Gap Analysis
Executive Summary
Prepared by the City of Burnaby

In order to ensure the overall scope of the ESS was comprehensive and compatible with other established frameworks for guiding sustainability, a Gap Analysis was performed. This analysis compared the thematic content of the goals, strategies and example actions of the ESS, as represented in Phase 2 public consultation materials, with three sustainability frameworks that are commonly applied at the community level:

- **LEED Canada 2009 Neighbourhood Development**[1], the Canada Green Building Council system for neighbourhood scale development.

- **One Planet Living**[2], a UK-based system adopted by the World Wildlife Fund.

- **EcoDistricts**[3], a protocol developed in Portland that is currently being tested in a number of North American communities.

Each of the ESS elements (goals, strategies, example actions) was reviewed in comparison with over 200 elements of the three other frameworks, such as prerequisites, credits, actions, strategies and themes.[4] In addition to the ESS, content of the *Burnaby Community Energy and Emissions Plan* (CEEP), which is currently in development, was also considered. Furthermore, in some cases components of the *Burnaby Social Sustainability Strategy* (SSS) and *Economic Development Strategy* (EDS) were reviewed to determine if topic areas were addressed in these other strategies.

In general, the findings of the Gap Analysis indicated:

- There was excellent alignment at the goal level, and no significant gaps were identified[5].

- All the key "outcomes" of the ESS, such as reducing emissions, water use, waste, and improving ecosystem health, were also key components of the other frameworks.

- There was excellent alignment in "implementation areas" such as green buildings, transportation and compact land-use planning.

- Initially, about 33 individual actions were identified as potential gaps, however these were subsequently screened[6] to a short list of 13, as outlined in **Table C1** (right).

- **Table C1** below also lists how the potential gaps identified are or will be addressed.

The Gap Analysis indicated that the community-driven ESS process resulted in a comprehensive approach comparable with leading expert-driven frameworks.

[1] http://www.cagbc.org/AM/PDF/nd outline 092209 Eng.pdf
[2] http://www.oneplanetliving.net/what-is-one-planet-living/the-ten-principles/
[3] http://ecodistricts.org/wp-content/uploads/2013/03/EcoDistricts_Protocol_Executive_Summary_ISSUE_6.242.pdf
[4] In order to allow for high level comparison between different frameworks, the analysis was limited to 'subject matter completeness' and did not address implementation components such as targets, ongoing tracking, monitoring and governance.
[5] In a few cases, potential gaps were determined to be covered by the SSS and/or EDS.
[6] This screening was based on considering appropriate scale and/or jurisdiction for a municipal policy level document such as the ESS, as compared to more prescriptive approaches intended for a different audience.

Table ES-1. *Summary of how ESS proposes to address 13 identified 'potential gaps.'*[7]

	ESS Goal	Potential Gap	Reference Framework	How gap is or will be addressed
1	GREEN	*Endangered species* – mention explicitly, give priority to protecting/restoring habitat for these species.	LEED ND	Additional strategy and supporting actions have been added to 'Green' Goal.
2	GREEN	*Habitat buffer zones* – mention explicitly, to protect sensitive habitats, watercourses.	LEED ND	Policy & Bylaw already in place (ESS focuses on new initiatives).
3	GREEN	*Contaminated sites* - target clean-up and remediation of contaminated brownfield sites.	LEED ND	Already an action under Green Strategy #5.
4	FLOW	Onsite wastewater treatment for non-potable and/or potable water.	LEED ND	Water conservation (potentially including opportunities for wastewater treatment) proposed as part of 'Big Move – New' #2.
5	BREATHE	*Indoor air quality* – include in addition to outdoor air quality.	EcoDistricts	Difficult to address explicitly but a likely outcome of meeting higher building performance standards (e.g. LEED equivalency, etc.).
6	LIVE	*All ages/abilities for parks and recreation*	LEED ND, EcoDistricts	Addressed in the SSS.
7	MOVE	*Transportation demand management* – ensure Transportation Plan includes explicit goal to reduce vehicular traffic and vehicle km travelled.	LEED ND, EcoDistricts	To be addressed in the updated Transportation Plan.
8	MOVE	*Parking policies* – to encourage modes other than single occupancy vehicles.	LEED ND	To be addressed in the updated Transportation Plan.
9	MOVE	*Reducing City staff vehicle commuting* – e.g. modified schedules, virtual meetings.	OPL	Part of proposed 'Big Move – New' #4.
10	BUILD	*Passive solar design* – encourage adoption in new development.	LEED ND	Included in CEEP.
11	BUILD	*Green building standards* – requirements, policies, incentives.	LEED ND	Proposed as 'Big Move – New' #2.
12	NOURISH	*Low impact nutrition* – encourage food with smaller environmental footprint.	OPL	May be addressed as part of 'Big Move – New' #4 (City procurement) and/or 'Big Move – New' #3.
13	PROSPER	*Environmental justice* – integrate class and race into environmental issues and green economy.	LEED ND, EcoDistricts	Addressed in SSS and EDS.

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[7] Shaded items are considered to be already addressed in the ESS, CEEP, EDS and/or SSS. Unshaded items were addressed in the revised ESS Structure.

Gap Analysis for Burnaby Environmental Sustainability Strategy

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Purpose of Document

Integral Group was retained by the City of Burnaby as part of the development of the Environmental Sustainability Strategy (ESS). The purpose of Integral's work is to complete an analysis of the draft strategy in order to determine its comprehensiveness. Integral developed a robust methodology, and employed its own expertise, in order to determine potential gaps and identify areas for expanded analysis and action.

Methodology:

In order to determine the potential gaps in the ESS it was determined in consultation with City of Burnaby staff that in a addition to professional review of the themes, strategies and actions, the ESS would be compared against three other established comprehensive sustainability frameworks that are commonly applied at the community level. The intent of this analysis is to asses if the Burnaby Environmental Sustainability Strategy and the associated Community Energy and Emissions Plan, which have been built from the ground up through a consultative process, have addressed all of the issues covered by peer reviewed, and market tested third party standards.

 The standards that Integral Group identified for the purpose of comparison are:

LEED Canada 2009 Neighborhood Development: The Canada Green Building Council defines LEED for Neighborhood Development, as *"a rating system that incorporates the principles of smart growth, New Urbanism, and green building into a national standard for green neighborhood design... The rating system distills the experience of leading professionals in environmental policy and the building industry, and the U.S. Green Building Council, the Congress for the New Urbanism, and the Natural Resources Defense Council, into objective, measurable criteria."* Like other LEED rating systems LEED ND is a US based, third party verified, check list that routed in other pre-existing standards so while comprehensive and empirically measured it does not cover subjective criteria or process outcomes that are not easily quantified. It also tends to a greater level of specificity than what is used in strategic planning documents like the ESS.

Link: LEED ND Canada

One Planet Living: Is a standard developed by Bioregional, a UK not-for-profit affiliated with progressive for profit residential neighbourhood developer. It has been adopted by the World Wildlife Fund as their preferred tool for neighbourhood assessment within their cities program. It is based on ten principles each with a defined methodology for measuring performance. Unlike LEED ND, One planet attempts to address some more subjective topics such as culture, community, health and happiness.

Link: One Planet Living

EcoDistricts: The EcoDistricts Protocol is still in draft from, but has undergone 3 years of development and has been applied in its "beta" format to 10 neighbourhood pilot projects across North America. The Protocol has 8 performance areas that, like One Planet Living, have both environmental and quality of life indicators. The protocol further defines projects into three categories; Buildings, Infrastructure, and Community Action & Programs.

Link: EcoDistricts Protocol

In comparing the ESS to the above noted frameworks we used the most recent edited version of the ESS available, the ten themes, their goals, and the example actions under each goal were mapped to a matrix. The adjacent cells were populated with relevant goals and requirements from each of the other three frameworks that directly related to ESS's ten themes. Any extra requirements in the three guides that related to a theme in ESS were put into the next column as possible gaps. Finally, a narrative was constructed for each gap found and assessed for its relative magnitude. From the thirty three potential gaps that were found, seven were selected as noteworthy. (Refer to table in Appendix 1)

Analysis:

Generally at the "theme level" of the ESS there was excellent alignment between the ESS and surveyed frameworks indicating that the ESS is comprehensive in its overall approach. All of the key outcomes fundamental to the ESS such as lowering emissions, water use, waste, and lessening the impact on

ecosystems are all key focuses of frameworks surveyed. There was also excellent alignment in what we would categorize as "implementation areas" these are things such as green buildings, transportation, and compact land-use planning.

Where there were thematic differences, most were a result of the ESS having a targeted environmental focus rather than a broader sustainability agenda that incudes social and economic sustainability. This is not a large concern as it should be noted that the City of Burnaby has previously developed a Social Sustainability Strategy and Economic Development Strategy that are the likely homes of this content but were not formally scoped as part of this analysis.

It should be noted that while the analysis was found to be robust it did become challenged as the analysis moves to higher levels of specificity. For example, comparing actions from the ESS to individual credits within the LEED ND system was difficult. This is because comparing a rating system like LEED ND that is designed to measure specific outcomes that can be empirically verified to a strategy document that seeks to outline either programs or future policy initiatives does not always align. Where this issue presented it was noted in the summary table in the "Notes" column in Appendix 1.

In all, over 204 prerequisites, credits, actions, strategies, and themes were reviewed as part of this analysis. In general, no major gaps in the ESS were found but some additions were noted and recommended. It should be noted that the ESS/CEEP were reviewed for subject matter completeness and not for whether the draft plans included other components such as measurable targets, and plans for ongoing tracking, monitoring and governance of the strategy.

Approximately 33 individual actions were identified as being potential gaps. Some of these gaps were noted but dismissed due to either being deemed a poor fit with a strategy document (i.e., too detailed or prescriptive) or for being potentially worthwhile, but likely inappropriate for a civic government to undertake. In total Integral Group identified seven potential gaps that staff may wish to consider. The entire list of 33 potential actions are catalogued in Appendix 1 of this report.

Potential Gaps for Reveiw:

After a review of all of the themes, strategies and actions outlined in the ESS the recommendations noted below are the potential gaps that are the most noteworthy and could be developed further into actions if there is sufficient support from stakeholders and the steering committee.

1. BUILD – Passive Solar Design

Adjust zoning and design guidelines to include Solar orientation and passive design is not included as a renewable energy or energy efficiency measure.

> Relevant Framework for Reference: LEED Green Infrastructure and Buildings – Solar Orientation

> Potential Actions:
> The adoption of passive design strategies that could be integrated into zoning and development by-laws or design guidelines could utilize existing planning authority to achieve community wide emissions reductions.

> Why Important: Building's orientation affects its ability to provide natural lighting, use sun for passive heating, or offer protection from overheating, and effectively deploy solar energy systems such photovoltaic or solar thermal collectors. This strategy is also important given it is a comparatively easy energy and GHG conservation measure to implement. It can be integrated into Burnaby's current regulatory authority. Passive design measures can also be applied with little or no cost to new construction.

2. GREEN – Endangered Species

While there is mention of using native and adaptive species there is no specific priority given to "endangered" or "threatened" species as priority or specific habitats or ecosystems that may be of higher value to protect.

> Relevant Framework for Reference: LEED ND Smart Location and Linkages – Imperiled Species and Ecological Communities Conservation

Potential Actions:

Identify crucial areas/species by listing under the Canadian Species at Risk Act (SARA), or under provincial endangered species legislation OR species and/or ecological communities classified as GH, G1, G2, G3, and/or S1 and S2 species by NatureServe and protect those first.

Why Important: Prioritisation of the most vulnerable species and habitats will add increased focus on to any Green Strategy. Protecting the habitats of endangered/threatened species helps the municipality prioritize the critically threatened ecosystem conservation.

3. GREEN/FLOW – Habitat Buffer Zones

No inclusion of buffer zones around identified ecosystems, sensitive habitats or water bodies/wetlands.

Relevant Framework for Reference: LEED Smart Location and Linkages – Site Design for Habitat or Wetland and Water Body Conservation. There is currently no legislation beyond the Provincial requirements that governs development around streams and wetlands. Burnaby has the opportunity to be a leader in this field by establishing riparian set backs that are beyond provincial and federal standards.

Potential Actions:

Research and provide additional guidance and examine restricting development or limit density in buffer zones around wetlands/water bodies

Why Important:: Buffer zones can further ensure the protection of a habitat or ecosystem.

4. GREEN/FLOW - Contaminated Sites Plan

Targeting clean up and remediation of contaminated brownfield sites.

Relevant Framework for Reference: LEED ND - Brownfield remediation

Potential Actions: Develop a strategy to map and target contaminated sites within Burnaby. Based on this map prioritise sites for remediation and clean up based on scale of contamination or threat posed by contamination to either public health or habitat. Create either an incentive program to trigger clean up and remediation for the highest priority sites.

Why Important: While provincial regulations enforced by local governments currently require clean up on sites that are being redeveloped this clean up and remediation is opportunistic and driven by development pressure rather than ecosystem or habitat health and integrity. A more comprehensive or strategic approach may yield better results and improve overall ecosystem health more quickly and comprehensively.

5. NOURISH – Low Impact Nutrition

No focus yet on foods with high embodied energy, GHG and water use, such as meat and dairy.

Relevant Framework for Reference: One Planet Living, Local and Sustainable Food

Potential Actions:

While regulations pertaining to public food choices have had mixed results at the local government level, for example the City of New York's regulation of maximum serving sizes was not well received, some leadership on this issue can still be displayed through alternate means such as purchasing polices. Provincial Health Authorities such as Kootenay Health have promoted and implemented "Meatless Monday's" in all of their facilities that serve food as a strategy to reduce the consumption of foods with high GHG and water intensities. Similar initiatives could be implemented at City of Burnaby facilities.

Why Important: Beyond reducing food waste, the second most effective way to reduce the environmental impact of food is to reduce the consumption of meat and dairy products.

6. BREATHE – Indoor Air Quality

Focus on indoor as well as outdoor air quality

Relevant Framework for Reference: EcoDistricts, Health + Well Being

Potential Actions:
Make a plan to assess, improve and monitor indoor air quality in all municipal buildings. This could include adopting a list of materials or products that are prohibited for use in new construction or renovation of civic facilities. This could further include the generation of educational materials on what construction or cleaning materials should be minimized in order to improve internal air quality.

Why Important: While outdoor air quality has been highlighted in the ESS as an areas of focus surveys from Health Canada estimate that the average Canadian spends 90% of their time indoors. Focussing on improving indoor air quality, can have long-term health benefits, and has been shown to promote employee productivity and reduce absenteeism.

7. MOVE – Transportation Demand Management Plan

Develop not just a "Transportation Plan" but a "Transportation Demand Management Plan" with a specific goal of reducing vehicular traffic or vehicle kilometers travelled.

Relevant Framework for Reference: EcoDistricts, LEED ND and One Planet Living

Potential Actions:
Highlight that one of the objectives of the Transportation Plan is to reduce the usage of the automobile.

Why Important:
While it may be implied though both the ESS and the CEEP that vehicle kilometers travelled will decline with "improvements in public transit" and "less reliance on the personal automobile" it is not explicitly stated that the objective is to reduce the amount of traffic and automobile usage in general. Setting these objectives can have a powerful impact on the trajectory and development of strategic plans.

Conclusion:

The themes, strategies and actions of the Burnaby ESS and CEEP were developed by Burnaby staff with input from local experts, stakeholders, and members of the general public. This process has yielded a comprehensive draft strategy document. In the experience of the Integral Group in developing and reviewing similar plans it is our conclusion that no major gaps are present. This was also the case when the strategy was compared against other 3rd party reviewed frameworks for sustainable community development.

At the "theme level" of the ESS there were no gaps present. When the ESS/CEEP strategies and actions were reviewed some additions were proposed. The most pressing of these recommended additions is the development of a 'Contaminated Sites Strategy or Pan', some additional focus on endangered species, and the promotion of indoor air quality as a priority for City of Burnaby facilities and possible education campaigns. With these additions the ESS will be extremely comprehensive in terms of the topics covered.

Appendix 1 - Gap Analysis Summary Table

Gaps Identified	Gap	Theme to add to	Relevant Framework for reference	May Require Attention	Notes:
No mention of themes of environmental justice (integration of class and race into environmental issues, specifically green economy)	Of Note	ALL	LEED ND - NPDc4 Ecodistricts - Equitable Development	✔	covered in Social sustainability strategy
No mention of themes like abelism, safety, inclusivity and access to environmental issues (like parks, green buildings and local food)	Of Note	ALL	- NPDc11 Ecodistricts - Community Identity		This is an interesting Equity and Inclusiveness issue. More appropriate for the Social Sustainability Strategy
Not focusing on indoor air quality as well as outdoor air quality	Of Note	Breathe	Eco-districts - Health and Well Being	✔	could be an area to highlight in civic facilities
Solar orientation/passive solar as renewable energy or energy efficiency measure	Of Note	Build	LEED - GIBc10	✔	
Including green electricity tariffs and green energy purchases as additional category under renewable energy purchase	Of Note	Build	One Planet Living - Zero Carbon		not as relevant. Little interplay between utilities and the city in this regard
No use of existing buildings as way to increase diversion of solid waste	Of Note	Conserve	LEED ND - GIBc5		while not explicit there are waste reduction actions noted in the strategy. I think this is adequately covered.
No special focus on recognized endangered or threatened species, their habitats or ecosystems	Of Note	Green	LEED ND - SLLp2 - SLLc7	✔	prioritization of these habitats is a good action to highlight.
No contingency plan for when ecosystem/habitat cannot be protected (e.g.. Saving a similar habitat/ecosystem of a similar area somewhere else as substitute)	Of Note	Green	LEED ND - SLLp2		this is a site specific issue that is not as relevant for city scale policy. Its unlikely Burnaby would purchase land outside of the city limits.
No inclusion of buffer zone around identified ecosystems, sensitive habitats or water bodies/wetlands	Of Note	Green Flow	LEED ND - SLLp3 - SLLc7	✔	Something to highlight.
No mention of trying to combat gentrification or neighborhood displacement with green plan	Of Note	Live Build	Eco-districts - Equitable Development		Social sustainability plan highlights this. Its covered.
Including beauty as well as efficiency and function in green building and neighborhood design	Of Note	Live Build	Eco-districts - Community Identity		Something to consider highlighting but likley not a fit with this strategy.
Use covenants, conditions, and restrictions (CC&R) or other forms of deed restrictions to state that growing produce is not restricted, and to dedicate certain areas of residential developments to viable growing space	Of Note	Nourish	LEED ND - NPDc13		Setting minimum requirements for growing areas on private land is likely not enforceable
Focusing on reducing meat and dairy intake (and other foods with high embodied energy and water use)	Of Note	Nourish	One Planet Living - Local and Sustainable Food		this is something that could be prioritized in Burnaby's own facilities. Likely not effective as a public policy agenda item.
No focus on remediation of brownfields through development, and the clean up of contaminated sites.	Of Note	Green	LEED ND - SLLc2	✔	While remediation is a Provincial Requirement of new development there is no proactive policy to compel clean up.
Mandating net-metering hook-up with any renewable energy installation	Other Potential Gaps	Build	LEED - GIBc11		a detailed provision that may be of benefit in the future
Not only composting organic materials, but consider energy recovery	Other Potential Gaps	Conserve	Eco-districts - Materials Management		There is already composting bins available but more possibly could be done here.
No comparison of variety of storm water treatment BMPs or ESC to ensure appropriate stringency and effectiveness (use *Washington*)	Other Potential Gaps	Flow	LEED ND - GIBp4 - GIBc8		likley too detailed for this type of document.
Not focusing on onsite treatment of storm water (more efficient and less stress on municipal systems)	Other Potential Gaps	Flow	LEED ND		Noted through ISMP but not highlighted as a prioroty.
Looking at water quality, wildlife habitat and hydrologic function, not just 'health' of water bodies and wetlands	Other Potential Gaps	Flow	LEED ND - SLLc7		Partly addressed.
No converting wastewater to potable water	Other Potential Gaps	Flow	LEED ND - GIBc14	✔	Water conservation should be prioritsed over this.
Promoting "structurally diverse" as well as native vegetation	Other Potential Gaps	Green	Eco-districts - Habitat and Ecosystem Function		unclear what the benefit will be. May be covered in the Forest Strategy.
When designing parks (and indoor rec), focus on attracting all ages, abilities and different usage groups for different times of day and different seasons	Other Potential Gaps	Live	LEED ND - NPDc9 - NPDc10 Ecodistricts - Health and Well Being	✔	may be already ocurring.
Not only talking about stakeholder INVOLVEMENT but also developing local GOVERNANCE, building leadership capacity to act on behalf of neighborhoods for environmental issues	Other Potential Gaps	Manage	Ecodistricts - Community Identity		This is more of a "how" the project is delivered rather than "what" is being proposed. Nothing specifically precludes this.
Not just a "Transportation Plan" but a "Transportation Demand Management Plan" with a specific goal of reducing vehicular traffic or kms travelled	Other Potential Gaps	Move	LEED ND - NPDc8 Ecodistricts - Access and Mobility	✔	Some explicit language on reducing VKT or vehicle traffic in general.
In addition to "protecting Agricultural Land Reserve", there should also be a policy to not disturb prime farmland (class 1, 2, 3 in Canada Land Inventory for rural Canada)	Other Potential Gaps	Nourish	LEED - SLLp4		May be redundant due to ALR provisions.
Focusing on seasonal food in addition to local, organic, and fresh	Other Potential Gaps	Nourish	One Planet Living - Local and Sustainable Food		Possible focus for Burnaby concessions.
Looking into reducing toxicity in product purchase as well as waste	Other Potential Gaps	Prosper Conserve	Eco-districts Materials Management		
Using LEED certification as "beyond code compliance" and a program to "reward builders"	Not relevant	Build	LEED - GIBp1, c1	✔	Curently use LEED Equivilency
Expanding preferred development to include infill sites, high intersection densities, and within a certain walking distance to transit stops, neighborhood assets, farmer's markets and jobs/housing	Not relevant	Live Move	LEED ND - SLLp1 - SLLc5 - NPDc13		Preferred Development is not a term that is oftern used in the Canadian Planning Context. Some of these are already present in towncentre initiatives.
Other vehicle use reduction strategies like discouraging off-street parking lots entirely, or unbundling parking from developments	Not relevant	Move	LEED - NPDc5 - NPDc8	✔	May be cnsidered in transportation plan
No strategies to reduce vehicle-use through interest virtual meetings, grouping meetings and site visits on the same day, or work from home for city officials	Not relevant	Move	One Planet Living - Sustainable Transport	✔	Liley not aproprite for civic government program or policy outside of city of Burnaby Staff
Encouraging financial incentives like interest free loans, and car allowances for low-emitting vehicular travel like bikes, car-shares, car-pooling, highly efficient cars, hybrids and Evs	Not relevant	Move	One Planet Living - Sustainable Transport		Likley not a fit for Burnaby.