summary notes

The following summary notes were synthesized from the notes recorded during Workshop 2. The summaries identify themes that assist in describing key issues and developing design-based indicators.

biodiversity

Biodiversity Discussion Summary – June 16, 2009

Chair: Val Schaefer
Facilitator: Sara Fryer
Recorder: Rachael Cabrera
Participants: Katherine Dunster, Nick Page, Pamela Zevit, Patrick Mooney

Revised Goal

- To ensure a healthy and diverse environment supported by networks of intact natural areas within green surroundings that serve to protect the intricate ecological web that sustains regional health and well-being.
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Indicator Gaps

-use Tree Canopy Mosaic (the pattern of different plant communities) instead of Tree Canopy Intensity. Valuation increases as you increase vertical structure.
-Develop strategic recommendations for native species and be specific about which invasive species not to plant.
-Habitat Quality added. Removing all invasive species would be #1 key strategy to affect quality of the natural environment.

Priority Indicators (details incorporated into indicator sheets)

1. Habitat Diversity
2. Habitat Reservoir Distribution / Natural Area Proximity / Greenway Connectivity
3. Green / Blue Matrix
4. Natural Shoreline Riparian Integrity Connectivity

Diagram Discussion

- Revised map incorporates: diverse habitat reservoirs that are connected through a diversity of cultural landscapes; smaller scale patches that are not necessarily connecting; green matrix that includes tree canopy cover and backyards, and a less green (grey) matrix
- Key habitat types to restore: riparian corridors (70% of vertebrates use this habitat at some point in their life cycle), marine shorelines, wetlands, forests, meadows/old fields
- Natural disturbance locations: Fraser floodplain
- Spread out the natural footprint (reversal of human footprint)
- Protect what's there and then look for areas for restoration
- In every development leave 2/3 of the land for preservation

Implementation Strategies

1.What are examples of implementation or supporting strategies for the indicators at your table?

- Stream side protection regulations
- Burnaby Still Creek City Green analysis
- Fergus Creek Integrated Plan
- DNV tree canopy preservation
- Integrated storm water strategy for all municipalities in MetroVan
- Fisheries No Net Loss policy on the Fraser

- Agricultural Land Reserve
- MetroVan Regional Parks system
- Delta Farmland and Wildlife Trust
- Nature Trust
- Integrated Storm Water Plan (ISMP)
- Liquid Management Plan
- Drinking water reservoirs

2. What are existing policies or processes that inhibit achievement of the strategies?

- R.A.R.E. – loosening the riparian regulations instead of tightening them, we need more than 50m due to private land issues
- Putting all lands into the ALR prevents a farmer from making a living, and compensation doesn't make up for the loss of land and the requirement for local food
- Water planning led by engineers with the approach of improvement on nature instead of focusing on trees/soil
- Tree canopy focuses on only one layer
- Documents are made but then shelved due to multiple agencies involved.

3.What are realistic timeframes for implementation of suggested strategies?

- Have to have a plan in place that has the right vision, which is supported by all key stakeholders;
- Regulatory environment is a real inhibitor – if municipalities or provincial governments don't buy into it, nothing happens;
- Challenge is to encourage various levels of government to move from talk to action.

Best Practices and Potential Targets

1.What are examples of best practices and targets for the priority indicators at your table?

- Species at Risk best practices guide;
- Ministry of Environment has Development with Care best practices draft document;
- Green Bylaws toolkit is available;
- Greenskins Lab at UBC;
- Water Balance Model, Beyond the Guidebook;
- UK sustainable commission document "Prosperity without Growth".

2.What are some case studies/sample projects that best represent the indicator's intended outcome?

- DNV taking advantage of redevelopment by generating a prescriptive land use;
- Dockside Green;
- South East False Creek/Olympic Village;
- UBC South Neighbourhood (ground water use);
- Crown Street;
- Country Lanes;

- Delta's greening of their streets block by block;
- UBC Integrated Water Project (disconnect from the regional water system).

3.What are areas of weak data availability and areas for future research?

- Tools are in place, we just need to make them relevant and put them into practice, need people to champion them;
- Remember that indicators need depth in order to have function (i.e. tree canopy is just one level of vegetative layer);
- Policies need more creativity;
- Issues with scale, municipalities have a lot of their own data which doesn't always mesh with region and sharing of info is insufficient;
- No requirement for private land use (i.e. taking big trees down on your land, alternatives for storm water);
- Get the first project built – once done and proven, it can become "mainstream" (i.e. Dockside Green).

Economy Discussion Summary – June 16, 2009

Chair: Tom Leung
Facilitator: Jackie Teed
Recorder: Carol Mak
Participants: David Ramslie, Roger Everett, Todd Litman

Economy Indicators (in order of priority)

Efficiency and Affordability are the meta-indicators of a sustainable economy. To get at efficiency and affordability within the DCS methodology, the economy team prioritizes the design-based indicators, with the first five as key, and the sixth as unimportant, as follows:

#1. Land Use Diversity

- The description for this indicator needs to be revised – it reads as a distribution indicator (i.e. the spatial relationship of land uses) vs. a diversity indicator (i.e. the range/ ratio of different land use areas).
- Metric "% reduction in urban footprint" should read "% change in urban footprint."
- The group felt Land Use Mix (i.e. spatial relationship – probably with similar metrics to the intensity indicators) would also be a "high priority" indicator – noting that the target would be "the greatest degree of mix feasible," recognizing some land uses (e.g. heavy industry and housing) should not be included. When mixing, should regulate impacts, not uses – e.g. don't limit mixing industrial and residential but limit the degree of impacts like smell, noise, etc.
- With respect to parking reduction strategies: the group consensus was to prepare parking management plans that respond to the specific context within and between neighbourhoods and that are flexible to change over time. The group expects that the "business case" for parking would support approximately half the area that is currently required (rather than eliminating parking requirements all together).
- The group noted that Metro Vancouver does not include true "heavy" industry (e.g. pulp mill, chemical plants, etc.)

#2. Transit Proximity

- Economy is production and consumption connected by transportation.
- The group particularly supported the need to use a network approach to transit for this to be successful.
- The group noted that good transit is often a catalyst for good community development.
- Transit is also key to affordability, as real cost of living is housing + transit.
- Walkability as part of mobility network is also key.
- Do suburban areas (e.g. Abbotsford) need a different model, as they are

not as likely to have transit hubs to grow around?

#3. Housing Diversity

- The group was quite concerned that housing affordability be addressed, and reluctantly accepted diversity as a proxy.
- With respect to supporting strategies: the group noted ecodensity will likely bring approximately 50% of needed affordable housing stock (est. 10,000 units/year required). Need policy incentives for building more rental units. Need higher density zoning to go deeper into neighbourhoods than first block along transit corridors, and this depth should be flexible to adapt to changing needs over time.
- Densification will also support affordability (e.g. ecodensity policy).

#4./#5. Intensity – Housing and Employment (equally weighted)

- The group continued to equate Land Use Diversity with Housing/ Employment Intensity, despite facilitation direction.

#6. Employment Proximity

- #1 - #4 are the design drivers for success – if successful in achieving sustainability targets for indicators #1 - #4, then #5 will naturally follow through market forces.
- The group felt that transit proximity is much more important than employment proximity, as people today do not generally prioritize living and working in proximity and are more ready to change job/ residence location every few years, thus changing the geographic relationship between living and working. Providing living and working proximity to transit accommodates this geographic flexibility while providing alternative transportation modes to the car.

Missing Indicators:

- Need a means to indicate affordability of industrial/manufacturing lands and/ or increasing area of urban industrial/ manufacturing lands – currently lands are valuable enough to be developed as housing, thereby shrinking supply of industrial lands, making leasing/ ownership too expensive in urban areas, causing leapfrogging to suburban areas.
- Is there a way to indicate diversity at a finer grain – e.g. dance studios, incubator neighbourhoods (e.g. Gastown), live/work?

energy

Energy Discussion Summary – June 16, 2009

Chair: Dale Littleton
Facilitator: Nicole Miller
Recorder: Kari Dow
Participants: Jeff Carmichael, Kip Morison, Peter Ostergaard, Gordon Price, Maged Senbel, Ray Kan

We recognize that the transportation group will deal with the transportation sector so our focus will be primarily on the building sector with an emphasis on alternative energy sources. The indicators are organized under the broad categories supply and demand.

Demand Indicators

Compact development can help to decrease demand for energy because it shares maintenance costs among more consumers, reduces transmission losses, and enables forms of energy efficient behaviors (ie. shorter trip distances and shared heating). Densification allows for the optimization of existing energy infrastructure and improves efficiencies in the system.

- 'Infill Intensity' implies that adding new buildings in unused space is the only way to improve energy efficiency. It should also include Adaptability.

Future demand can be minimized by including adaptability. Adaptability refers to the ability of buildings and infrastructure to adapt to rapidly emerging and evolving conditions and technologies through retrofits, renovations or redevelopment. Certain building types are better at allowing the urban landscape to evolve more effectively. For example, large scale, concrete high rises have much longer life expectancies therefore they are less adaptable to future changes while wood buildings with less than 6-8 stories are more adaptable.

> Indicator: Density and Adaptability (previously 'Infill Intensity')

Supply Indicators

Proximity of end-users and energy sources (district heating, solar etc.) decreases transmission losses and allows for localized energy generation and synchronicity of uses. Emphasis should be placed on proximity to a renewable energy source although during the transition period, practices such as heat recovery from fossilfuel-based energy sources should not be discounted. Renewable energy can happen at the building, district or provincial scale.

Compact, mixed use allows for locational energy synergies. Density should be clustered around potential energy sources such as district heating or ground-source heat pumps.

energy

> Indicator: Renewable Energy Proximity (previously 'District Energy Proximity')

Recovery of waste energy is closely associated with the proximity of end-users and energy sources and our ability to convert waste to energy. It is about capturing energy from waste resources (food, organic, sewage) and using it in the local community. In some cases, the recapture of this energy might need to take place further away from residential areas.

> Indicator: Recovery of Waste Energy (previously 'Heat Capture Connectivity' and 'Waste to Energy Capture Intensity')

Low Priority Indicators

Solar Orientation Intensity and Modal Diversity

Implementation Strategies

1. Local government being in charge of energy production
2. Private partnerships (e.g. Terasen is willing to uptake gas from biodigesters – the benefit lies in the fact that they already have the infrastructure in place)
3. Heat capture (bring the source and the sink together)
4. Use large government buildings as the impetus for installing and using alternative energy sources and distribution systems, such as district heating, and then scale up to incorporate the surrounding community. The first step is the hardest but expanding a system already in place is easier. (Need critical mass and infrastructure in place)

Challenges

Conflicts between energy and agriculture will likely arise in a fossil fuel constrained future because they both compete for the same resources. Conflicts could also arise if energy crops begin to compete with food crops (or drive up prices, as recently experienced with corn).

Local government regulations can be a barrier – we need a regulatory framework to help the transition not hinder it.

food

Food Discussion Summary – June 16, 2009

Chair: Kevin Connery
Facilitator: Colin O'Byrne
Recorder: Lindsay Raftis
Participants: Kent Mullinix, David Tracey, Jim LeMaistre, James Richardson, Claire Gram, Arthur Fallick, Herb Barbolet

Key Discussion Themes and Observations:

- Determine how the social/political issues surrounding our food system may translate into physical indicators and use these spatial findings to inform physical growth and land-use planning strategies.
- Determine what parameters are most effective in measuring food sustainability.
- Maximize food production at a variety of scales within the region.
- Economics will influence and regulate the food system.
- Some foods sources are not soil-dependent (i.e. some meats, hydroponics, seafood, etc.) but are affected by run-off.
- Land protection, capacity and utilization are key concerns and should be improved across all scales.
- Are we designing the food system for self-sufficiency, regional food security, or local resiliency and global market participation? This relates to diversity of choices and opportunities.
- The treatment of agriculture reflects our larger social system.
- Present forms of commercial agriculture are not sustainable – we need to shift to less energy intensive inputs and production techniques before we are forced to do so.
- We are assuming there is an increasing societal concern with food security and improving connections with agriculture.

Garden vs. Large Scale Agriculture Debate:

- Need to determine what are suitable uses for agricultural land (i.e crops / livestock vs greenhouses or schools)
- A greater % of the population should be involved in food production (currently very low)
- 0.5 ha of land per person needed to meet Health Canada's Food Guide requirements
- Garden plots create a bond and increase awareness among consumers.
- Think about who the food system is designed for – income, access, impacts/benefits.
- Seasonal supply limitations – there is only so much we can produce in a home garden throughout the year.

Comments on the Agricultural Land Reserve (ALR):

- Ensure no further loss of viable agricultural land.
- Strengthen the ALR model to operate on a municipal level - to improve

public support for agriculture and local food production.
- Develop comprehensive land use policies that support a viable agricultural food sector from urban centre to rural periphery.
- What has failed in the ALR is more a reflection of the food economy than the ALR itself. [Need to elaborate on this]
- Urban agriculture cannot replace ALR lands but should be used to supplement these.

Discussion - Indicators and Metrics

- Metrics should be framed in a positive tone, e.g. "increase" instead of "no loss".
- "Per capita" is more accurate than "per dwelling" since one dwelling unit may contain several people.
- There are commonalities between diversity and proximity of production and protection indicators.
- Design indicators should: enable discussion, simplify policy, be meaningful and grounded in science, be relevant and able to influence taxation, economics and policy, and not rely on human behaviors and processes.
- Determine where the indicators will apply, e.g. at different scales (region, municipality, community, neighbourhood, parcel, building).
- Urban and rural communities may require different metrics.
- Establish a baseline: what level of regional self-sufficiency is acceptable?
- Tie new development to availability of growing space.

Suggested Metrics:

- Percentage of persons involved in food system industry
- Percent of local open space dedicated to food production per capita
- Percent of population per unit area of growing space
- Number of community gardens within walking distance
- Number of community garden plots per capita
- X amount of land base devoted to local production
- Biomass production per area of land
- X amount of land base dedicated to crops for local markets
- X amount of land base protected
- X percent of land utilized to produce food for a local food system
- X percent of land utilized to produce food for export
- Increase food production by X% per year.

Discussion - Afternoon Mapping Session:

- Diversity of crops and growing space size is important from both a production and cultural perspective.
- The relationship between proximity and production is important within the food distribution system.
- Incorporate social infrastructure and food distribution (food hubs and precincts)

- Growing space along right of way/streets may be subject to air contamination issues/disease.
- Indicators are dynamic and do not translate easily onto fixed elements on a map.
- A series of maps at different scales would be useful – ideally, the entire land area would be green – streets, yards, agricultural land, rooftops, highway interchanges, etc.
- Use carbon footprints as a visual tool for food production and consumption.
- Inputs and distribution are the most spatial aspects of food production.

Cross Theme Discussion: Food and Energy Best Practices
Energy Participants: Maged Senbel, Peter Ostergaard, Jeff Carmichael

Utilizing agriculture byproducts and processes for energy production and conservation:

- Agriculture is one of the largest energy consumers
- Wastewater treatment plants – could generate heat, fuel, electricity
- All waste should be treated before sending it to landfills; however, air pollution control is costly.
- Pellets of waste agricultural products and bio-fuel can be used to heat homes.
- Edible food waste is a potential energy stream and resource that is not utilized.
- Heat capture from greenhouses for neighbourhood heat sources could work if they were located in closer proximity.
- Economic, institutional and social shifts will be the ultimate enabler for these energy technologies and systems to evolve.

Waste Reduction Techniques:

- Implement food waste collection and redistribution programs (i.e. sending unsold food to soup kitchens or discounting it rather than throwing it out)

Improvements to the food system:

- Reintroduce crops in rotations that will balance nitrogen in the soil.
- Reintroduce animals back into food production practices to reduce energy inputs.
- Encourage a nutritional plant-based diet rather than animal based nutrition to reduce the energy inputs of food production.
- Produce food in closer proximity to residents to reduce transportation energy demand.
- Sustainable agriculture can only be achieved in an energy-neutral system, where the energy used to produce the food is in balance with the energy produced by the food.
- "Close the loop" of energy inputs and outputs in agricultural operations to minimize energy expenditure related to production.

mobility

Mobility Discussion Summary – June 16, 2009

Chair/Facilitator/Recorder: Sara Muir Owen
Participants: Josh van Loon; Jack Becker; Ugo Lachapelle; Ray Kan; Mike Harcourt (part of the session); and,
Sawngjai Dear Manityakul

Goods movement

- Port expansion and goods movement is a key component for the region in terms of transportation
- Is goods movement an issue that will be addressed by Economy?

Transit

- The Translink Plan is being developed; it is something that will need to be referenced in relation to SxD
- The transit systems are changing. They are accommodating a diversity of uses, versus acting as "cattle cars".
- Currently only about 250 out of 1500 buses in Metro Vancouver are electrical
- Affordability is also a key theme. Affordable transit is necessary.

Infrastructure

- The region is going to require massive bridge replacement; existing infrastructure is 50 to 80 years old. Tolling and pricing this infrastructure is going to be a big issue.
- Safety should also be considered. Safety for pedestrians, bikes, children walking to school.
- Mobility for the region should be designed around the freedom to choose mode of travel.

Indicators

- To evaluate and prioritize the indicators the group considered: Active Transportation (People movement); Goods Movement and Mobility/ Accessibility in terms of street network connectivity, commuter time, and getting people to people versus people from A to B.
- Ensure the transit proximity indicator reflects the level of quality service
- Should also include an energy output indicator that measures modes with different energy consumption
- Mike suggested the group explore the Questcanada.org website to learn more about energy objectives and issues for the nation
- Energy output indicator: dedicate 90% of all bus service to electrical
- Identify set targets for region-wide Vehicle Kilometres Travelled (VKT) and mode selection. Could use the province's GHG targets. The focus should be on options that reduce driving and increase the mode shift. The indicators can serve to do this shift.
- Three key themes seem to frame the indicators:
- Mobility/Accessibility
- Active Transportation

- Goods Movement
- In terms of the proposed indicators, suggest combing a number of them
- Combine Transit Proximity with Transit Supportive Land Use Intensity
- Combine Greenway Proximity with Pedestrian and Bike Route Connectivity.
- Ensure greenway objectives are met through the incorporation of specific metrics under the more general indicator
- The "Shipping Land Use Intensity" indicator relates to how Ports actually operate

Priority Indicators

1. Transit Proximity, Quality and Land Use Intensity
2. Active Transport Route Connectivity
3. Goods Movement Mode Diversity (distance to modal options, rail, truck and water)

Other points to consider

- Add energy goal for overall mobility
- Include GHG and air quality metric for each indicator

Best Management Practices (Economy/Mobility)

- Land Use Diversity: best practices, examples could include downtown Vancouver. However, downtown is not that replicable throughout the region. Also, may have a lack of jobs (industry) than an ideal land use diversity example.
- There is a lack of industrial, commercial and warehouse concepts: though, the downtown is good for housing and liveability. It has limited success in maintaining affordability
- Need to conduct more research on affordability and industrial/commercial side of the land use diversity indicator.
- Some of the major strips of commercial streets in Vancouver might serve as good models.
- Difficult to find appropriate industrial examples
- Should look to Portland to explore successes and failures
- Transit Proximity: best management practices include the BRT in Ottawa; LRT in Portland; Toronto relatively good T.O.D; Calgary has good LRT system.
- London could provide an example. But not replicable. Don't have the density to support and the system is way too expensive to implement now.
- Should ensure that there is 400 metres to a bus stop. Express service people will walk a little further.
- Time on transit is an important element of success. Transit frequency needs to meet appropriate threshold.
- It is not just the distance that needs to be considered, but also safety and pedestrian environment that facilitates use of the system
- Goods movement: best practices would include short haul shipping from the boat in the harbour to handling. Something that moves goods by

barge or rail to a handling facility, versus by truck.

- CNN Rail fails on short hauls. Need to make use of short haul. "BC Southern Rail" used to do this, but doesn't exist anymore.
- Should investigate the feasibility and companies that specialize in short haul.
- Need more research on how to efficiently and effectively provide movement of goods on roads. Research the options of dedicated truck lanes.
- Highway 25 in Montreal has a separate R.O.W for truck freight. Might serve as an example.
- South of Fraser goods movement needs to be more efficient—How do we use roads like SFPR while avoiding car congestion. Need to look at other jurisdictions.
- Housing Diversity: Best practices—again Vancouver is a good example, but fail ion the affordability issue. Need to look at other places and other policies—inclusionary zoning. Laneway housing.

water

Water Discussion Summary – June 16, 2009

Chair: Kim Stephens
Facilitator: Patrick Condon
Recorder: Sheryl Webster
Participants: Paul Ham, Zo Ann Morten, Daniel Roehr, Xenia Semeniuk, , Ted van der Gulik,

Kept Indicator

- Tree Canopy Intensity addresses evapotranspiration and interception, thus limiting the volume of runoff and mitigating the urban heat island effects.
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Combined Indicators

- Stream Connectivity was combined with Aquatic Environment Diversity that addresses the health of the watershed and habitat.

- Natural Hydrology Intensity was combined with Impervious Surface Intensity that addresses volume of runoff and stream health.

Additional Indicator

- Per Capita Water Use as an indicator addresses site-specific municipal water use, soil depth and health, xeriscaping, rainwater catchment and reuse of potable water. This indicator feeds into the other indicators creating a holistic perspective of water use and volume of water discarded.

Discarded Indicators

- Waster Treatment Proximity and Decentralized Water Distribution were incorporated into other indicators that addressed similar issues.

Main Discussion Points

- A good indicator is all encompassing; is fast and easy to measure; provides guidance for the design so that the design can be measured against the indicators; aids in the regulation on water volume; and complements other indicators.

- We need to know how the indicators are going to be used so that we know data is collected appropriately. We need to have data collection in place to measure stream health. Volume of water directly impacts erosion.

- Water volume as a measurable indicator will manifest changes in the landscape and link to the other physical indicators. However, when part of the city is densely built, the volume of runoff into a steam does not have a direct correlation to the physical change on the landscape- detained only temporarily.

- Thirty to forty percent of potable municipal water is used outside of the home and effects downstream. Potable water should be reused and xeriscaping

should be mandatory, as in Australia.

- Pervious surfaces must have an absorptive capacity. What is under surfaces really counts. A field seems impervious, but drainage pipes below carry water away into the storm drainage system. One foot of topsoil is optimum below any pervious surface. However, scale is important, because soil conditions change over a site or region, which affects water retention.

- Targets should be different for each watershed. There are 130 watersheds in Metro Vancouver and none are alike - downtown Vancouver to North Shore.

- Stream health should be the methodology for setting targets, because if we are preventing runoff, streams will dry out. A change in the landscape changes the flows.

- Connectivity of streams is a good indicator because some water use can be within that framework. Often a stream goes from natural to irrigation ditches to natural before it meets up with a bigger body of water.

- Land cover as an indicator is problematic - for example, a parking lot with lots of tree coverage has poor land coverage but good canopy coverage, or an area with high percentage of impervious surfaces could come across as bad for land coverage but then sprawl could be seen as good. However, higher densities are needed to support other sustainable land uses like transit.

- Should the ephemeral vs. yearly streams have the same buffers? Does the ephemeral system become part of the stream system? If the ephemeral system is protected, would it limit the places to develop? (the ephemeral system has flowing water only during, and for a short duration after, precipitation events in a typical year).

- It's leadership and champions that make things work. Concrete examples are the best ways to advance best practices. We need buy in and catchy phrases for various audiences. How do we pitch it - the health of the stream? Salmon are the canaries? We want creeks where kids can play? We need agreement on the same terminologies.

- Is the Metro Vancouver region the right place for green roofs? Maybe not as we have summer droughts. Europe's rain patterns are more constant than here and Shanghai's climate is perfect for green roofs. However, Metro Vancouver is definitely the right place for rainwater harvesting. The GVRD has a10-year study on green roofs. Seattle uses a methodology called the Green Factor for assessing green roofs, however including facades and streets would provide a more a holistic perspective.

- Developments in high areas of the watersheds are the cause of many problems. Upland developments affect the lowland agricultural fields. The more development happens upland, the worse conditions get in the

lowlands-increased flooding affects farmers. An inch or a foot of water prevents a farmer from working the land.

Implementation

- Green/blue connectivity - Plant more riparian vegetation
- Natural Hydrology – Impervious surfaces, green streets, maintain existing creeks
- Stream Connectivity – buffer zones, South and West shading of creeks and irrigation ditches
- Habitat Diversity - compost and build up soil that acts as a sponge and sequesters carbon
- Conservation of key habitat areas, native plant diversity and areas with intact soils
- Habitat (reservoir) Distribution - community mapping, acquire and create green spaces
- Enable people to live within 500 meters, look for urban gaps and opportunities, Naturescape
- Green Matrix - greening the matrix with green roofs, permeable pavers, native vegetation
- Areas of overlap – diversity of species and environments, soil building, connectivity

Examples of Implementation

- Dockside - habitat, stream onsite, water catchment, reuse and treatment on site, water per capita
- Lost Lagoon – biofiltration, habitat, rainwater/rainwater/stormwater management
- Crown Street – rainwater/stormwater, natural hydrology
- Portland – bioswales on urban streets
- Green Roofs – habitat, but the higher you go the less habitat value. Doesn't have to be green to have habitat value – pieces of concrete creating crevices etc. It's climate dependent.
- Any opening of water to the surface increases biodiversity.
- Best Management Practice – greywater systems especially for landscape purposes relates to the indicator Water Use Per Capita
- There are 5000 gal cisterns in all new developments in Australia to capture all the rainwater for reuse
- East Fraser Lands-OCP includes foreshore buffer and connection to Everett Crowley Park
- Recreation vs. biodiversity - More condos increase people recreating in natural areas and crowding out wildlife. Developers should buy adjacent lands for recreating purposes.
- Stream daylighting where old infrastructures are failing – instead of replacing them with the outdated technology – daylighting is a win/win
- Planning for biodiversity in new developments is necessary
- Thain Creek is a good example of a daylighting project
- Regional Biodiversity Strategy – A draft of bylaws and the Green Bylaws tool kit

- Whistler - OCP amendments with a change in setbacks for biodiversity
- Surrey has a biodiversity study
- Langley has a wildlife habitat conservation strategy
- East Clayton, Dockside and communities with water metering
- Parliamentary office of biodiversity in England just came up with a 5-year implementation plan for biodiversity – It can be done

Gaps

- Planning for biodiversity
- Data – missing habitat and species info
- Regional Plans not enforced because the barriers are too big
- There is a lack of large-scale examples- not just boutique projects but overall
- Lack of developments with green infrastructure
- There are more gaps on biodiversity than water
- More research is needed on engineering species – for example microrhyzae, fungi, beavers etc.
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Mike Harcourt's Summary

- Every initiative needs the following for implementation: Policy development, buy in of the cabinet and citizens, money and a communications strategy.
- Metro as a regional government needs help. Is this region's current governance structure a good one for the future? Integration is good.
- Implementation of how we can change behaviour – policy, incentives, education. Examples of good implementation are: Copenhagen, Dockside, and South East False Creek.