line activity in Vancouver seems to have peaked, while that in Seattle has continued to grow. **Seattle is clearly out-competing Vancouver as a home port and, as a result, port-of-call activity in Victoria has increased. However, the economic activity loss in Vancouver is much larger (indeed, about 8.5 times larger) than the economic activity gain in Victoria. In consequence, the B.C. economy as a whole loses significantly as this shift occurs.**

The 2008 data provided earlier in Chapter Two indicate that the overall output impact of cruise ship activity in Port Metro Vancouver contributed about \$574 million to the Vancouver economy or, on average, about \$2.2 million per cruise ship visit, although Port Metro Vancouver suggests that \$2.0 million per cruise ship visit is a more accurate estimate. As with Seattle, about five-eighths of the overall output impact relates to the direct expenditures of the cruise ship industry, while the remaining three-eighths relates to the expenditures of embarking and disembarking passengers, as well as crew members, while in Vancouver.

As previously mentioned, Port Metro Vancouver is party to the Northwest Ports Clean Air Strategy. Towards the end of August, 2009, shore power became available at the Canada Place Terminal for appropriately equipped cruise ships. The installation of shore power was a \$9.0 million co-operative initiative between the Government of Canada, the BC Ministry of Transportation, BC Hydro, Port Metro Vancouver, Holland America Line and Princess Cruise Lines. Shore power reduces diesel exhaust emissions by enabling cruise ships to shut down their engines while docked. The use of shore power by ships while at berth is referred to as “cold ironing”.

According to the *Northwest Ports Clean Air Strategy, 2009 Implementation Report*, considerably less progress has been made in Vancouver, in comparison to both Seattle and Tacoma, with respect to ocean going vessel compliance with the strategy’s main performance targets. Indeed, with the exception of cruise ships that link up to shore power while at berth, Vancouver appears to be moving backwards in terms of compliance when all ocean going vessels that frequently call in Vancouver are taken into account. Although 58 shore power connections were planned for 2010, the *Implementation Report’s* Vancouver section does not otherwise separate out cruise ships from other ocean going vessels.

(c) Victoria

Victoria remains a public port under the *Canada Marine Act*. Transport Canada is the governing authority over Victoria’s harbour, which is defined by “All the navigable waters, including any foreshore, from a line running from the Ogden Point breakwater in a westerly direction to the southern end of Macauley Point northward to the Trestle Bridge”. The Ogden Point cruise ship terminal is operated by Western Stevedoring Co. Ltd. on behalf of the Greater Victoria Harbour Authority (GVHA), which owns the Ogden Point lands and adjacent waterlots. These properties were divested by Transport Canada in April, 2002, to the GVHA, along with three other harbour-related properties: Fisherman’s Wharf, Ship Point and the Wharf Street properties.

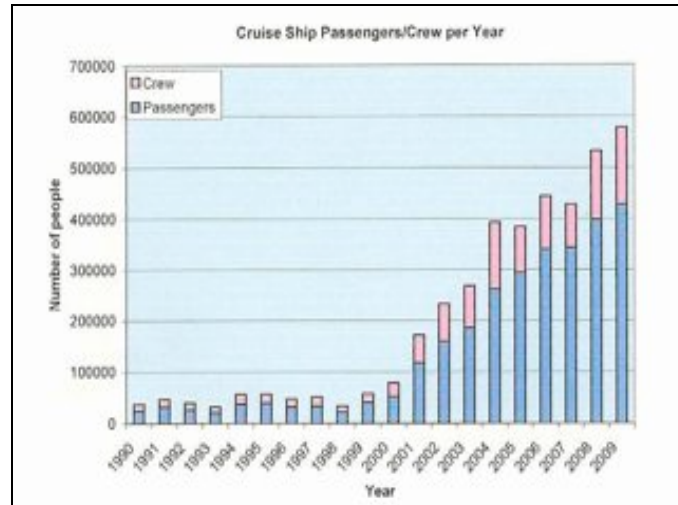
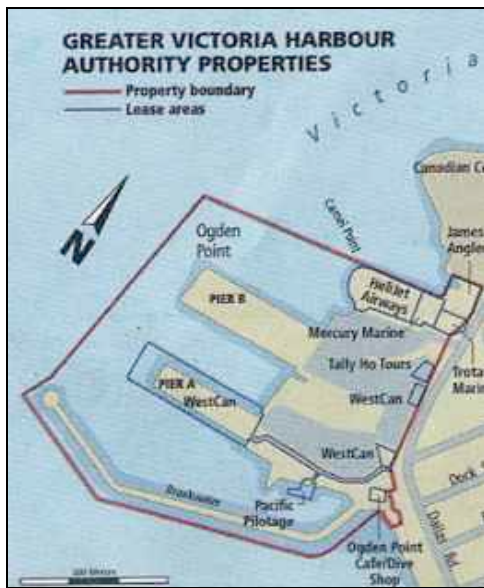
GVHA is incorporated as a not-for-profit society. Despite the term “authority” in its name, **GVHA is a not a port authority under the meaning of the *Canada Marine Act*.** (There are seventeen such port authorities in Canada, of which four are Pacific Coast ports: Port Metro Vancouver plus the Nanaimo, Port Alberni, and Prince Rupert port authorities.) GVHA is simply a land-owner. However, because its member agencies include the Provincial Capital Commission, the City of Victoria, the Township of Esquimalt, and the Esquimalt and Songhees First Nations, there is public confusion in relation to the roles and responsibilities of GVHA. This confusion is somewhat exacerbated by the fact that the Capital Regional District, the Chamber of Commerce, Tourism Victoria, and the

Victoria/Esquimalt Harbour Society are also member agencies. Each of these bodies nominates one member to the Board of Directors of the GVHA, with the exception that the Harbour Society nominates two Board members. There are also four Community Directors, who are appointed by the remainder of the Board.

The governance model for GVHA differs substantially from that of the Seattle Port Commission and from that of Port Metro Vancouver. In particular, there is a much greater likelihood that GVHA's activities will be dominated by the interests of commercial users of the Victoria harbour than would be the case if either the Seattle Port Commission governance model or the Port Metro Vancouver governance model were in place. City of Victoria Councillor Geoff Young has stated that *"local control of Victoria's harbour ... is in danger of slipping away. The GVHA's board of directors is transforming itself into an entity that will be effectively unaccountable to any group of voters. Local citizens may wind up with less influence over the harbour than when it was run by distant federal bureaucrats. ... Before supporting further divestiture of lands and authority to the GVHA the local governments and business groups that appoint directors should ensure the GVHA re-establishes the open and responsive board it was intended to have."* (See <http://geoffyoung.ca/governance.html>.)

GVHA has been pursuing further divestiture of harbour properties to itself. It has also shown interest in becoming a port authority under the terms of the *Canada Marine Act*, replacing the role of Transport Canada in this respect. However, for several reasons, the current form and function of GVHA's governance structure is incompatible with it becoming a port authority. First, GVHA is a not-for-profit society, and the membership agencies represented on the GVHA Board are too diverse for the standard port authority model. Second, the GVHA Board is also too large (for example, Port Metro Vancouver has an eleven member Board of Directors while seven member boards are typical for smaller ports). **Third, some of the members of the GVHA Board directly own, or are officers of, or are employed by, particular port users. The *Canada Marine Act* model is designed to avoid conflicts of interest of this kind. GVHA's so-called "stakeholders" could not serve as Board members under the *Canada Marine Act* model.**

The Ogden Point cruise ship terminal is operated, under contract to GVHA, by Western Stevedoring Company Ltd., which is also heavily involved, through Westcan Terminals Ltd., with cargo operations in Vancouver, B.C. As previously indicated, the Ogden Point to downtown Victoria shuttle bus service is run by CVS Cruise Victoria, a wholly owned subsidiary of Western Stevedoring Co. Ltd. However, Western Stevedoring has been 50% owned since April 2005, and wholly owned since 2006, by SSA Marine, which is itself wholly owned by Carrix, Inc., an international marine, rail transportation and logistics company headquartered in Seattle, Washington. SSA Marine is the operator of several U.S. ports in the Pacific Northwest including the cruise terminals in Seattle. In sum, the scope and scale of activities that take place at Victoria's Ogden Point terminal are largely subservient to the Seattle-based cruise ship industry. This pervades not only the schedule of cruise ship arrivals and departures, but also the operation of the cruise ship terminal. **It is almost as if Victoria has allowed a "foreign enclave" to be set up in the south-west corner of James Bay.**



At the Ogden Point terminal, each side of Pier B provides a 240 metre berth, as does the north side of Pier A, whose south side accommodates a single 335 metre berth. At most, three large cruise ships can simultaneously be accommodated because Piers A and B are relatively close together. The GVHA requested, and received, \$2.4 million in funding (\$1.5 million provincial, and \$0.9 million federal) from the two senior orders of government to help with the installation of a “dolphin”, which would help Ogden Point to accommodate the next generation of even larger cruise ships, and to conduct some dredging just to the north of Pier B. The “dolphin”, which has a similar effect as increasing the length of Pier B, has now been installed, and the dredging has been completed.

The *BREA* data provided earlier in Chapter Two suggests that, during the 2008 season, the **overall output impact** of cruise ship activity in Victoria contributed about \$52.7 million to the Greater Victoria economy or, on average, about \$262,000 per cruise ship visit. **This estimate is upwards-biased because, among other things, it overstates the impact of crew expenditures, and possibly by as much as \$5 million. A better estimate might be \$47.7 million, or about \$237,000 per cruise ship visit.** However, even this estimate may be too high, because it may fail to allow for the kick-backs received from advertised stores, and the commissions retained for on-shore tours that are either pre-sold or sold on board by the cruise ship companies. Approximately half of the overall output impact relates to the direct expenditures of the cruise ship industry, while the other half relates to the expenditures of passengers and crew while the cruise ships are in port.

As indicated in Table Ten, over the past decade the number of cruise ship calls at Ogden Point has mushroomed from 34 in 1999 to 228 in 2010. As depicted above, the number of passengers has escalated ten-fold from about 40,000 in 1999 to about 441,000 in 2010. This growth has placed substantial pressures on the residential community of James Bay in the form of traffic congestion, traffic noise, and air-shed emissions from the increased volume of traffic and from the cruise ships themselves, which are the prominent source of sulphur dioxide for the region. Other neighbourhoods in Greater Victoria have also felt the

impact of the growth in cruise tourism. The associated social and environmental costs will be assessed in the following chapter.

While writing this report, economic data pertaining to the impact of the 219 cruise ship visits to Ogden Point during the 2009 cruise ship season became available. These data are provided in Table Eleven. Whereas GVHA asserts, without much in the way of direct local evidence, that the **direct output impact** of cruise ship activity in Victoria equalled \$64.5 million in 2008 and \$71.5 million in 2009, better estimates would equal \$52.7 in 2008 (see Table Seven) and \$60.3 in 2009 (see Table Eleven below), before downwards adjustment is made for the over-estimation of crew expenditures in the local economy.

Appropriate downwards adjustment would bring these numbers to about \$47.7 million in 2008 and \$55.0 million in 2009.

Table Eleven: Victoria Cruise Ship Expenditures: 2009

Passenger and Crew Expenditures

Ship Visits	219				
Pass. Visits (000s)	428	Crew Visits (000s)	150	Total Visits (000s)	578
Lodging (\$m)	0.0		0.0		0.0
Food and Beverages	3.3		4.0		7.3
Other Retail	10.9		4.2		15.1
Tours and Transport	10.7		0.4		11.1
Total Exp. (\$m)	24.9		8.6		33.6
Total per pass. (\$)	58	Total per crew (\$)	57	Total per visitor (\$)	58
Total per visit (\$k)	114		39		153

Cruise Ship Expenditures

Ship Visits	219				
Ag., Util., Const (\$m)	3.0	Trans. and Stor. (\$m)	12.8	Other Manuf. (\$m)	13.7
Total Exp. (\$m)	29.5				
Total per visit (\$k)	135				

Total Expenditures

Total Exp. (\$m)	63.1	Less Ind. Taxes (\$m)	2.8	Output Impact (\$m)	60.3
Total per visit (\$k)	288			Impact per visit (\$k)	275

Source: Data originally compiled by *Business Research and Economic Advisors (BREA)*.

It should again be noted that **these are not estimates based upon new surveys**. They are again based on the BREA model, where per passenger and per crew expenditures have been indexed for inflation and then multiplied by the estimated passenger and crew numbers. **The crew expenditures are significantly exaggerated for reasons already outlined.** The cruise ship expenditure numbers have also been escalated by BREA from earlier data. Expenditures by BC residents on cruises elsewhere in the world (\$11.8 million) have been deleted from the BREA estimates, as have expenditures (again not newly estimated) on ship building and repairs (\$12.1 million), which are not directly related to activities at the Ogden Point cruise ship terminal.

During the 2010 cruise ship season, 228 cruise ship calls were scheduled, although 9 planned arrivals were unable to dock due to inclement weather. GVHA has indicated that 441,330 passengers were carried on the 228 ships. However, not all of these passengers would have opted to come ashore. The majority of the cruise ship visits lasted for only five

or six hours in duration and occurred on the final evening before passenger disembarkation in Seattle the next morning. Some cruise ships visited during wet weather conditions. GVHA has not provided data indicating the actual number of passengers or crew who came ashore. The numbers provided simply count the aggregate roster from cruise ship passenger lists. However, CVS Cruise Victoria has indicated that about 230,000 tickets were distributed for return trips from Ogden Point to downtown Victoria, and many other vehicles picked up about 92,000 passengers for a variety of local tours and transportation destinations. 210 cruise ship calls, involving 22 distinct ships, are anticipated at Ogden Point during the 2011 season, with an aggregate of possibly 418,000 passengers on board. The *Norwegian Jewel* will begin port-of-call visits in 2012.

(d) Other BC Ports

At present, the three other BC Ports that cater to large cruise ships are Prince Rupert, Nanaimo and Campbell River, although pocket cruise ships have been known to call at Port Alberni. With the exception of Campbell River, the other three ports are managed by port authorities under the *Canada Marine Act*. Typically, for smaller ports, port authorities are governed by seven member boards, with three board members appointed by the federal, provincial and municipal governments, and four members nominated by, but not from, a committee of port users. All persons so nominated must be approved by the federal Minister of Transport. Although the board of directors for smaller ports has fewer members than the board of directors of Port Metro Vancouver, the model is essentially the same. The Nanaimo Port Authority and the City of Nanaimo have together signed a Charter to guide the relationships between them.

The Northland terminal at Prince Rupert has a floating moorage dock that is capable of handling cruise ships up to 300 metres in length, while the smaller Atlin terminal handles pocket cruise ships. Between 2008 and 2009, the volume of cruise ship activity at Prince Rupert fell significantly from 63 calls to 27 calls, of which 7 were pocket cruise ship calls. All but one of the 2009 calls by large cruise ships were made on Thursday evenings by the *Norwegian Star*, which disembarks and embarks passengers in Seattle on Saturdays. Prince Rupert, like Victoria and Nanaimo, is mostly servicing the cruise ships for which Seattle, rather than Vancouver, is the home port. However, the *Norwegian Star* will no longer be scheduled to call in Prince Rupert during 2012, leaving Prince Rupert without a regular weekly cruise ship call.

The Port of Nanaimo has recently completed the financing for a new moorage dock that will be capable of handling cruise ships up to 300 metres in length. The financing package of \$24 million includes \$8.5 million from the federal government, \$5.0 million from the provincial government, \$3.5 million from the Island Coastal Economic Trust, and \$7.0 million from the Port Authority itself. The new terminal should be in place by the start of the 2011 cruise season. Cruise ship activity is projected to increase once the new moorage dock is in place. However, cruise ship activity has been declining from a peak of 15 large and 21 pocket cruise ships in 2007, to a combined total of 21 cruise ship calls in 2008, to 10 large and 5 pocket cruise ships in 2009, to 6 port-of-call visits in 2010 (apparently with, in total, 6,824 passengers on board), and 4 in 2011.

The four cruise ship visits scheduled for 2011 are all connected with the cruise ship re-positioning that occurs at the beginning and end of the season, with the *Norwegian Pearl* and the *Celebrity Century* calling in May, and the *Celebrity Millennium* and *Norwegian Star* calling in September. Nanaimo estimates that cruise ship calls will bring an estimated 120,000 passengers over the next five years, and that passengers spend an average of \$65 to \$85 per person during shore excursions, with crew members spending an average of \$25 to \$30 on shore. While the passenger expenditure number is larger than the perennial \$56 per person of the *BREA* model, the crew spending number is significantly, and more realistically, smaller than \$56 per person.

In any case, 120,000 passengers spending \$65 per person, spread over five years to rise from about 9,000 passengers on four cruise ship visits in 2011 to about 46,000 in 2015, would generate an income stream that when discounted back to the present at about 10% per annum would generate a net present value of about \$5.5 million, to which one might add a small amount of crew member expenditures and some direct expenditures by the cruise ships themselves. Accordingly, even if Nanaimo's optimistic projections about the number of cruise ship visits, and associated passenger visits, were to be borne out, the payback period for the initial investment of \$24 million will be quite long. **In fact, the net present value of Nanaimo's investment, with a great deal of use of public tax-payer funds, may well turn out to be negative. This is certainly the case for Campbell River's investment.**

In Campbell River, the cruise ship terminal is located on First Nations property. Campbell River started hosting cruise ships in 2007, and had 5 such calls in 2008. At this time, it is difficult to say how cruise ship activity at Campbell River will develop. However, it currently appears that the Campbell River terminal will host no cruise ships during the 2011 cruise ship season, paralleling earlier seasons when only pocket-sized cruise ships, such as Cruise West's *Spirit of Columbia*, called. The Campbell River terminal took more than \$19 million in public funding to build. **Given the Prince Rupert, Nanaimo, and Campbell River experiences, one must seriously question why Canadian and B.C. taxpayers are providing large capital subsidies to build infrastructure that would support the profits of a multi-billion dollar foreign industry, but without generating local economic output impacts that are large enough to generate a reasonable rate of return on public investments.**

(**Carnival Corporation**, which services 51.6% of the world cruise market and operates 98 cruise ships through its various subsidiaries, **made profits of US\$1,978 million in the year ended on November 30, 2010, on revenues of US\$14,469 million, while paying a world-wide total of \$1.0 million in corporate taxes!** Micky Arison and family own 47% of the Carnival Corporation shares, which paid dividends of US\$0.40 per share on per share earnings of US\$2.51 during 2010. Parallel numbers for 2009 include profits of US\$1,790 million on revenues of US\$13,460 million, and earnings per share of US\$2.27.)

Taken together, the overall output impact of cruise ship activity at the three ports of Prince Rupert, Nanaimo and Campbell River amounted to about \$12.2 million during 2008, although this is undoubtedly contains an exaggerated estimate of the expenditures of crew members. About one-third of the overall output impact relates to the direct expenditures of the cruise ship industry, while the other two-thirds relates to the expenditures of passengers and crew while the cruise ships are in port.

(e) A Comparison of Port Charges

Port charges are quite variable among Pacific Coast ports. Table Twelve provides details of existing port charges at those ports for which information is readily available. The information provided in Table Twelve is consistent with the notion that home ports assess larger port charges than ports-of-call. Part of the reason for this is that a greater number of services are provided at home ports where cruise ship provisioning occurs and where passengers embark and disembark. In addition, home ports seem to have more ability than ports-of-call to increase their port charges because threats by industry to pull the cruise ships out and relocate them elsewhere are less credible in the case of home ports.

It is, however, unfortunate, that information pertaining to dockage and service charges appear to be unavailable for Victoria. Moreover, information pertaining to the passenger charge in Victoria was obtained by word of mouth, and not through the GVHA web-site. The passenger charge in Victoria was set at \$8.00 per passenger for the 2010 cruise season, when 228 cruise ship calls were scheduled, and appears to be being raised by adding a "sustainability fee" of about \$1.00 per passenger in 2011. Nevertheless, it is not clear what industry pressure Victoria might be under to keep its port charges relatively low. It is also not clear whether or not Prince Rupert has been pressured in this regard, given that only one large cruise ship regularly called there during the 2009 season, and this ship will no longer call in 2012. Some Caribbean ports have been pressured into giving port charge discounts when certain thresholds are reached for passenger numbers or cruise ship calls. In many ways, this practice is perverse because the local social and environmental costs escalate as the number of cruise ship calls, and associated passenger numbers, increase.

In keeping with the Northwest Ports Clean Air Strategy, both Port Metro Vancouver and the Port of Seattle are currently taking steps to reduce the adverse impact of cruise ship emissions on air quality, and have detailed their actions in this regard within their schedules of port charges. Seattle mandates the use of shore power or fuels with no more than 1.5% sulphur content while cruise ships are in port, or berthed at the Bell Street terminal (Terminal 66). A tougher standard is apparently being applied at the newer Smith Cove terminal (Terminal 91), where **auxiliary engines should use fuel of 0.5% sulphur content or less**, and shore power is available for suitably equipped cruise ships. **California imposes a similar 0.5% sulphur content fuel standard**, and shore power is available in San Francisco. Vancouver includes a "clean air incentive" in its schedule of harbour dues, while also pressing towards the use of shore power and cleaner fuels. The use of shore power is referred to as "cold ironing". **In Victoria, GVHA has not taken similar actions.**

Following the earlier creation of Emission Control Areas in the Baltic Sea in 2006, and the North Sea in 2007, the North American Emission Control Area (ECA) is supposed to come into effect in 2012. The 2012 standard for fuel sulphur content under the ECA is 1.0%, and it is proposed to reduce this to 0.5% in 2015. However, 1.5% fuel sulphur content appears to be the best commitment made so far by the cruise lines, while 1.8% appears to be the lowest fuel sulphur content being used in Canadian waters. The industry has not provided direct evidence of the sulphur content, or the range of sulphur content, in the fuels being used in Canadian waters during Alaska-bound itineraries, but fuel with sulphur content as high 3.0% may well be being used.

Table Twelve: Port Charges

<i>Port</i>	<i>Passenger Charge</i>	<i>Dockage and Service Charge</i>
<i>San Diego</i>	US\$6.10 per embarking or disembarking passenger	Not recorded
<i>Note:</i> Supplemental surcharge for facilities upgrade: US\$4.00 per embarking or disembarking passenger.		
<i>Seattle</i>	US\$10.80 per embarking or disembarking passenger for home port ships, or per passenger in-transit for port-of-call ships	US\$23.00 per metre ship length per day for home port ships (weekdays: TWR) US\$30.20 per metre ship length per day for home port ships (weekends: FSSM) or for port-of-call ships (anytime)
<i>Note:</i> Seattle offers a bundled charge of US\$14.80 per embarking or disembarking passenger for home port ships, and a bundled charge of US\$18.85 per passenger in-transit for port-of-call ships.		
<i>Note:</i> Supplemental surcharge for facilities upgrade at Terminal 91 (Smith Cove): US\$1.90 per passenger embarking or disembarking for home port ships, with the same amount per passenger in-transit for port-of-call ships.		
<i>Note:</i> Dockage and service charges have been converted from US\$/foot to US\$/metre.		
<i>Note:</i> Shore power or fuel with 1.5% sulphur content or less must be used while at berth.		
<i>Vancouver</i>	Can\$11.25 (weekdays: TWR) or Can\$11.75 (weekends: FSSM) per embarking or disembarking passenger for home port ships, and per passenger in-transit for port-of-call ships	Can\$22.00 per metre ship length (weekdays: TWR) or Can\$23.00 per metre ship length (weekends: FSSM) per first period of up to 12 hours, then Can\$2.00 per metre ship length per additional hour
<i>Note:</i> Rebates of up to Can\$1.00 per passenger are applied depending upon the number of passengers brought through by a cruise ship during the season.		
<i>Note:</i> A berthage fee of Can\$9.46 per metre ship length also applies at the Canada Place terminal, with berthage fees of about half this level at other terminals.		
<i>Note:</i> Harbour dues of Can\$97.00 per 1,000 gross registered tonnes apply for the first five arrivals of a ship during the season. Harbour dues are reduced step-wise to Can\$57.00 per 1,000 gross registered tonnes for ships that use fuels with reduced sulphur content while in port or close to port.		
<i>Victoria</i>	Can\$8.00 per passenger in-transit Plus, in 2011, a 'sustainability fee' of about \$1 per passenger in-transit	Not recorded
<i>Prince Rupert</i>	Can\$2.50 per passenger in-transit	Can\$25.00 per metre ship length per day at Northland terminal

Port charges for other ports in the continental United States vary considerably, and include a variety of docking fees and other service charges. However, passenger fees per person embarking or disembarking are equal to US\$8.98 at Miami/Dade, US\$8.10 at Port Everglades, US\$8.00 at New Orleans, and US\$10.31 at Los Angeles. At Key West, a major cruise ship port-of-call, the passenger fee per person disembarking is US\$10.63. (These data are all available in *Legislative Research Report, Report Number 09.232*, Juneau, May, 2009, prepared by the Alaska Legislature, Legislative Research Services.) Passenger fees in Alaska include US\$5.00 per passenger plus a US\$3.00 per passenger port development fee in Juneau, US\$7.00 per passenger in Ketchikan, US\$8.51 per passenger in Skagway, and US\$6.50 per passenger in Seward.

When overall port charges are taken into consideration, the following comparisons emerge (see the Alaska *Legislative Research Report*, cited above). Where appropriate, these comparisons include the Alaska Cruise Ship Passenger Levy (see below). For Holland America's *Ryndam* (720 feet, 56,000 tons, 1,258 passengers), overall **port-of-call** charges would run to about US\$18,000 per visit in each of Juneau, Ketchikan and Skagway, while for Princess Cruise Line's *Dawn Princess* (856 feet, 77,000 tons, 1,950 passengers), overall port charges would run to about US\$27,000. For Norwegian Cruise Line's *Norwegian Wind* (754 feet, 51,000 tons, 1,748 passengers), overall **home port** charges would run to about US\$42,000 in Port Everglades, US\$55,000 in Seattle, and Can\$53,000 in Vancouver. Typically, because more services are involved, overall port charges in home ports exceed those in ports-of-call.

With respect to the Alaska ports, Juneau received 1,032,000 cruise ship visitors in 2008, up 49% from 691,000 in 2001, Ketchikan received 942,000 cruise ship visitors in 2008, up 42% from 665,000 in 2001, Skagway received 782,000 cruise ship visitors in 2008, up 28% from 610,000 in 2001, while six other Alaska cruise ship ports received, in total, 856,000 cruise ship visitors in 2008, up 44% from 594,000 in 2001. Most Alaska-bound cruise ships include visits to more than one Alaskan port in their itineraries. Although cruise ship visits bring considerable economic activity to Alaskan ports, many residents also consider them to be a bane as disembarking hordes test the patience and infrastructure of small port communities. (Juneau has about 30,000 year-round residents, while Skagway has about 1,000.) Despite stronger legislated regulations than in many other parts of the world, including British Columbia, environmental issues remain important as cruise ships sail up and down the Alaska panhandle.

(f) Alaska's Cruise Ship Passenger Levy

The State of Alaska imposes an environmental levy that was initially set at the level of US\$50 on each cruise ship passenger who visits one or more Alaskan ports while on a cruise. This levy is based upon State legislation that results from the majority vote on a referendum, held in August, 2006, and known as the Cruise Ship Ballot Initiative. Implementation of the levy began in 2009. Port municipalities receiving funds transferred from the levy's proceeds are required to phase out their local passenger fees within one year under the terms of the implementation legislation for the Alaska cruise ship passenger levy. However, where local passenger fees are equal to, or exceed, the allowable transfer (as in Juneau and Ketchikan), the local fees are likely to be retained. In Skagway and Seward, the port facilities are owned by local railroad corporations, and not by the municipalities.

US\$4 from the cruise ship passenger levy is set aside for the Coastal Ranger program, which places a Coast Guard licensed marine engineer on board each cruise ship plying Alaskan waters to observe and monitor compliance with federal and state regulations pertaining to marine discharges. US\$5 from the cruise ship passenger levy is set aside for each of the first five Alaskan ports that a cruise ship visits and is used to improve port and harbour facilities and services at these ports. Thus, in total, a maximum of US\$25 could be set aside for this purpose. A further 25% of the cruise ship passenger levy was to have been used for similar purposes by coastal towns not currently hosting cruise ship visits. However, this portion of the cruise ship passenger levy has now been dropped, so that **the current levy is US\$38.50 per passenger, or US\$34.50 plus the US\$4 that is dedicated to the Coastal Ranger program.**

The Alaska cruise ship passenger levy protects Alaskan port cities from “divide and conquer” threats from the cruise ship industry to relocate ships away from individual ports that attempt to implement, or increase, a local passenger charge. Not surprisingly, the Alaska Cruise Association, which represents the major cruise ship companies, initially filed a lawsuit in federal court to have the levy quashed, arguing that the levy is unconstitutional. However, the lawsuit has now been dropped in response to the reduction in the passenger levy. The Association also makes the claim that the levy, although passed on to passengers, is undermining their business. However, saturation of the marketplace and the downturn in the overall economy are much more likely to have led to any reduction in cruise tourism in Alaska that may have been observed.

The State of Washington and the Province of British Columbia should both take note of the Alaska cruise ship passenger levy. If a similar, but probably smaller, levy were imposed by the State of Washington, where Seattle is the main home port and port-of-call, the funds so raised could be dedicated to environmental restoration projects in Puget Sound. Given the U.S. Passenger Vessel Services Act (which mandates a foreign port-of-call for foreign registered cruise ships making round trips from U.S. home ports), as long as there is a cruise industry with foreign registered ships that ply from the lower 48 states to Alaska, B.C. actually has a “captive audience”. Why should B.C. not impose a “captive levy” to generate revenues that could be used to help mitigate the industry’s environmental impacts?

Any such levy should protect individual B.C. port cities that might want to impose their own passenger charge from “divide and conquer” threats from the cruise industry to relocate their ships. B.C. port cities can hardly be expected to “go it alone” on this matter. The levy would need to be provincial in scope, although the funds so raised should largely be allocated to the port cities for mitigation, restoration and infrastructure purposes. However, one should be careful to limit the size of the passenger levy, because any such levy provides ammunition to the cruise ship lobby that already presses for the repeal of the U.S. Passenger Vessel Services Act (PVSA), which would permit Alaska-bound cruises to avoid calling at a B.C. port. The counter lobby to this pressure could come from the U.S. coastal shipping industry, where the parallel Jones Act prevents foreign registered cargo ships from carrying goods between U.S. ports without calling, on route, at a foreign port. Repeal of the PVSA might be considered the “thin end of the wedge” by those protected by the Jones Act.

By providing access to the local environment and community free of charge in relationship to the social and environmental costs incurred, B.C. ports-of-call, and Victoria in particular, are actually supporting the Seattle-based cruise ship industry at the expense of the Vancouver-based industry, all to provide economic gains to a small number of players. Hotels are frequently used in home ports when passengers embark and disembark cruise ships, but B.C. ports-of-call (Victoria, Prince Rupert, Nanaimo, Campbell River, and Port Alberni) do not levy even the equivalent of the B.C. hotel tax on cruise ship passengers while the ships are in port. Victoria is giving away its environment, local amenities, and frequently residents' peace and quiet, far too cheaply.

It is clear that every time a cruise ship abandons Vancouver as its home port for Alaska-bound cruises and relocates to Seattle as a home port, there is a significant loss in overall economic output for the B.C. economy. This conclusion carries with it the corollary that much of the escalation in cruise ship port-of-call visits to Victoria's Ogden Point terminal makes little economic sense from an overall B.C. perspective.

Chapter Four: Social and Environmental Costs

(a) The Limits of Acceptable Change and Community Liveability

The term, limits of acceptable change, is a well-used technical term that is more general than the notion of carrying capacity. Carrying capacity usually relates to whether or not some particular physical infrastructure can tolerate additional “traffic” and/or “waste disposal”, etc. The limits of acceptable change concept is more holistic and takes into account social and environmental impacts as well as physical impacts. For example, roadways can sometimes accommodate additional traffic under the carrying capacity concept, but because there are social and environmental costs associated with traffic build-up in the form of congestion, noise, airshed pollution, and road repairs, the limits of acceptable change are likely to be reached before the roadway’s physical capacity is breached.

To use another example, if too many sea-kayakers and motorized marine vessels visit the Broughton archipelago during any particular period of time, the ecological system may be impacted adversely, and possibly in a manner that takes much time to repair. Adverse impacts could include disturbances to the aquatic habitat for killer whales and other marine mammals, and damage to fore-shore ecological systems as a result of excessive and/or careless stops on the islands for camping and other purposes. These activities adversely affect vegetation and wildlife habitat. Birds nesting on beaches, such as black oyster-catchers are especially at risk. If these adverse impacts are severe, one would then want to argue that the growth of sea-kayaking and motorized marine vehicle activity had over-shot the limits of acceptable change, from which there could be irreversible impacts. That there are limits to acceptable change from an ecological perspective is also evident in the ceilings imposed on the numbers of people who can access the Pacific Coast hiking trail in Pacific Rim National Park, and the shuttle bus service that runs into Lake O’Hara in Yoho National Park during the summer months.

The continued growth of float plane activity in the Victoria harbour has created a major problem of noise pollution and concerns about air-shed emissions (especially volatile organic compounds or VOCs) for other harbour users and local residents. Resident objections to this growth have been raised continuously for more than the past decade. The growth in float plane activity has already surpassed the limits of acceptable change. Similarly, the results of the 2009 Community Survey suggest that many residents of James Bay, the neighbourhood in which the Ogden Point cruise ship terminal is located, believe that the growth in cruise ship activity (and, in particular, the related large vehicle traffic volume, noise and emissions) has also breached the limits of acceptable change.

When the management of a particular enterprise allows activities in a relatively confined space to over-shoot the limits of acceptable change, the social acceptability of that activity will change in such a manner that it becomes more difficult for that activity to be pursued, even at the threshold level of activity which coincides with the limits of acceptable change. Thus, the limits of acceptable change concept relates to a threshold level of activity that should not be exceeded, and which, if exceeded, sets off a new dynamic that may not have been anticipated by those managing the enterprise.

The liveability of any community tends to be undermined when certain activities (including crime, or drug trafficking, or other undesirable activities) have grown to a level

that many residents would consider to be overboard in relationship to the limits of acceptable change. It follows that there is a clear relationship between the two concepts, liveability and limits of acceptable change.

This chapter considers various social and environmental costs that are associated with cruise ship activity, and thereby impact negatively on the liveability of the local neighbourhood. In the case of the James Bay neighbourhood, the intensity with which some of these impacts are felt by residents has been captured in the results of the 2009 Community Survey. The 573 survey respondents make up a sizeable portion (over 6%) of the above-school-age population of James Bay, so the results have a high level of significance. Sample statistics provide a representation of community views that is accurate within a +/- 4% range 95% of the time. Results of the survey can be found on the James Bay Neighbourhood Association (JBNA) web-site, www.jbna.org. This site also contains studies of noise pollution and air-shed emissions, including studies sponsored by the Vancouver Island Health Authority (VIHA).

(b) Traffic Problems

The 2009 Community Survey indicated that, out of 28 possible items spanning the four areas of community safety, traffic and transportation, access to amenities, and quality of property development, the top three priorities requiring attention were the quantity/volume of traffic, traffic noise, and traffic pollution/emissions. 81%, 74%, and 73% of respondents, respectively, stated that the quantity/volume of traffic, traffic noise, and traffic pollution/emissions had become worse over the past five years. Out of 11 possible items within the traffic and transportation category, the top five priorities requiring attention were quantity/volume of tourist buses, tourist bus noise, motorcycles, cruise ship emissions, and float plane noise.

When the 573 survey responses were stratified by respondent street address, even higher percentages of respondents living in James Bay West except Dallas Road (137 respondents), along Dallas Road itself (107 respondents) and along Douglas Street (79 respondents) indicated that these environmental problems had become worse over the past five years. These areas are heavily exposed to increases in traffic volumes, noise and emissions. (The other street address stratifications included Interior Central with 134 respondents, and James Bay East except Douglas with 95 respondents; the residual 21 respondents could not be classified by street address.)

(i) Congestion

As outlined in Chapter One, traffic counts completed during the summer of 2007 indicate that the 4,200 vehicles which travel along Erie Street and Dallas Road (north of Ogden Point) on non-cruise ship days increase to 5,150 vehicles on three cruise ship days, and that each average sized cruise ship generates 317 additional traffic movements along this route, with traffic volumes often concentrated in the late afternoon and early evening hours. Observational evidence also indicates that traffic volumes expand significantly along Dallas Road (east of Ogden Point) and Douglas Street. A substantial proportion of the increased traffic volumes involves large, highway-sized, tourist buses.

Although it may be necessary to use large vehicles to move cruise ship passengers to places such as Butchart Gardens, it is inappropriate to use large, highway-sized tourist buses to shuttle people from Ogden Point to downtown Victoria, which is within easy walking distance. Alternative means of transportation – walking, pedicabs, horse drawn carriages, smaller motorized vehicles, water craft, and even B.C. Transit buses – would seem to be much more appropriate modes for moving people over short distances of 2 to 3 km.

In addition, traffic volumes expand along various interior streets, as taxicabs are fond of using Montreal, Oswego, and Superior Streets on their way to and from Ogden Point. Traffic speeds in excess of posted speed limits are frequently observed. Pedestrian and street safety (the tenth highest priority out of 28 items) is compromised by higher traffic volumes, excessive speed, and the absence of controlled intersections and crossings.

(ii) Noise

In a study conducted for the James Bay Neighbourhood Association (JBNA) during June, 2009, Wakefield Acoustics Ltd. recorded 24-hour noise levels along Dallas Road near Ogden Point (Site 1) and at the Dallas-Erie corner (Site 2) that varied between Leq 59.3 dBA and Leq 63.7 dBA, which also converts to an Ldn range from 61.0 dBA to 65.6 dBA. Traffic volumes associated with cruise ship calls have a significant impact on the noise measurements. One-minute interval Lmax measurements above 80 dBA were frequently recorded, although some of these related to float plane and helicopter movements.

The Wakefield report contains the following statement: *“The Leq(24) at Site 1, the Dolphins location, was 3.2 dBA higher for the second 24-hour monitoring session day when numerous cruise ships were berthed at Ogden Point. Since the scheduled seaplane and Helijet arrival and departure noise would be roughly the same for the two adjacent 24-hour periods and transit bus noise would be expected to be the same over this period, the increase in noise levels is considered to be largely due to increased tour bus activities associated with cruise ships. This substantial 3.2 dBA increase in noise levels over 24-hours corresponds, that is, would be equivalent in effect to, roughly a doubling of all transportation noises over the day. ... The increase in Leq(24) at Site 2, ... of 2.2 dBA was less pronounced but can be equated to roughly a 50-60% increase in all forms of transportation noise.”* It should also be pointed out that the base-line observations in the Wakefield Study were not entirely free of cruise ship influence, so that the increase in Leq(24) values from non-cruise ship to cruise ship days is somewhat understated.

It is increasingly recognised that there are health impacts associated with exposure to excessive noise. Noise impacts include chronic noise stress (including sleep disturbance, annoyance and reduced performance), and hypertension, since there is clear evidence that sound can impact on blood pressure. In addition, a recent study based on intensive Danish data (over 50,000 people surveyed wherein 1881 persons were victims of stroke) concludes that, while previous studies have linked traffic noise with raised blood pressure and heart attacks, exposure to road traffic noise also seems to increase the risk of strokes. (See Sorensen et.al., *Road Traffic Noise and Stroke: a Prospective Cohort Study*, European Heart Journal, 2011.) **Each 10 dBA in road traffic noise increases the probability of a stroke by 14% in the general population, and by 27% for those over 65 years of age. Moreover, the incidence of stroke is increased when road traffic noise exceeds 60 dBA.**

Normally, the costs associated with excessive noise are estimated using the hedonic pricing method, which involves measuring the impact of excessive noise on property values. However, this is known to generate downward-biased estimates because losses in property values sustained by property owners due to increases in noise do not also account for the loss of place-specific utility by residents who choose not to move. Nor do they include the relocation costs of those who do choose to move.

Calculating the costs of noise requires three pieces of information, how much noise is produced, how much the noise exceeds some defined acceptable threshold levels, and what is the unit price of noise. The first two components represent the quantification of noise and the last the monetization of noise. One recognised Canadian expert, Dr. David Gillen, suggests that **the acceptable threshold is breached when the amount of noise exceeds between 60 dBA and 65 dBA during daylight hours and 55 dBA during night-time.** (See Gillen, *Estimation of Noise Costs due to Road, Rail and Air Transportation in Canada*, Transport Canada, 2007.) Roughly speaking, these thresholds would translate into an Ldn level somewhat below 60 dBA. However, several European and Asian studies suggest that the threshold level above which noise impacts should be assigned a monetary value should be Ldn 55 dBA. (See, for example, various articles in *Transportation Research, Part D*.)

It follows that, from a comparative perspective, and recognising that dBA measures follow a logarithmic scale, **the Leq(24) and Ldn measures recorded in the Wakefield study when cruise ships are in port are well beyond the threshold for a liveable residential neighbourhood. On the western side of James Bay, cruise ship related traffic noise is additive to existing float plane and helicopter noise levels.**

Various estimates exist in the literature for the noise depreciation sensitivity index (NDSI), which represents the percentage decrease in the value of a house that follows a unit increase in noise level above an appropriate threshold. A typical estimate for the NDSI is a 0.7 percent decrease in property value for each decibel increase in traffic noise above the threshold level. **Thus, a 3.2 dBA increase in Leq(24) noise level would, if consistently maintained, lead to a decrease in property values of over two percent.** As indicated above, this should be interpreted as a lower bound estimate of the social cost of excessive noise.

It would not be easy to use the NDSI approach to measure the impact of increased traffic noise due to cruise ship activity on property values in James Bay and elsewhere in Greater Victoria because one is unsure of the number of properties that are impacted by the increased traffic noise. In addition, the impact is both time specific and seasonal. However, evenings (and especially weekend evenings) during the five summer months from May through September are times that many residents like to enjoy outdoor recreational activities, and there can be no doubt that the traffic noise associated with the large highway-sized buses that service Ogden Point is seriously disturbing to these activities in some neighbourhoods.

The people movement problem associated with up to 400,000 cruise ship passengers that arrive at Ogden Point for short visits needs to be addressed in several ways. Possible strategies include (a) greater use of other modes of transportation (walking, bicycling, other non-motorised vehicles, multi-passenger ferries between Ogden Point and Ship Point, etc.), and (b) phase out of large highway-sized buses and their replacement with smaller, environmentally-friendly vehicles. This theme will be revisited in Chapter Five.

(iii) Vehicle emissions

As previously indicated, 73% of James Bay Community Survey respondents indicated that traffic pollution/emissions had become worse over the past five years. Respondents also indicated that these emissions were the third most important priority requiring attention out of 28 possible items. Vehicle emissions include small particulate matter (PM_{2.5}), oxides of nitrogen (NO_x), sulphur dioxide (SO₂) from diesel engines, and volatile organic compounds (VOCs). These air-shed pollutants are known to have adverse impacts of human, animal and plant health, and lead to reductions in life expectancy. Indeed, from the opposite perspective, improvements in air quality have contributed to measurable improvements in human health and life expectancy in several Western countries. (See, for example, Pope, Ezzati and Dockery, *Fine-Particulate Air Pollution and Life Expectancy in the United States*, New England Journal of Medicine, 2009.)

A recent European study (see the Aphekom project, *Improving Knowledge and Communication for Decision Making on Air Pollution and Health in Europe*, French Institute for Public Health Surveillance, 2011) suggests that a decrease to World Health Organisation (WHO) guidelines on PM_{2.5} fine particles in 25 large European cities could add 22 months to life expectancy for persons 30 years of age and older, depending upon the city and its average level of PM_{2.5}. The study also concludes that sustained reductions in ambient SO₂ levels in 20 major European cities has prevented some 2,200 premature deaths, as well as improving the health outcomes for asthmatics and other people who suffer from chronic respiratory problems and diseases.

Both Transport Canada and the Clean Air for Europe Programme (CAFE) have generated estimates of the range of socio-environmental damages associated with each tonne of air polluting emissions. These estimates are provided below in Table Thirteen. In the case of the Transport Canada estimates, a central estimate of the value of a statistical life (VSL) of \$4.05 million lies behind the scenes, while in the case of the CAFE estimates, an across-country median VSL estimate of 980,000 Euros (about \$1.4 million) lies behind the scenes. However, the CAFE estimates also include the impact of ground level ozone (O₃) – created by the impact of sunlight on NO_x and VOCs – on human health and agricultural crop production, and an estimated cost for associated CO₂ emissions. This accounts, in part, for the higher CAFE estimates, despite the lower background VSL assumption. For comparative purposes, Table Thirteen also contains U.S. estimates compiled on a somewhat different basis by Matthews and Lave.

The Canadian Medical Association has also tried to estimate the costs associated with air pollution, regardless of the sources thereof. (See *No Breathing Room: National Illness Costs of Air Pollution*, August, 2008.) These costs are associated with acute premature deaths, additional health care costs, quality of life impacts, and lost productivity. For British Columbia, in 2008, these costs are estimated to be \$915.2 million on an annual basis. Of the estimated 306 acute premature deaths, about 42% are related to cardiovascular conditions and 11% to respiratory conditions. The B.C. Environment Ministry has suggested that local air quality co-benefits will be associated with the reduction in greenhouse gas (CO₂-equivalent) emissions under the B.C. Climate Action Plan. Meta-analysis estimates (across 22 developed countries) of the air quality co-benefits per tonne of CO₂-equivalent reductions could amount to between US\$31 and US\$44. (See Nemet,

Table Thirteen: Socio-environmental damages per tonne of emissions

	Transport Canada (Can\$)	CAFE (Euro)	Matthews Lave (US\$)
PM2.5	12,600	40,000	6,580 (PM10)
NH3 (ammonia)	n/a	16,000	n/a
SO2	3,960	8,700	3,060
NOx	3,580	6,600	4,280
VOCs	436 (see Notes)	1,400	2,450

Sources: Transport Canada, *Estimates of the Full Cost of Transportation in Canada: Synthesis Report*, 2008; AEA Technology Environment, *Damages per Tonne Emission of PM2.5, NH3, SO2, NOx and VOCs from each EU25 Member State (excluding Cyprus) and Surrounding Areas*, 2005 (prepared for the Clean Air for Europe Programme); and Matthews and Lave, *Applications of Environmental Valuation for Determining Externality Costs*, Environmental Science and Technology, Vol. 34, 2000 (as updated to 2008\$ in Boardman et al., *Cost-Benefit Analysis*, 2011).

Notes: The Transport Canada estimated socio-environmental damages associated with each tonne of VOCs emitted are most likely to be seriously understated because of a failure to account for organic aerosols. The Matthews and Lave estimated socio-environmental damages associated with each tonne of particulate matter refer to PM10 rather than PM2.5, the latter being more damaging to health than the former. The U.S. estimates by Mathews and Lave largely corroborate the Transport Canada estimates for Canada.

While large highway buses can be run using bio-diesel fuel blends, the use of which may reduce the production of greenhouse gases (largely carbon dioxide, CO₂) – although this is questionable when a full-cycle approach including the costs of producing and transporting bio-diesel fuels is utilised – there are only modest indications that local pollutants are simultaneously reduced when regular diesel fuels are replaced by bio-diesel blends. (SO₂ and PM_{2.5} emissions are lowered when fuels with significant bio-diesel content replace regular diesel fuels, while NO_x emissions are increased.) **What is required, instead, is a reduction in the overall number of vehicle movements, coupled with the use of more energy efficient and environmentally friendly vehicles.**

Although vehicle emissions are a major source of air-shed pollution, and especially NO_x, cruise ship emissions are a more important source of pollutants in the vicinity of, and downwind from, Ogden Point, partly because of the volume of the cruise ship emissions, and partly because the bunker fuel that is currently in use is much dirtier than the diesel fuels used in road motor vehicles. More will be said about cruise ship emissions later in this chapter.

(iv) Road Repairs

Maintaining the condition of urban roadways is a civic responsibility, financed by the local taxation of residential and commercial properties. There can be little doubt that large highway-sized vehicles create substantially more wear and tear on City streets than standard-

sized automobiles. Tour buses that carry cruise ship passengers to and from Ogden Point are by no means paying a fair share of the additional road maintenance costs that they impose on the City of Victoria and the Capital Regional District. There is an implicit subsidy provided to tour bus operators through this route. Why should the average property owner pay for these externality costs? Why should the cruise ship industry not be reimbursing the City for the imposed road maintenance costs? Given that the cruise tourism industry represents a net cost to tax-payers, governments should consider mechanisms (such as a cruise ship passenger levy) that could recover some of the road repair costs resulting from heavy vehicle use of local roadways. **Failure to recover these, and other, costs results in a domestic tax-payer subsidy to foreign-based cruise ship companies.**

(c) Cruise Ship Waste Products

There are three kinds of waste products generated by cruise ships: solid and recyclable wastes which are disposed of on land while the ships are docked; liquid wastes and bio-hazards which are mostly, but not entirely, disposed of via marine discharges; and air-shed emissions from ship-board engines, power plants, and incinerators. The cruise ship industry generates land-based, water-based and air-based pollutants. Each of these types of waste products is discussed in this section.

(i) Solids and Recycling

Cruise ships are like floating cities, and generate similar kinds of wastes. In Victoria, two companies are directly involved with carrying off waste products from the cruise ships that call at Ogden Point each summer. Peninsula Waste Water Services (PWWS) co-ordinates overall waste product management, while also specialising in the treatment of particular liquid wastes and bio-hazards. However, the specific liquid wastes and bio-hazards handled by PWWS do not include the very large volumes of grey water, and (treated) black water (or sewage) discharges that the cruise ships make when they are underway at sea. Rather, they include concentrated liquid wastes such as bilge oil, expired chemicals, battery acids, solvents, and the like.

Ellice Recycle Ltd. handles the recycling and disposal of most of the solid wastes unloaded from the cruise ships. Some of these wastes, such as aluminum cans, glass bottles, plastic containers, and waste paper products are channelled through the usual kind of land-based recycling facilities. Other solid wastes wind up in local land-fill sites. Together, the two companies play a dual role in helping the cruise ship industry meet various environmental standards. Dumping any of these waste products at sea would create adverse, and unnecessary, environmental impacts on marine habitats and marine life. Plastic materials are a particular problem in this regard.

It is interesting that cruise ships offload much of their trash and waste products in Canada rather than in the United States, and especially on turn-around day in Seattle. It is not clear whether this occurs because environmental standards and associated enforcement are lower in Canada, or because it is cheaper to dump waste products in Canada than in the United States. It is therefore an open question as to whether there should be a surcharge on solid waste removal from cruise ships to the Hartland Landfill site.

There is very little provisioning offset to the waste product disposal that occurs at Victoria's Ogden Point port-of-call. Provisioning (including refuelling) occurs at home ports, and most frequently in Seattle for the cruise ships that call at Ogden Point. Occasionally, however, fresh water is supplied in bulk to the cruise ships.

(ii) Liquids, Bio-Hazards, and Marine Effluents

According to Canada's foremost expert on cruise ship socio-environmental impacts, Dr. Ross Klein, a typical vessel carrying about 3,000 passengers can produce every day more than 180,000 litres of sewage, over two million litres of grey water (produced by bathing, cooking and cleaning), 18,000 litres of oily bilge water, and as much as 17 tonnes of solid waste. (See *Getting a Grip on Cruise Ship Pollution*, Friends of the Earth, 2009.) Oil spills around the world prove how damaging oily bilge water can be to marine ecological systems.

Environmental regulations require sewage to be treated with marine sanitation devices, such as advanced wastewater treatment systems (AWTS). There are designated areas, normally beyond four nautical miles from shore, in which treated sewage can be discharged. However, unlike Alaska, in British Columbia there are no Coastal Rangers placed on cruise ships to monitor compliance with environmental regulations, and there are precious few fines imposed for compliance failures. (There were 66 recorded wastewater violations by cruise ships in Alaskan waters during 2009.) As a result, environmentalists now call B.C. the "toilet bowl" of the western coast of North America. Discharges occur in the territorial waters of the country with the weakest environmental and enforcement standards.

The situation with respect to grey water is similar. In the United States, grey water discharges from cruise ships must be treated to meet regulatory standards, while in Canada it appears that grey water can be dumped almost anywhere since there are virtually no rules which govern grey water disposal. While in U.S. waters, including those adjacent to Washington State, cruise ships are monitored with respect to their marine discharges and on-board treatment systems, while in Canadian waters, very little of the same scrutiny occurs. Given this laxity, it is not surprising that cruise ships wait until they are in Canadian waters before disposing of their waste waters. The costs imposed on Canada's marine environment, perhaps often in sensitive areas, are inevitably substantial.

(iii) Air-shed Emissions

In two related papers, Winebrake, Corbett, et. al. have attempted to measure the premature mortality costs associated with ocean-going shipping (which includes cargo ships as well as passenger ships). (See *Mortality from Ship Emissions: A Global Assessment*, Environmental Science and Technology, Vol. 41, 2007, and *Mitigating the Health Impacts of Pollution from Oceangoing Shipping: An Assessment of Low-Sulphur Fuel Mandates*, Environmental Science and Technology, Vol. 43, 2009.) Winebrake and Corbett compare the number of pre-mature deaths under a current base-line no-control scenario, with 2.7% sulphur fuel content, with the number under a 0.5% sulphur fuel content scenario inside a 200 nautical mile North American coastal Emission Control Area (a reduction to 18.5% of its former value). In association with reduced sulphur content, small particulate matter (PM_{2.5}) content would also be reduced to 32.1% of its former value.

With these projected changes, which are more stringent than the new 1.0% sulphur fuel content standard for the North America Emission Control Area (ECA) which is supposed to commence in 2012, the number of pre-mature deaths in North America associated with air-shed emissions from ocean-going shipping would be projected to fall by 3,700 per year from 9,600 to 5,900. Using an estimate for the value of a statistical life (VSL) of US\$5 million, this would involve a reduction in the costs of pre-mature deaths by US\$18.5 billion per year from US\$48 billion to US\$29.5 billion. It is clear that there are substantial health-related gains to be associated with reduced sulphur content (and related PM2.5 content) of marine fuels.

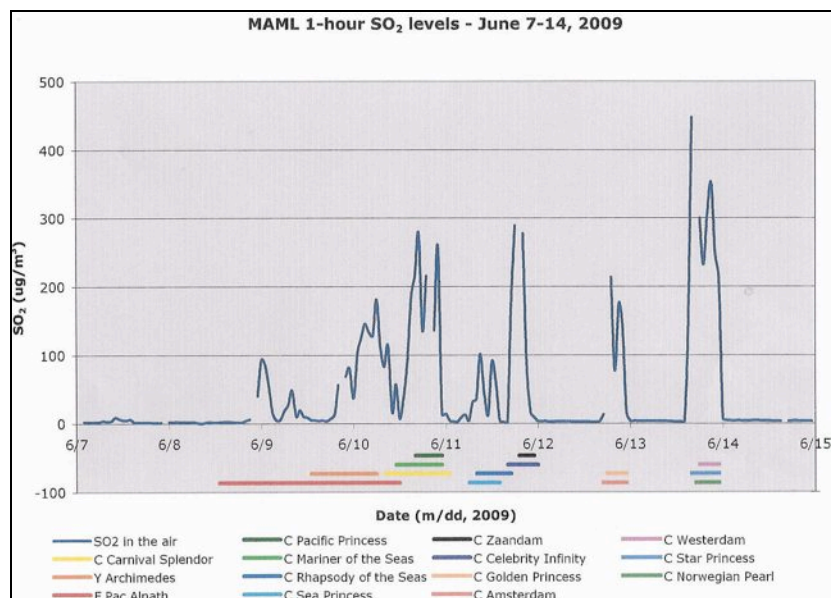
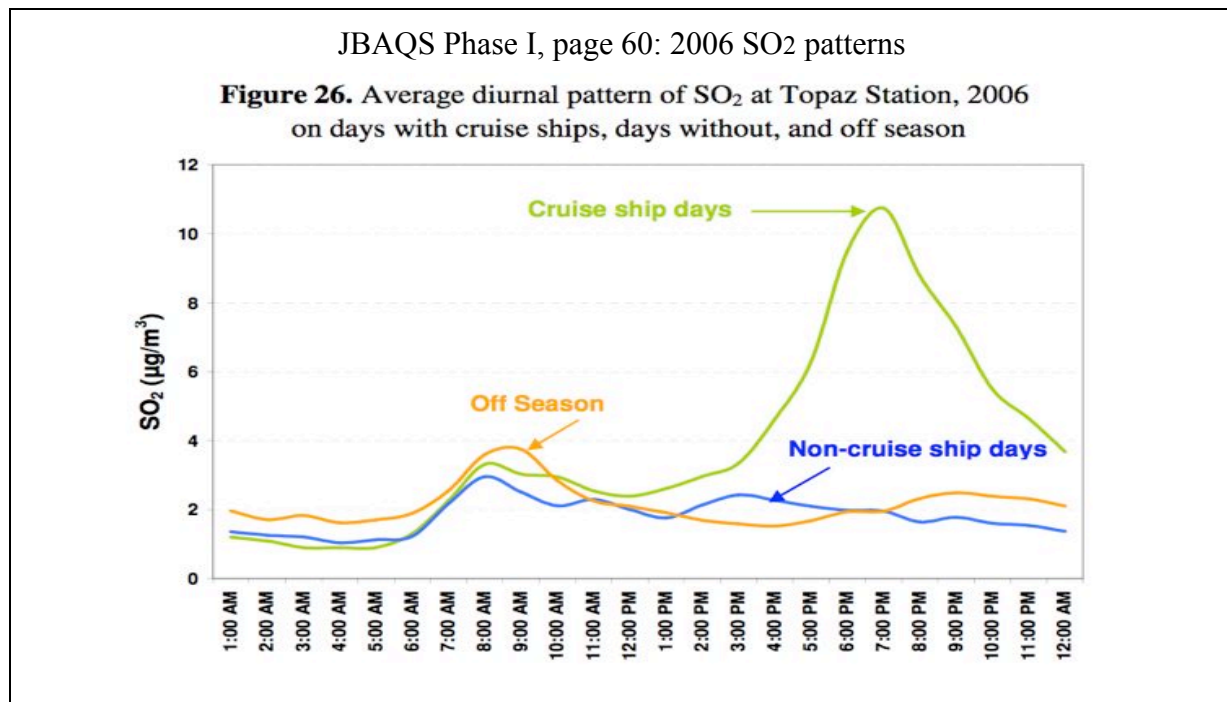
Originally proposed by the U.S. Environmental Protection Agency (EPA), the ECA was approved by the International Maritime Organisation (IMO) in March, 2010, with the support of both the United States and Canadian governments. However, the cruise ship industry continues to lobby Canada (including threats to reduce the number of visits to Canada) to opt out of the enforcement of the ECA standard of 1.0% sulphur fuel content that is to commence in 2012. Part of the industry's complaint is the cost of cleaner fuel, which has led to industry lobbyists asking for government fuel cost subsidies for cruise ships traversing Canadian waters. However, subsidies to an extremely profitable foreign industry that seems to pay no corporate taxes anywhere should not be seriously contemplated.

The James Bay Air Quality Study (JBAQS), conducted under the auspices of the Vancouver Island Health Authority (VIHA), provided CALPUFF dispersion studies and a Health Impact Report. In 2009, air quality measurements, referred to as the MAML study, were taken by BC Environment over three summer months (May to August) at one fixed site near the community gardens on Montreal Street. The measurements of NO_x, PM_{2.5} and PM₁₀ were close to those which had been modelled in the JBAQS, and maximum levels for these pollutants on both the one-hour and 24-hour exposure criteria came within the relevant current standards. (The JBAQS phase two CALPUFF simulations suggested that 163 average-sized cruise ship calls would generate around 119 tonnes of NO_x, 10 tonnes of PM₁₀, and 8 tonnes of PM_{2.5} emissions, while berthed and within 2.5 km of Ogden Point. The simulations also suggested that 163 average-sized cruise ship calls would generate around 72 tonnes of SO₂ emissions, assuming 1.6% sulphur fuel content.)

However, measurements of SO₂ emissions were recorded at about three times the levels expected from the earlier modelling exercise when considered from both the one-hour and 24-hour exposure criteria, thereby suggesting that bunker fuels with much higher sulphur content than the simulation models had assumed were actually being used. Episodic peaks in SO₂ emissions correlated closely with times that cruise ships call at Ogden Point. These SO₂ measures are quite alarming because the maximum one-hour levels exceeded the current U.S. EPA standard (while also coming close to exceeding the less rigorous B.C. and Canadian standard of 450 micrograms per cubic metre), while the maximum 24-hour Capital Regional District (CRD) standard is almost reached on a midnight to midnight basis and exceeded on a rolling 24-hour basis. The new World Health Organisation (WHO) 24-hour standard of 20 micrograms per cubic metre is exceeded on 14 (16%) of the 89 days monitored, and 23.6% of the days when cruise ships were in port.

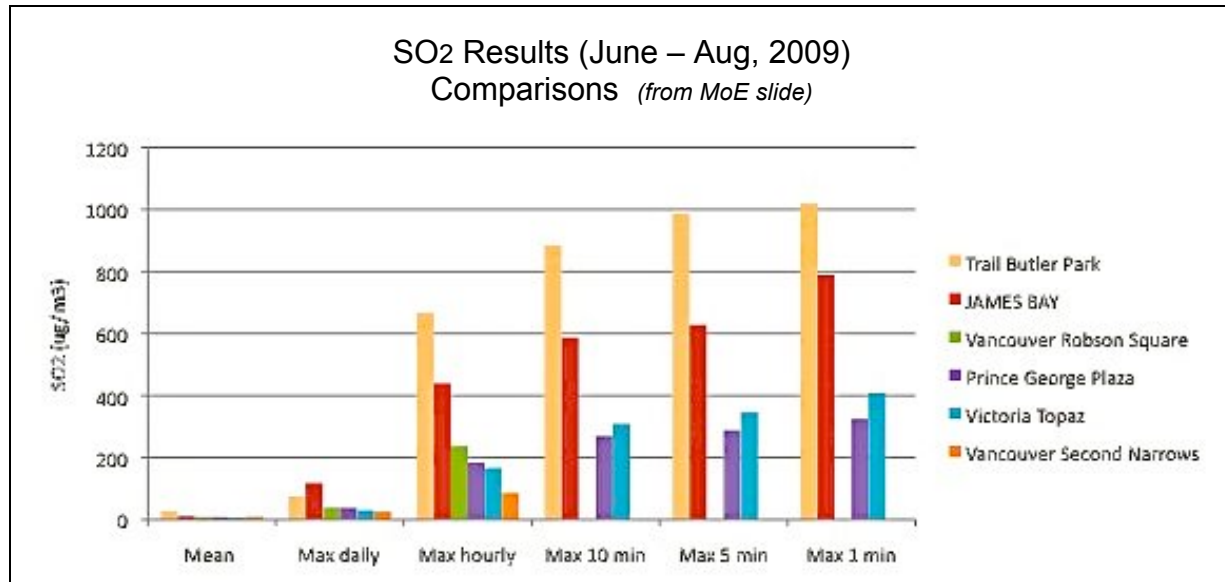
As shown in the diurnal schematic on the following page, cruise ships are now a major source of SO₂ for the whole Victoria region from May through September. The

MAML 1-hour SO₂ level chart below indicates the direct relationship between individual ship visits and air-shed pollution.



On a maximum daily basis, SO₂ measurements recorded in James Bay during the summer of 2009 are 1.6 times those recorded at Trail Butler Park (near a smelter), 3 times those recorded at Vancouver Robson Square and Prince George Plaza (near a pulp mill), 4 times those recorded at Victoria Topaz, and 5 times those recorded at Vancouver Second Narrows. On a maximum hourly basis, measurements recorded in James Bay are exceeded by those at Trail Butler Park, but are considerably larger than those recorded at the other four

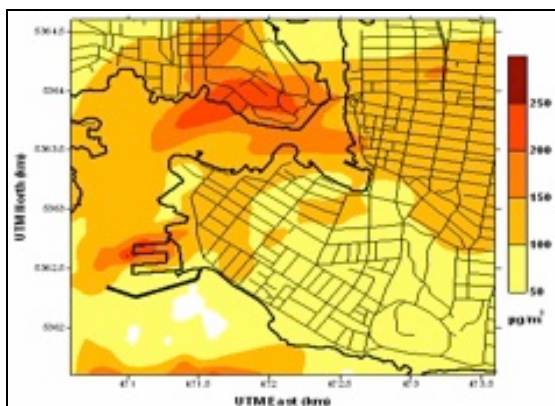
sites. The five-fold difference between the James Bay measurements and those recorded at Vancouver Second Narrows on both a maximum daily and maximum hourly basis is surprising, since Vancouver Second Narrows is, with prevailing westerly winds, immediately down-wind of the Vancouver dockyards.



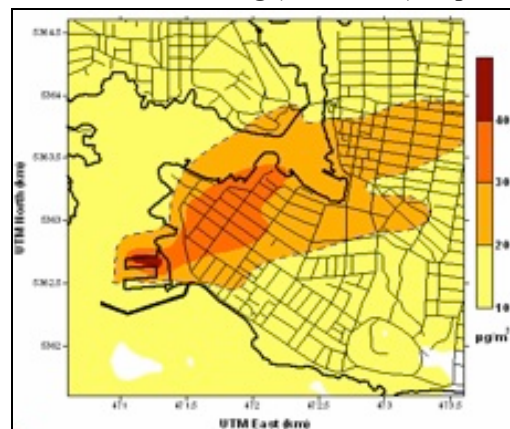
In the 2009 Community Survey, cruise ship emissions were the fourth ranked priority, among the transportation categories, requiring attention, after tourist bus volumes, tourist bus noise, and motorcycles. 44% of respondents listed cruise ship emissions as a problem, while 14% had no opinion. Although all areas within James Bay provided similar responses on cruise ship emissions, Dallas Road respondents, at 53%, were most likely to regard cruise ship emissions as a problem, while the priority level given to cruise ship emissions was highest among Central Interior respondents. However, if the information on cruise ship emissions had been made available to James Bay residents before they completed the Community Survey questionnaire, the priority level given to cruise ship emissions might well have been higher than fourth among the transportation categories.

The JBAQS created SO₂ dispersion predictions of the harbour area:

1-hour SO₂ modelling (CALPUFF) dispersion



24-hour SO₂ modelling (CALPUFF) dispersion



Ongoing monitoring of air quality in the vicinity of the Ogden Point cruise ship terminal should be implemented, especially during the five-month cruise ship season. The results of such monitoring should be made public on a real time basis, so that people who are most likely to be susceptible to air-shed pollution can take precautionary action. This would include people who suffer from asthma and chronic obstructive pulmonary disease. Indeed, VIHA has reported that the B.C. Centre for Disease Control estimates that 0.4 to 1.6 premature deaths are likely to result in each cruise ship season unless the SO₂ content of cruise ship emissions is significantly reduced. Using the mean estimate (from the Transport Canada study, cited earlier) of a single premature death, the VSL-based social cost from this impact alone would amount to at least \$4 million.

However, it also behoves GVHA to require that the operators of the cruise ships make marked improvements in the quality of the fuel that they use while within a few nautical miles of port. Consistent with the requirements of the Northwest Ports Clean Air Strategy, immediate movement to a main drive engine 1.5% fuel content standard for the 2011 cruise ship season should be made mandatory (in transition to a binding commitment to the ECA 1.0% sulphur fuel content standard in 2012), with the 0.5% sulphur fuel content standard being made mandatory for auxiliary engines. The City of Victoria should be insisting on this because, when ships turn into Ogden Point, they leave federal waters and the Greater Victoria Harbour Authority (GVHA) is responsible for ship pollution created while berthed. In short, there is no valid reason why Victoria residents should be inflicted with the environmental consequences of dirtier fuel than residents of Seattle, Tacoma, Vancouver or San Francisco.

(d) Measuring Social and Environmental Costs

Measuring the social and environmental costs of cruise tourism on the City of Victoria is fraught with difficulties. These difficulties relate to both the quantification of environmental impacts, and the attempt to monetise these impacts. Nevertheless, these costs are likely to be substantial. They are also borne by segments of the Victoria community that do not participate in the potential economic benefits, which relate to the economic output impacts discussed in Chapter Two. Those who gain from cruise tourism are few in number, while those who lose are many.

A matrix framework for dissecting the annual social and environmental costs of cruise tourism is provided in Table Fourteen. Five classes of externality costs are identified across the matrix columns: noise costs, traffic emission costs, cruise ship emission costs, transport system costs, and marine ecology costs. The types of information that could be used to measure these costs are identified within the matrix rows: property value losses, premature losses of life, health care impacts, infrastructure remediation requirements, and environmental damage estimates. Although many of the estimates contained within Table Fourteen are based upon the empirical material outlined earlier in this chapter, all of them involve subjective judgements. They are, therefore, ball park estimates that are subject to a considerable variance. Most of the estimates are, however, explained within the accompanying text. All of the estimates are based upon the assumption of a seasonal total of about 200 cruise ship calls per year.

Table Fourteen: Socio-Environmental Costs of Cruise Tourism: Can\$ millions

	<i>Noise</i>	<i>Emissions</i>		<i>Transport</i>	<i>Marine Ecology</i>
		Vehicle	Cruise Ship		
Property Values	2.0+		2.0+		
Premature Death			4.0+	1.0+	
Health Care	3.0+	2.0+	4.0+		
Infrastructure				4.0+	
Environment		1.0+	1.0+		4.0+
Sub-Totals	5.0+	3.0+	11.0+	5.0+	4.0+
Overall Total	28.0+				

Source: Author estimates and judgement calls.

For each of the estimates contained in Table Fourteen, an attempt has been made to be conservative. Accordingly, each of the estimates has a plus (+) sign attached to it, which indicates that the numerical value provided in the table is a lower bound estimate. Thus, for example, a cost estimate given as \$2.0+ million means that \$2.0 million is a lower bound for the annual costs involved in that category of measurement. However, this should also be meant to imply that the next million higher, in this example \$3.0 million, is probably the upper bound for the annual costs for that category of measurement. Since the sum of all items in the table is \$28.0 million, a \$1.0 million increase in each of the cost columns would imply a higher overall total of \$33.0 million.

Ball-park estimates of some of the annual social and environmental costs of cruise tourism at the level of about 200 cruise ship calls per year can be provided. These ball-park estimates are believed to be conservative, and quite likely understate the true social and environmental costs. For example, the property value loss under the noise category might be based on the assumption that about 1,000 residences in James Bay and elsewhere are seriously impacted by transportation noise, particularly from the large highway buses that are used to transport cruise ship passengers on a variety of tours. If these residences have an average property value of \$700,000 and each is impacted by noise externalities that reduce property values by 3%, then the total loss of property value would be equal to \$21 million. (3% is used here rather than 2.25%, because the base-line observations in the Wakefield study were not entirely free of cruise ship influence.) Although this number would need to be reduced by a discount factor to generate an “equivalent annual net cost”, property tax losses would also be associated with these reductions in property values. A 10% discount factor would be recommended to reflect the social opportunity cost of capital plus the residential property tax rate, thereby generating an “annual equivalent” \$2.1 million estimate. In addition, there are likely to be similar property value losses associated with the impact of cruise ship emissions on the quality of life in affected neighbourhoods.

On the assumption (see earlier) that cruise ship emissions will cause one additional life to be lost, the social cost associated with premature death would be equivalent to the VSL estimate of \$4 million. It is also likely that increased road congestion will be

associated with reduced street safety and the possibility of traffic related fatalities. In any case, there are additional health care costs associated with noise-related stress and air-shed pollution from both vehicles and cruise ships. On the basis of the literature cited earlier in this chapter, these costs are likely to be reckoned in the millions. If three, two and four million dollars were associated with noise, vehicle and cruise ship emissions, respectively, then the total health care cost would amount to \$9 million on an annual basis.

Transport costs relate to additional street repairs and the costs of government subsidies for the installation of the Ogden Point mooring “dolphin” and other similar infrastructure grants. The \$2.4 million dollars received by GVHA from the two senior orders of government for the installation of the mooring “dolphin” also provided funds for a project to dredge an area on the north side of pier B to improve ship clearance, costing between \$1.3 and \$1.7 million. In total, \$4 million might be a suitable estimate for annual infrastructure remediation costs that are incurred by various governments.

Environmental damage costs are generated by marine discharges of treated sewage, grey water, and other liquid wastes into sensitive aquatic ecological systems up and down the B.C. coast. However, there are also impacts of cruise ship and vehicle emissions on plant growth. Of all the various costs, environmental damage costs would be the most difficult to estimate. However, in total, these costs are likely to amount to at least \$6 million per annum, and possibly much more.

While all of the numbers given above are, at best, crude approximations, it would be reasonable to assert that they would aggregate to at least \$28.0 million per annum, and therefore to at least one-half of the estimated total economic output impact that cruise tourism brings to Victoria. There is almost no equivalent cost offset when it comes to the impact of MV Coho operations. However, the economic output impact that cruise tourism brings to Victoria is not the measure that economists would use for economic benefits, because all manner of labour, capital and materials costs are incurred in generating the economic output impact. These costs need to be subtracted to determine the underlying economic surplus that cruise ship activity brings to Victoria. This fundamental point is revisited in detail in the following chapter.

(e) Pending Legislative and Regulatory Changes

Legislation is pending in both the United States and Canada to create a coastal Emission Control Area (ECA) around North America, which would extend to 200 nautical miles from the coast line. If this legislation is approved, the sulphur content of the fuel used by ships travelling (or berthed) within this area should be reduced to 1.0% in 2012, and to 0.1% in 2015. Through various industry associations, and within the International Maritime Organisation (IMO), the cruise ship industry is lobbying strenuously against these planned fuel content improvements. In particular, the industry appears to want the second of these legislative steps to be postponed indefinitely, even though the incremental fuel cost of about US\$7 per passenger day (an EPA estimate) for the second step is modest, and could largely be passed on to cruise ship passengers through higher ticket prices. The European Union estimates that it would cost about 1,900 Euros (\$2,650) per tonne of abated SO₂ to move from 2.7% sulphur fuel content to 1.5% sulphur fuel content, and a further 1,300 Euros (\$1,800) per tonne of abated SO₂ to move from 1.5% sulphur fuel content to 0.5% sulphur

fuel content. (See Miola et al., *Regulating Air Emissions from Ships*, European Commission Joint Research Centre, November 2010). Given the modest nature of these incremental fuel costs, the argument has now moved on to cleaner fuel availability.

Although the cruise ship industry keeps bringing up the issue of cleaner fuel availability, refining capacity ought to be adjustable over a short span of years. After all, much cleaner fuel is used in land-based vehicle and other operations at present. The installation of “cold ironing” facilities through which shore power can be provided to the auxiliary engines of cruise ships while they are in port would also be helpful in reducing air-shed emissions, provided that the electricity supplied to the cruise ships is not produced from coal-fired generating stations. Depending upon the sophistication of an area’s electrical grid systems, and the need for deliverability upgrades, “cold ironing” could involve considerable set-up costs. As has happened in Vancouver, the cruise ship industry should be prepared to contribute a significant portion of the costs of installing shore power, if BC Hydro declares it to be feasible, at Victoria’s Ogden Point terminal. One should point out, however, that switching delays may undermine the cost-effectiveness, if not the feasibility, of shore power when port-of-call visits are of short duration.

Shore power may well not be the most cost-effective way of reducing ship emissions, because it can only be used while cruise ships are at berth. Pollution reaches populated areas even if the ships generating the emissions are miles from land. It follows that moving towards cleaner fuels and/or perhaps using sea scrubbers while ships are underway are likely to provide the most cost-effective solution to the ship emissions problem. (On this point, see Miola et. al., *Regulating Air Emissions from Ships*, Joint Research Centre, European Commission, 2010.) A fuel sulphur content guideline of 0.5% is proposed for marine use outside established Emission Control Areas in the year 2020, but it remains just a proposal at this time.

Federal legislation is required, but does not appear to be pending, to bring Canada’s marine ecology standards, and wastewater discharge regulations, up to the level of those already in existence in the United States. Many other valuable recommendations designed to reduce cruise ship pollution can be found in Ross Klein, *Getting a Grip on Cruise Ship Pollution* (Friends of the Earth, 2009).

Provincial legislation ought to be enacted to establish a cruise ship passenger levy along the lines of the existing Alaska levy to compensate the Province for the harm created by cruise ship pollution to its land, water and air. A portion of the associated revenues could be used to fund a Coastal Ranger program. The remainder of the funds could be allocated across B.C. cities and towns that home port or provide ports-of-call for cruise ships, with the funds ear-marked for monitoring, mitigating, abating and remediating the local socio-environmental impacts of cruise ship activities.

Continuous monitoring of cruise ship air-shed emissions is required, along with real-time publication of the air quality results. To this end, the B.C. Environment Ministry is currently coordinating efforts to establish an ongoing monitoring site near Ogden Point prior to the start of the 2011 cruise ship season. What gets measured ultimately gets managed.

Chapter Five: Towards a Triple Bottom Line Approach

(a) Benefits, Costs, and Distributional Incidence

In earlier chapters, it has been argued that the local benefits generated by cruise tourism expenditures are over-stated by those who advocate on behalf of the industry. This is especially true for port-of-call visits, but is also the case for home ports. In Seattle, for example, passengers who embark or disembark from cruise ships spend no more on a daily basis than other visitors to the U.S. Pacific Northwest, and the average duration of their combined visit (both before and after their Alaska cruise) amounts to about 1.5 nights of accommodation, as opposed to an average of almost five nights for other visitors. The situation in Vancouver may be rather similar. Moreover, when cruise ship passengers buy their pre/post cruise accommodations through the cruise line companies, the revenue receipts of local hotels are frequently lower than they would be for other guests due to concessionary pricing or kickback arrangements made with, or commissions paid to, the cruise lines.

In Victoria, anecdotal evidence provided by downtown merchants, including those with retail stores along Government Street, suggests that cruise ship passengers do not spend much while visiting Victoria. They may buy T-shirts and gelato, but not much in the way of quality merchandise. There is some suggestion that cruise ship companies are filling up their cabins by marketing cruises to lower income people, who have less spending power than was formerly the case when cruise tourism catered to “the elite”. Whether or not this is true, the typical port-of-call visit to Victoria occurs for a short few hours on the final evening before cruise ships return to their Seattle home port, and passengers may well be “spent out” by the time their ship docks in Victoria. Passengers have few hours available for on-shore activities. In addition, they must have their suitcases packed and outside their cabin door before midnight. It is also “tip night” when passengers give gratuities, possibly enjoy their last paid-for meal, and/or spend the evening on board with new found friends.

When asked to support the often-cited notion that cruise ship visitors, having wetted their whistle on a short duration port-of-call stop in Victoria, come back on another occasion for a longer visit, the local NorthWest Cruise Ship Association representative could provide no solid evidence. Indeed, it appears that no study of return visits has been done, although the Tourism Victoria representative on the GVHA Board has asserted, with little empirical backing, that perhaps 6% of cruise ship visitors make a subsequent visit to Victoria. (When Cozumel studied this question, it found that very few people made a return visit, despite receiving over two million cruise ship visitors each year.) However, what is alternatively possible is that “bad tourism drives out good tourism”, with the implication that potential longer-stay hotel visitors opt not to come to Victoria when there are likely to be large crowds of cruise ship passengers in town.

This has certainly been asserted to be the case in some other ports. For example, in Charleston, which currently hosts only 70 cruise ships per year, *“the crowding-out effect of large numbers of cruise passengers disembarking does encourage both traditional tourists and residents to stay away from high-impact areas.”* (Post and Courier, Oct 3, 2010). Moreover, *“the influx will lead to a ‘dumbing down’ of tourism in the city, with discount travellers and tacky trinket shops replacing the upscale tourist trade Charleston worked for decades to cultivate.”* (Ibid.) For Charleston, it is estimated that cruise ship passengers

spend an average of US\$43 to US\$66 per passenger (note that this again appears to be a *BREA* model estimate), while traditional tourists each spend about US\$170 *per day*. In Key West, cruise tourism has led to the town receiving a “getting ugly” label by National Geographic Traveller.

As indicated earlier, the *BREA* estimates of passenger and crew expenditures are model based, and have not been derived from any specific form of local Victoria survey. It seems unreasonable to assume that poorly paid foreign workers who handle all of the menial tasks aboard cruise ships have the ability to spend as much as cruise ship passengers during port-of-call visits. In addition to this, the *BREA* model assumption that crew visit numbers are (mechanically) equal to 35% of passenger visit numbers, when port-of-call visits are repetitive, as short as five hours in duration, and often occur over the evening supper hour, is not supported by any form of local survey of Victoria number counts. Crew members have neither the time to visit, nor the money to spend, at the same rate as passengers. As a result, the *BREA* crew expenditure estimates are clearly exaggerated. On-shore passenger expenditures are also likely to be over-stated by *BREA* due, among other things, to the kickbacks and commissions paid to the cruise ship companies by local vendors.

With respect to overall expenditures, the *BREA* numbers include estimates for cruise related travel by local residents elsewhere in the world, but this has no bearing on the economic contribution of cruise ship visits to Victoria. *BREA* also includes estimates for shipbuilding and repairs, but retrofits and repairs that take place at the Esquimalt Graving Dock (EGD) are essentially unrelated to Ogden Point activity. The EGD is a relatively unique Pacific Coast facility which has been in business since well before the expansion of cruise ship visits to Victoria.

Finally, ***BREA* uses multipliers that cannot be justified, and have no bearing on direct economic impacts.** In any case, multipliers do not belong in cost-benefit calculations. The net financial benefits are smaller than direct output impacts, not larger, because labour, capital and materials costs need to be subtracted from direct output impacts to determine the underlying economic surplus that cruise tourism activity brings to Victoria. **On the likely assumption that these costs amount to significantly more than one-half the economic output impact (industries do not expect to operate with profit margins or mark-ups that are as large as 100% of costs), the economic benefits of cruise tourism, when properly stated, are almost certainly more than offset by the social and environmental costs associated with current levels of operation.**

For all of these reasons, one cannot but come to the conclusion that the financial benefits to the Victoria community from cruise ship visits are overstated. These financial benefits also accrue to a relatively small number of players: Greater Victoria Harbour Authority (GVHA), Western Stevedoring Co. Ltd. and its wholly-owned subsidiary, CVS Cruise Victoria (which has a contractual monopoly for shuttle-bussing cruise ship passengers into down-town Victoria), other tour bus companies, taxicabs, pedicabs, horse-drawn carriages, whale-watching companies, King Bros. Ltd. (ship chandlers), D’Costa Ports of Call (which arranges on-shore tours), Butchart Gardens, the owners of a modest number of other tourist attractions, and some local restaurants and retail stores. A relatively small amount of property tax and licence fee revenues accrue to the City of Victoria, and both

senior orders of government receive some sales and income tax revenues. However, **these public sector revenues are undoubtedly more than offset by higher public sector costs.**

As indicated in Chapter Three, Western Stevedoring Co. Ltd. and its wholly owned subsidiary, CVS Cruise Victoria, are themselves wholly owned by Seattle-based Carrix Inc. through its affiliate, SSA Marine. Although the activities of Western Stevedoring Co. Ltd. and CVS Cruise Victoria may generate higher incomes for their employees than these employees could earn in alternative lines of work, the profits of these companies flow south of the border and should not be counted as a local benefit.

The costs and benefits of cruise tourism can also be analysed on a regional versus local basis. It is clear that various tourist destinations outside the city of Victoria, such as Butchart Gardens, gain from the additional visits associated with cruise ship passenger tours. However, gains of this type are compromised by “forced” discounts on admission costs for cruise ship passengers. **This means that other visitors are subsidising cruise ship passengers,** given that admission fees are the main source of the revenues required to operate and maintain the gardens. **There are few similar benefits that accrue within local neighbourhoods, such as James Bay, that are negatively impacted by cruise tourism.** To some extent, **one again has a situation where residents of the City of Victoria lose, but some residents of other CRD municipalities may gain.**

The overall costs are borne by the environment, by the City itself, and by residents whose neighbourhood is rendered less liveable by the negative impacts of cruise ship tourism. “Good tourism interacts with a community; bad tourism impacts upon a community.” In addition to this, it is quite clear that every time a cruise ship moves its home port from Vancouver to Seattle there is a significant loss of economic activity to the Province as a whole. **The effort being made by GVHA to support the Seattle-based cruise ship industry makes little sense from a B.C. economic perspective, let alone a socio-environmental perspective.**

The costs and benefits of cruise tourism in Victoria may be summarised within the context of the Multiple Accounts or Triple Bottom Line framework outlined in Table Four of Chapter One. Table Fifteen provides a descriptive overview, using the multiple accounts framework, of the costs and benefits to the Greater Victoria community of cruise ship tourism. In the table, costs and benefits are allocated across four accounts: Government Finances, Economic Development, Social Well-Being and the Environment, which may, in principle, be added horizontally into a Net Benefits account. Seven categories of impacts are considered: economic impacts, tax and license revenues, property value impacts, premature death potentiality, health care impacts, infrastructure restoration and development, and environmental impacts. The last five categories of impacts relate directly to the social and environmental costs that were previously outlined in Table Fourteen of the previous chapter, while the first two categories of impacts relate to the financial benefits of cruise tourism.

The benefit-side estimates are directly related to the direct economic impacts that were discussed in Chapter Two. Essentially, there are three kinds of benefits: (a) the revenues minus input costs of the local firms and organizations that provide services to the cruise ship industry, (b) the incomes that may be earned by local households which are in excess of what these households might otherwise earn in alternative avenues of employment,

and (c) the taxation and license fee revenues received by governments. These financial benefits are captured in the first two rows of Table Fifteen.

There are clearly **net financial benefits accruing to a number of private sector firms, and to GVHA**, from cruise ship tourism activities in Victoria, but these sum to much less than the economic output impacts outlined in Chapter Two. The revenues received minus the input costs of the local firms and organizations that provide services to the cruise ship industry, including its passengers and crew members, might amount to as much as \$14 million per year, or one quarter of the 2009 economic output, or gross revenue, impact of about \$55 million (see Table Seven of Chapter Two or Table Eleven in Chapter Three), allowing for the over-estimate of crew expenditures (by as much as \$5 million per year), and for the fact that profits earned by Western Stevedoring and CVS Cruise Victoria flow south of the border to Seattle-based Carrix Inc., and should not be counted as part of the local benefits of cruise tourism activity. **Thus, the economic development account entry would amount to about \$14 million. However, it should be noted that this is a highly generous estimate, because it suggests that a full one quarter of the revenue receipts of companies that service the cruise ship industry, and its passengers and crew, accrue as profits, or as surplus in excess of costs.** A high mark-up of service prices over unit costs would be implied.

The wages and salaries paid to employees are likely to be the largest cost elements for the companies that provide services to the cruise ship industry. If the wages and salaries earned by the workers employed by these companies amounted to one-half of gross revenues (or about \$28 million), and if one quarter of these wages were surplus to the incomes that these workers could obtain in other alternative lines of work, then the economic (or employment) impact in the social well-being account would amount to about \$7 million. **It should also be noted that this \$7 million estimate for employee surplus is again highly generous, because many of the jobs available in the tourism sector are low wage jobs, and the likelihood that these jobs generate much of a wage premium is small.** However, there may be employees in some of the service companies that are receiving a higher wage than they could command in alternative lines of work. (The remaining \$13 to \$14 million portion of gross revenues would thereby be assumed to be used to cover materials input purchases and/or capital costs, most of which would likely flow out of the regional economy.)

Tax revenues earned by various orders of government were earlier estimated to be between \$2.5 and \$2.8 million (again see Tables Seven and Eleven). Adjusting this sum positively for license revenues, and negatively for the tax revenue effects of reduced property values, leads to about \$3 million being estimated as gross revenues to government, against which infrastructure and health care costs would need to be set. **In sum, the financial benefits associated with cruise tourism port-of-call visits to Victoria during the 2009 cruise ship season would amount to about \$24 million at most, that is, \$14 million to the companies which service the cruise ship industry, \$7 million in employee benefits, and \$3 million in tax revenue benefits.**

Offsetting these financial benefits, the socio-environmental costs identified in the previous chapter would amount to at least \$28 million per year, and could be as large as \$33 million per year, as carried over from Table Fourteen to the last five rows of Table Fifteen.

The net benefits bottom line of the multiple accounts framework is therefore negative. At their currently excessive number, port-of-call cruise ship visits to Victoria's Ogden Point do not pass the triple bottom line, multiple accounts, or cost-benefit analysis criterion. The number of cruise ship visits has surpassed the limits of acceptable change. **At today's excessive levels of activity, the socio-environmental costs of cruise tourism outweigh the financial benefits.**

The net financial impacts for the government sector are most likely to be negative, with local governments taking a loss from infrastructure repairs and a possible reduction in property tax revenues, and senior governments taking a loss from infrastructure subsidies and additional health care costs which are partially, but not entirely, offset by additional indirect tax revenues. Whereas a small number of households might enjoy an income gain from their involvement in the cruise tourism service industry, a much larger number of households are likely to suffer from property value losses, nuisance impacts, and various health problems. Finally, the environment (and, quite possibly, future generations) suffers a loss in association with both air-shed emissions and marine effluents.

Table Fifteen: A Multiple Accounts View of Cruise Ship Costs and Benefits:
Can\$ millions

	Government Finances Account	Economic Development Account	Social Well-Being Account	Environ- mental Account	Net Benefits Account
Economic Impact		14.0	7.0		21.0
Tax & License Revenues	3.0				3.0
Property Values			- 4.0		- 4.0
Premature Death			- 5.0		- 5.0
Health Care	- 5.0		- 4.0		- 9.0
Infra- structure	- 4.0				- 4.0
Environment				- 6.0	- 6.0
Sub-Totals	- 6.0	+14.0	- 6.0	- 6.0	- 4.0

Source: Author estimates and judgement calls.

(b) Experience Elsewhere: Croatian and Other Ports

The Tomas Institute for Tourism in Dubrovnik, Croatia, surveyed 1340 cruise ship passengers and 319 crew members during the June to September 2006 cruise ship season. Cruise ship visitors (both passengers and crew) came from a variety of countries: Italy (27%), U.S.A. (20%), Spain (17%), Great Britain (7%), France (7%), Germany (3%), and other European and overseas countries. Cruise ship passengers (approximately 80% of visitors) stay off board in the destination for 5.3 hours, while crew (approximately 20% of visitors) stay off board for 4 hours, for a combined average of 5 hours. Cruise ship visitor expenditures in the destination amounted to 39 Euros per person on average, with passengers spending 41 Euros per person (again \$57, consistent with the *BREA* model assumption) and crew members spending 29 Euros per person, on average. 5% of the visitors did not spend anything while visiting the destination, while the British, American and French spent slightly more per person than other visitors. The majority of cruise ship visitors bought souvenirs (60%), followed by those who bought postcards (33%), clothing (20%), original Croatian drinks (16%), arts and crafts (16%) and original Croatian food (12%).

During the 2006 cruise ship season, 694,000 cruise ships guests (passengers and crew) entered Croatia. Most of these guests were port-of-call visitors, rather than home port visitors. Multiplying the guest numbers by the average expenditure of 39 Euros per person generates an economic output impact of about 27 million Euros, although in a recent paper by H. Caric, of the Institute for Tourism in Zagreb, this number is rounded up to between 33.7 and 37.2 million Euros for the 2007 cruise ship season, allowing for both volume growth and a modest amount of direct cruise ship expenditures. (See Caric, *Direct pollution cost assessment of cruising tourism in the Croatian Adriatic*, Financial Theory and Practice, Vol 34(2), 2010.)

Caric goes on to estimate the direct environmental costs of the 2007 volume of cruise tourism to be between 271 and 274 million Euros, thereby concluding that cruise tourism in the Croatian Adriatic fails the cost-benefit analysis test, yielding a negative bottom line of about 238 million Euros. The environmental costs of cruise tourism are over seven times the estimated economic benefits.

Caric comes up with this bottom line estimate by considering the environmental costs associated with solid waste generation, hazardous waste generation, waste water generation (including black water, grey water and bilge water), and atmospheric emissions. The lion's share of the environmental cost estimate relates to atmospheric emissions, at a cost of 266.5 million Euros. In combination, all of the other costs are assessed at between 4.5 and 7.5 million Euros. These other cost estimates are separately derived using an avoided cost method. In each case, the estimates reflect the disposal costs of treating similar effluent discharges if they occurred at an on-shore location, and not the actual damage costs of effluent discharges into a marine environment. If the on-shore treatment process is cost effective, the disposal costs will be less than the costs of the environmental damage that is thereby avoided. As a result, it can be argued that these cost estimates are likely to be understated.

The large atmospheric emissions cost is estimated in the following way. The European Committee on Transport and Tourism has estimated the damage caused by air-shed emissions from passenger and cruise ships to be 0.24 Euros per person per kilometre

travelled. This estimate includes emissions of carbon dioxide (CO₂) as a greenhouse gas in addition to emissions of local pollutants. Cruise ships that call in Croatia are almost always bound for Venice, and hence travel the full length of the Croatian coastline in both directions, amounting to 1,600 km. Thus, 266.5 million Euros is the product of 694,000 persons times 1,600 km times 0.24 Euros per person per km.

It seems fairly clear that the large atmospheric emissions costs would be reduced if one focused only on local air pollutants, and ignored carbon dioxide emissions. However, even if one reduced these costs by an order of magnitude, the cost-benefit analysis for cruise ship tourism in the Croatian Adriatic would generate a bottom line that is no better than break-even. Moreover, noise costs, lifestyle disruption costs, and infrastructure costs have not been included in the Croatian estimates, and the overall costs and benefits would be just as unevenly distributed as they are in Victoria, B.C.

Key West, a city in Florida with a relatively small population, experiences year-round cruise ship activity. Thomas Murray & Associates, Inc. has provided a report, based on a real survey, on *The Impacts of the Cruise Ship Industry on the Quality of Life in Key West* (October, 2005). During 2004, approximately 900,000 cruise ship passengers visited Key West, and the overall direct economic impact from cruise ship activity amounted to about US\$55 million, of which approximately one-half related to passenger expenditures (about US\$30 per passenger). Cruise tourism accounted for about 8% of the direct economic impact of all forms of tourism on Key West. The direct economic impact contribution ratio for Victoria is somewhat smaller (about 5%), but not dissimilar.

The Murray report asserts (on page 9) that: “*Cruise ship tourists are not spending a great deal of money per capita in Key West whether it is the length of stay, lack of substantial duty free shops, placement on the cruise itinerary, or passenger clientele. Efforts should continue to be pursued to bring in quality cruise ship traffic and to establish an environment that provides for higher economic return from given levels of cruise ship activity. Marketing efforts to bring in higher end cruise traffic and to capture more return vacation traffic should be continued.*” **However, the report goes on to worry that civic expenditures incurred in support of the cruise ship industry could exceed the revenues that the city receives in relationship to cruise ship port-of-call visits, thereby leading to a subsidy from resident tax-payers to the cruise ship industry.**

In a related Key West residents survey with over 1000 respondents, almost half of the respondents had an unfavourable opinion of cruise ship tourism, and 59% of respondents wanted more regulation of the cruise ship industry. Commenting on the Key West situation, the *Post and Courier* (September 5, 2010) states that many residents of Charleston “*look to cruise heavy cities such as Key West and worry that things will only get worse until the boats and their human cargo overrun Charleston and destroy its historic charm. ... It feels like we are giving up so much of our quality of life for something where most people don't see any benefit.*”

In Juneau, Alaska, a cruise ship visitor profile was generated in 2005 from a sample survey of 329 cruise ship passengers. (See McDowell Group, *Juneau Cruise Visitor Profile*, 2005.) These passengers participated in various on-shore activities, most notably glacier tours, wildlife/marine-life viewing, and sight-seeing. Most passengers surveyed were satisfied with their overall Juneau experience, but only a minority thought it likely that they

would, at some point, return to Juneau. The most important infrastructure improvement that seemed to be required was a continuous walkway along the waterfront. **Local expenditures per passenger on tours, shore excursions and other items appear to be larger than suggested by BREA for other ports-of-call, but considerably smaller than suggested for home ports.** This may reflect the fact that the length of time that cruise ships spend, on average, at Juneau on their Alaskan swing considerably exceeds the five to six hours of most cruise ship calls to Victoria, as well as the fact that **Juneau is the key destination for Alaska cruises.** It may also reflect higher spending on shore excursions, due to **the number of high-priced excursions, such as helicopter trips to glaciers,** that may be available at Juneau.

(c) Resolving the People Movement Problem

The James Bay Neighbourhood Association (JBNA) has developed two key priorities in relationship to the problem of moving cruise ship passengers through the community from the Ogden Point terminal. These are:

- (a) Establish near-term goals to increase the proportion of cruise ship passengers that make their way downtown from Ogden Point by walking, cycling, or taking a watercraft shuttle; and
- (b) Establish near-term goals to reduce systematically, until phase out, the number of large highway buses that are licensed to transfer cruise ship passengers, replacing these buses, where necessary, with lighter, more community friendly vehicles.

It is important to work on both the traffic volume and the nature of the vehicles that are being used.

While limited progress may be occurring with respect to the first of these priorities (but not, as yet, on the watercraft shuttle alternative), progress on the second is unlikely until such time as the existing contract between GVHA and CVS Cruise Victoria expires in March, 2013. CVS Cruise Victoria provides about 40% of all of the bus transportation emanating from the Ogden Point cruise ship terminal. For progress to occur, GVHA must acknowledge the need for any future contract to specify resident-friendly vehicles, of which many examples exist in other ocean ports, and write binding environmental and bus type constraints into any subsequent contract for all transportation providers serving Ogden Point. Alternatively, B.C. Transit could be invited to provide shuttle bus services during the cruise ship season, assuming that it can do so without cross-subsidy from domestic riders and taxpayers.

Watercraft shuttle services, horse drawn carriages, pedicabs and (with major reservations) taxicabs can all provide part of the solution to the Ogden Point people movement problem, although the number of passengers that can be carried by these modes of transportation is rather limited. Establishing a watercraft shuttle service from Ogden Point to Ship Point (a downtown GVHA facility) is probably the most promising addition, but has not yet been tried. Larger whale-watching boats could be used, especially during the evening hours, for this purpose. Whale-watching boats should also be taking cruise ship passengers who book such tours directly from Ogden Point rather than having these passengers rather senselessly bussed to Ship Point or to Fisherman's Wharf (which is a very short walk from Ogden Point) for this purpose.

For cruise ship passengers, a watercraft shuttle service would also provide a most attractive entrance into Victoria's inner harbour, while reducing the need for road-based transportation. Beautifying the harbour pathway, and talking up walking routes on board the cruise ships and at dock-side would also be helpful.

(d) Regulation, Mitigation and Compensation

The James Bay Neighbourhood Association has also developed three priorities in relationship to the problem of cruise ship and vehicle emissions. These are:

- (a) Request that the City of Victoria adopt World Health Organisation (WHO) guidelines as standards, pursuing regulatory or other means to generate compliance with standards by both point and mobile sources of emissions;
- (b) Improve cruise ship fuel standards significantly and well in advance of the recently announced North American Emission Control Area (ECA) requirements that are proposed to commence in 2012 and 2015; low sulphur content fuel is available and should be used immediately; and
- (c) Implement immediately for Victoria operations the same fuel standards for both auxiliary and drive engines that are currently being utilised in Vancouver, Seattle and Tacoma, under the auspices of the Northwest Ports Clean Air Strategy.

Dr. Richard Stanwick, Chief Medical Health Officer, Vancouver Island Health Authority, issued a *"Health Review and Response"* to the JBAQS on June 10, 2010. In his report, Dr. Stanwick concluded *"I concur that there are occasions where SO₂ [levels] are elevated so as to cause health impacts that could affect the quality of life and well being of some area residents. For this reason, I ask the cruise ship industry and associated agencies not wait until the new IMO regulations come into effect in 2012 to reduce SO₂ emission levels."* Dr Stanwick recommended the continued monitoring of cruise ship emissions. Among other recommendations, he identified mitigation measures that included:

- . voluntary use of lower sulphur fuel (1.0%) by cruise ships while approaching, berthing or departing Victoria Harbour,
- . adoption of lease language by GVHA to require low sulphur fuel use, and
- . reminding those in susceptible population groups to familiarize themselves of times when elevated SO₂ levels may be present and take appropriate counter-measures.

Clearly, unless ongoing air quality monitoring occurs in the vicinity of Ogden Point, there can be no assurance that compliance with regulatory standards is likely to occur. Moreover, given the inaction of GVHA to employ best practises, mitigation of adverse impacts may not take place unless regulatory standards are imposed and compliance is enforced.

Although individuals who suffer from the adverse impacts of sub-standard air quality have access to public health care facilities, arranging compensation for these individuals is likely to be fraught with difficulties. Nuisance laws are complicated and difficult to apply in the environmental context. Better always are public initiatives based upon the "polluter pay principle", thereby creating an incentive for polluters to clean up their act. However, these initiatives require City officials to be willing and able to apply the powers that they are granted under the B.C. Community Charter.

Under the B.C. Community Charter, the purpose of a municipality includes *“fostering the economic, social, and environmental well-being of its community”*. The fundamental powers of a municipality include the power to regulate, prohibit and impose requirements in relation to a variety of matters including the protection and enhancement of community well-being. Section 64 of the Community Charter provides municipalities with authority in relation to numerous matters including:

*“(a) nuisances;
(b) noise, vibration, odour, dust, illumination or any other matter that is liable to disturb the quiet, peace, rest, enjoyment, comfort or convenience of individuals or the public;
(c) the emission of smoke, dust, gas, sparks, ash, soot, cinders, fumes or other effluvia that is liable to foul or contaminate the atmosphere;
and ...
(j) the carrying on of a noxious or offensive business activity.”*

The City of Victoria has zoning responsibility for, and authority over, the GVHA owned, fee-simple, land holdings and water lots at Ogden Point. This authority has been confirmed by the Provincial Government in discussions with the City about the proposed Songhees marina. The City of Victoria has an obligation to residents to ensure that GVHA is in compliance with the M-2 Light Industrial District zoning that applies to Ogden Point, wherein it is stated in Sections 1 and 1(g) that *“(1) the following uses are permitted, provided they are not noxious or offensive to the immediate neighbourhood or the general public by reason of emitting odours, dust, smoke, gas, noise, effluent or hazard: (g) docks, wharves and piers”*. Performance-based zoning might be the answer for future Ogden Point operations. Performance-based zoning would necessitate that specific and measurable standards be imposed, that there be transparent and independent monitoring of compliance with these standards, and that meaningful penalties be imposed for compliance failures.

Being willing and able to apply the powers granted under the Community Charter may also (but need not) imply a willingness to place the health of residents above the dollars that may (or may not) be earned by those who supply services to the cruise ship industry. Regulation, monitoring and enforcement create an incentive for mitigation, which is the route through which these awkward trade-offs can be avoided. *“If a city is created for residents, tourists will come and love it; a city created for tourists becomes unliveable.”* (Verbatim community survey comment of Dallas Road resident.)

(e) Establishment of a Cruise Ship Passenger Levy in B.C.

As previously suggested, both the Province and the City of Victoria are giving away the environment, local amenities, and frequently residents’ peace and quiet far too cheaply. Moreover, as long as Alaska-bound cruise ships remain foreign registered and the U.S. Passenger Vessel Services Act remains in place, B.C. has a “captive audience”. There is nothing to prevent the Province from implementing a cruise ship passenger levy along the lines that Alaska has done. Such a levy would apply just once on any Alaska-bound cruise that stops at one, or more, B.C. ports, including those cruises that home port in Vancouver.

The social and environmental costs imposed by cruise ship port-of-call visits to Victoria have been estimated to amount to at least one-half of the direct economic output

impact, which is itself much larger than the true economic benefits, or economic surplus, associated with cruise tourism, once labour, capital and materials costs are deducted from the revenue streams accruing to local service providers. If the social and environmental costs were to be recovered through the imposition of a passenger levy, then a levy which is somewhat larger than that applied in Alaska would be required, given recent passenger numbers.

A passenger levy at such a level might not be politically viable. A more viable recommendation would perhaps be a B.C. passenger levy of \$25 per head, of which \$5 might be allocated to a Coastal Ranger ship-board program. Across the Province, such a levy would raise in excess of \$25 million, given recent passenger numbers, and allowing for the possibility that some cruise itineraries have involved visits to more than one B.C. port. Caveats about the levy's size have been raised earlier, in Chapter Three.

The optimal arrangement for an Ocean Ranger program would be to co-ordinate it with the existing program in Alaska. As environmental observers, Ocean Rangers could then join cruise ships for the ship's entire itinerary, whether it originates in Seattle, Vancouver, or Alaska. This would be quite cost-effective, given the current costs in Alaska of getting the observers on and off the ship as it enters or leaves Alaskan waters. It is important, however, for environmental observers to be given legislated powers to acquire all relevant information in the ship's logs, and to visit freely any and all operational areas within the cruise ship, because the early experience in Alaska was that Ocean Rangers were barred access to relevant information. (On this point, see Klein, *Paradise Lost at Sea*, 2008).

Other than funding a Coastal Ranger ship-board program, the revenues raised through a B.C. passenger levy should largely be allocated to B.C. port cities on a pro-rata basis that depends upon passenger numbers. The two basic purposes on which the funds so allocated should be spent are the mitigation of the adverse socio-environmental impacts of cruise tourism, and the restoration of port-related infrastructure. **The “polluter pay principle” needs to be respected.**

Further justification for a B.C. cruise ship passenger levy can be found by considering the 12% harmonised sales tax (HST) rate that currently applies to hotel accommodation in B.C. In Victoria, the average hotel room rate is \$123 per night. Applying a sales tax of 12% on this room rate yields tax revenues of \$14.76. Cruise ships are floating hotels, but cruise ship passengers get to use the environment and infrastructure of Victoria without paying any such tax. Moreover, in the case of all of the evening cruise ship calls, cruise ship passengers are enabled to spend the evening in Victoria while sleeping on board the vessel on its night-time run into Seattle.

There is essentially no equity in this situation between cruise ship port-of-call visitors and all other visitors who overnight at hotel accommodation in Victoria. Taxation equity means that a tax should be “fair” across alternative tax-payers. Cruise ship visitors should be treated equitably with other visitors. Moreover, **visitors who enjoy public services should pay for those services in the same manner as local residents**, this being the traditional rationale for supplemental taxes on hotel rooms and rental cars. Furthermore, it can be argued that the lack of any tax on cruise ship cabins is a disincentive to investment in land-based accommodation. In fact, the local hotel industry should be supportive of the imposition of a B.C. cruise ship passenger levy.

The “parallel to hotel tax” argument goes a long way to justifying a B.C. cruise ship passenger tax in the neighbourhood of \$25 per passenger. After all, on every Alaska-bound cruise, more than one night is spent in B.C. coastal waters. Every Alaska-bound cruise imposes significant environmental and social costs on British Columbia. It is long overdue that B.C. residents and tax-payers be compensated for some of these costs. When cruise ship companies make billions of dollars in net profits (as indicated in Chapter Three, Carnival Corporation netted close to US\$2 billion on revenues of about US\$14 billion in its 2010 fiscal year), and pay almost no taxes anywhere in the world, they should not be getting free access to pollute our environment and disturb our residential neighbourhoods without some recompense.

(f) Conclusions and Recommendations

This report began with a descriptive picture of cruise ship activity at Victoria as a port-of-call, and provided an overview of both the economic benefits generated by cruise tourism, and the offsetting social and environmental costs. These costs are borne by others than those who benefit from cruise tourism, and are estimated to be at least equal to one-half of the estimated economic output impact, while being larger than the financial benefits that accrue to the local providers of services to the cruise ships, including passengers and crew, that call at Ogden Point, even when augmented by the financial benefits that may accrue to those who work for these local service providers, and to governments. **Mitigation of these costs through regulatory instruments that are available to various orders of government, including the City of Victoria, through the contractual powers of the GVHA, and through the imposition of a B.C. passenger levy on cruise ships that visit B.C. ports, is overdue. Ongoing monitoring of ambient air quality in the vicinity of Ogden Point is expected to commence before the next cruise ship season begins.**

The current level of cruise ship activity at Victoria’s Ogden Point terminal is excessive. Fewer, but longer duration, cruise ship calls would be desirable, as would better temporal spacing of cruise ship calls. Unfortunately, Victoria has become subservient to the Seattle-based cruise ship industry, thereby accounting for all of the Thursday, Friday and Saturday evening cruise ship calls. Why should neighbourhood residents be expected to reduce the scope of their outdoor recreational activities during weekend evenings over the prime summer period?

Local residents should not have the costs of cruise tourism imposed upon them without redress. It is time to put residents, who live here most of the time, ahead of cruise ship passengers who visit Victoria for a few short hours. Cruise tourism only represents a relatively small component (no more than 5%) of the overall tourist industry in Victoria and, with the exception of a small number of service providers, is largely un-remunerative. Moreover, subsidization of a foreign industry that generates billions of dollars in profits for its owners, and imposes substantial social and environmental costs on the local community, makes no sense at all.

The James Bay Neighbourhood Plan, which was drafted well before the take-off of cruise ship port-of-call visits to their current levels, asserts that the Plan should “*support new light industrial activity...which is clean, environmentally sound, small scale and not traffic intensive*”. The Plan should also “*recognize the impact that tourism has on the residential*

areas of James Bay and develop policies to ensure that tourist development will...minimize disruption to residents.” Related Neighbourhood Plan goals include: “maintain residential street character by controlling non-residential traffic from taxis and tour buses”, and “develop enforceable performance standards (e.g. noise, odour, etc.) to ensure compatibility of the Ogden Point industrial uses with the residential area of James Bay.”

Eight years ago, when the number of cruise ship calls at Ogden Point was not much more than one half the current number, the Ripple Effects report suggested that planning to meet these goals *“has clearly been absent in the uncontrolled promotion of cruise ships in the neighbourhood.”* (See Gorecki and Wallace, *Ripple Effects: The Need to Assess the Impacts of Cruise Ships in Victoria B.C.*, Vancouver Island Public Interest Research Group, 2003.) As stated in the *Charleston Post and Courier* (September 5, 2010): *“one thing we have learned is that for tourism to be successful it needs to be managed, and cruise ships are no exception.”* In Victoria, the limits of acceptable change have been surpassed. A new social dynamic will eventually prevail.

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