

Challenge: Development Permit Area Guidelines

Organization Name: Township of Esquimalt
Municipality: Esquimalt
Website for organization: <http://www.esquimalt.ca/>

Research and develop draft guidelines for establishing Development Permit Areas that encourage energy, water and GHG reductions in Esquimalt.

A Development Permit Area (DPA) is a set of development regulations pertaining to a specific area as specified by the Official Community Plan. Any proposed building and subdivision within a DPA requires the issuance of a development permit. The authority for local governments to establish DPAs is set out in the Local Government Act, Sections 919.1 and 920. DPAs help local governments plan smart, safe, resilient communities.

Your challenge is to conduct a jurisdictional review of Development Permit Areas (DPAs) among local governments in British Columbia (starting with the capital region) and develop draft guidelines for establishing DPAs that encourage energy, water and GHG reductions in Esquimalt.

- Draft guidelines for establishing a Development Permit Area for climate action in Esquimalt
 - Review literature on development permit area (DPA) guidelines with specific focus on guidelines for addressing climate action
 - Conduct a jurisdictional review of DPAs among local governments in the capital region
 - Which municipalities have DPA guidelines to address energy conservation, water conservation and/or GHG emissions reduction?
 - Identify common and unique elements of DPAs in the region
 - Recommend applicable DPA guidelines for the Township of Esquimalt

Desired format for final project results:

A brief research report with draft Development Permit Area guidelines enclosed.

Other relevant information that could be shared with students:

- Development Permit Areas for Climate Action: A guide for energy conservation, water conservation and GHG emissions reduction ([PDF](#))
- BC Climate Action Toolkit ([Web](#))
- Esquimalt Environment Backgrounder ([PDF](#))
- Esquimalt Bylaw No. 2732 – GHG Targets ([PDF](#))
- Official Community Plan Review ([Web](#))
- Esquimalt Development Backgrounder ([PDF](#))

Challenge:**Business Case for a Lighting Control System**

Organization Name: School District #63
Municipality: Saanich
Website for organization: www.sd63.bc.ca

Analyse electricity use from lighting in our schools in order to inform a business case for a lighting control system.

Your challenge is to help School District #63 to better understand the potential for lighting controls in our schools. An analysis of how much electricity is consumed by lighting during periods of low occupancy is desired. Typical school hours are 9 am-3pm but lighting is often still on from 3pm-11 pm for custodial work and community use. However, occupancy is very low (usually only two to ten people in a school in the evening) yet many lights are still on. An analysis of how long the lights are on relative to how often the lit areas are actually occupied is desired. This would essentially allow us to develop a business case for occupancy sensors (or another type of lighting control system).

A possible stretch analysis would be a comparison of light levels in common areas (hallways, lobbies, circulation areas) at different times of the day and with lights on and off, compared to minimum lighting requirements for these areas (lighting levels for common areas are lower than working areas such as classrooms and offices). This analysis would estimate how often lights could be off during the day and form the business case for adding photocell controls to lighting (daylight harvesting).

Desired format for final project results:

A research report would be the desired final project results.

Other relevant information that could be shared with students:

The District consumes over half of its electricity outside of instructional hours (ie no students are in the school). While some energy must be consumed for custodial work, exterior lighting, and for community groups using the school after-hours, this level seems very high. This information has only become available in the last year due to the installation of SmartMeters on our schools. While we know how much energy is consumed after school hours, we do not know what is consuming the energy.

Background data on energy consumption patterns, current levels of technology in the schools and is available for technical guidance.

Challenge:**Edible Landscapes at UVic**

Organization Name: Sustainability Office, University of Victoria

Municipality: Saanich/Oak Bay

Website for organization: www.uvic.ca/sustainability

Investigate the feasibility of edible landscapes and other food growth options on the UVic campus.

The University of Victoria (UVic) Sustainability Action Plan 2014-19 provides updated goals on strategic topics for campus sustainability that require attention over the next five years and beyond. The plan covers topics from administration and investment to food and waste. Among the over 70 action articulated in the Action Plan is the commitment to “investigate the feasibility of edible landscapes and other food growth options on campus.”

Food is a contributor to the university’s environmental footprint, and growing and purchasing local food is one of the ways of reducing that footprint. Your challenge is to:

- Assess the feasibility for creating edible landscapes at UVic,
- Identify up to 5 potential locations where those landscapes could be piloted, and
- Identify individuals or groups at UVic who would take responsibility to care for the pilot spaces.

Desired format for final project results:

Please provide a written report on the feasibility of edible landscapes on Campus outside the campus community garden. A follow up meeting with the sustainability office on the report is also requested.

Other relevant information that could be shared with students:

The University of Victoria Facilities Management Department maintains the campus environment. Engaging with the Facilities Management Grounds staff would be critical to understand the feasibility of edible landscapes.

Key Facilities Management Department staff contact information and introductions will be provided.

Other Universities have deployed edible landscapes. Please consider reviewing examples such as the University of Massachusetts Amherst (<https://www.umass.edu/sustainability/get-involved/permaculture-initiative>), and the University of Seattle (<https://www.seattleu.edu/grounds/edibles/>)

Challenge: **Green Infrastructure Inventory**

Organization Name: Environmental Protection, CRD

Municipality: All

Website for organization: www.crd.bc.ca/watersheds

Create a photo and data inventory of green infrastructure to update the CRD's natural areas atlas.

The Integrated Watershed Management (IWM) program promotes green infrastructure techniques for sustainably managing rainwater to protect watershed health and the nearshore marine environment. Your challenge is to:

- Update the [current online inventory](#) of examples of innovative rainwater management techniques in the region, including rain gardens, rainwater harvesting, bio-swales, wetlands, permeable paving, green roofs and sustainable developments, etc. Examples of sites could include Dockside Green, the Atrium, University of Victoria, etc. Challenge requires students to collect information about each site, take photos and map the location. The information would be posted on the CRD website, and used to promote green infrastructure in the region.
- Expand the sites to include restoration sites. (i.e. Bowker Creek behind OBHS)
- Gather the new sites and update the current sites with GIS points so that links can be incorporated into the CRD Atlas.

Desired format for final project results:

- Data to be submitted in digital format and displayed in Excel for easy uploading/integration into the CRD Atlas.
- Any new sites will also be requested in a Word document in similar content and format to current on-line inventory.
- Photos in high resolution JPEG.
- Site locations mapped in ArcGIS, including a PDF map.

Other relevant information that could be shared with students:

- Site locations across the CRD.
- Site information is also available on municipal websites

Challenge:**Illegal Dumping**

Organization Name: Environmental Resource Management, CRD
Municipality: capital region
Website for organization: www.crd.bc.ca/recycle

Research and pilot a campaign on how to apply the 3Rs of Reduce, Reuse, Recycle to deal with all your 'stuff' at the end of the school year.

The Environmental Resource Management administers and manages all municipal solid waste disposal for the Capital Region at Hartland landfill, as well as waste reduction and recycling programs. Close to 50% of the solid waste generated in the region has been diverted from disposal, with the remaining 50% primarily landfilled at Hartland landfill. Each year over 134,000 tonnes of garbage is landfilled in an environmentally responsible manner.

Environmental Resource Management has a mandate of focusing on the environmental future, and is responsible for the planning, developing, and application of systems that will best ensure an integrated and beneficial use and reuse of our resources- some of which may now be seen as waste. Instead of disposing waste, the CRD is focused on utilizing waste as a commodity for beneficial reuse. This includes a focus toward zero waste in our landfill, bio solids recycling, methane gas capture, compost and organics processing initiatives, and other energy from waste opportunities.

The amount of illegal dumping and abandoned waste activity occurring in the region is significant and research has shown that this activity is elevated at the end of the school year with post-secondary students leaving town.

Your challenge is to research and test a campaign on how to apply the 3Rs of Reduce, Reuse, Recycle to deal with all your 'stuff' at the end of the school year.

Desired format for final project results:

Final written report should include results of research and analysis of campaign and its impact on changing behaviour. Presentation optional.

Other relevant information that could be shared with students:

Research on illegal dumping, including research showing this activity is elevated at the end of the school year with post-secondary students leaving town, is available On our website.

- <https://www.crd.bc.ca/service/waste-recycling/illegal-dumping>

Challenge: **Multi-Modal Transportation Festival**

Organization Name: Regional Planning, CRD
Municipality: capital region
Website for organization: www.crd.bc.ca/planning

Plan a multi-modal transportation festival to educate, encourage, motivate residents to cycle walk take transit and reduce single occupant use.

The CRD would like to organize and execute a multi-modal transportation exposition or festival. The proposed event would be held between June and October 2016 and should be designed to educate, encourage, motivate and inspire residents to cycle, walk, take transit and generally reduce single occupant vehicle use for commuting and personal travel.

While the festival would be open to all residents, there is a particular interest in attracting and supporting children/youth/families as well as seniors, newcomers and immigrants. The CRD has a maximum budget of \$5,000 for this event.

We would like a team of students to research, develop and propose ideas for various aspects of this event including:

Other examples of similar or related events and lessons learned (BC):

- Potential names for the event
- Potential dates and locations for the event (day, time, costs, benefits, drawbacks)
- One day or multi-day day event?
- Suggested content and programming (speakers, presentations, workshops, demonstrations – basically what would happen at the event. We have a particular interest in looking at ways we can “program” the event to attract specific audiences who we can count on to attend.)
- Suggested partners to invite (potential vendors who would be interested in attending such an event and having an informational display – for example, BC Transit, MODO car share, local bike shops, advocacy organizations etc)
- Suggested promotional strategies or marketing efforts to attract participants

The Students are not expected to implement the event, rather help us do some of the legwork and research to plan the event.

Desired format for final project results:

A report and presentation to CRD staff.

Other relevant information that could be shared with students:

This effort would aim to support the SOFT E’s associated with sustainable transportation (encouragement, education, enforcement and evaluation). Students can learn more about the region’s objectives to increase the use of active & multi-modal transportation by viewing two of our major plans:

- a) [2014 Regional Transportation Plan](#)
- b) [2011 Pedestrian & Cycling Master Plan](#)

A reminder that this event would be focused on the entire capital region – from Sooke to Victoria to Sidney and everywhere in between.

Challenge: **Energy Efficient Building Incentives Research**

Organization Name: Canadian Passive House Institute West
Municipality: capital region
Website for organization: <http://www.passivehouse.ca/>

Research and present on successful energy-efficient building incentives that are currently proposed and/or implemented by local and senior levels of government in Canada.

CanPHI West is a non-profit organisation that works to provide Canadians with the knowledge, tools, networks and confidence to design and construct buildings to meet the Passive House Standard.

The term passive house refers to a rigorous, voluntary standard for energy efficiency in a building, reducing its ecological footprint. It results in ultra-low energy buildings that require little energy for space heating or cooling. Local, Provincial and Federal governments play a key role in reducing barriers and building in incentives for innovative, energy efficient design.

Your challenge is to research incentive initiatives being proposed and implemented by policy makers and planners at varying levels of governance in Canada that support and promote energy efficient buildings. We are specifically interested in initiatives that support and promote the construction of Passive House buildings.

Desired format for final project results:

A short research report, accompanied by a power point presentation to staff. If this is selected as a winning project, students will have the opportunity to present to the Canadian Passive House Institute West Board (comprised of noted Architects, Engineers and Developers).

Other relevant information that could be shared with students:

We will supply example initiatives that we are aware of as well as background on Passive House and energy efficient buildings. You may also look at similar lists developed for energy rebates for businesses:

Challenge: Youth Sustainability Workshop Development

Organization Name: Creatively United for the Planet
Municipality: capital region
Website for organization: <http://creativelyunited.org/>

Design and lead your own sustainability workshop(s) or educational display or activity on the topic of your choice at the 5th Annual Creatively United Earth Week Festival.

Creatively United for the Planet is a two-day solution summit April 22-23, 2016 to celebrate local leadership in sustainability and resiliency. For the first time, Creatively United for the Planet is being hosted at the new Royal Bay High School in Colwood.

Creatively United offers an opportunity for post-secondary students to develop their leadership skills by creating and leading their own sustainability workshop(s) at the 5th Annual Creatively United Earth Week Festival, April 22-23, 2016. Participants will be given their own one-hour session(s) on the topic of their choice as it relates to sustainability. During this hour, workshop attendees will be encouraged to participate in an activity or discussion around sustainability. The use of art, music, visuals, white boards, etc. is encouraged.

Another option is to create an educational display or activity to be enjoyed by the public during the event vs leading a workshop.

Desired format for final project results:

A workshop, presentation or educational display/activity.

Other relevant information that could be shared with students:

- Videos of past Creatively United for the Planet festivals
- Information/ideas from previous Creatively United for the Planet events
- Invitations to attend Creatively United for the Planet planning meetings and receive guidance
- Information about Creatively United for the Planet's own green practices and initiatives, displaying "walk the walk"
- www.creativelyunited.org
- [http://www.mcf.gov.bc.ca/youth_engagement/pdf/et_resource_guide.pdf](http://www.mcf.gov.bc.ca/youth_engagement/pdf/yet_resource_guide.pdf)

Challenge:**Onsite Composting Analysis**

Organization Name: Greater Victoria Compost Education Centre
Municipality: Victoria / capital region
Website for organization: <http://compost.bc.ca/>

Prepare a report and presentation outlining options for onsite composting and food waste diversion for post-secondary institutions with recommendations for the best options based on waste stream volume, scale, ecological value and economic viability.

Universities and Colleges produce large volumes of food waste from cafeterias, lunch rooms and student residences. While some institutions have implemented successful food waste sorting and collection stations on campus, the general trend has been to have the food waste collected by a private company and hauled off-site to an industrial composting facility. The most ecological and long-term economical solution to diverting food waste from the landfill and capturing the valuable resource from organic waste, is to develop and implement an on-site composting, gasification or food digestion system. Many options exist on different spatial and economic scales so there is scope to research these technologies and recommend the best option based on school property size, student population and waste stream volume.

Desired format for final project results:

A report and PowerPoint Presentation outlining options for on-site composting and food waste diversion for Royal Roads/UVIC/Camosun College with recommendations for the best options based on waste stream volume, scale, ecological value and economic viability.

Other relevant information that could be shared with students:

The Compost Education Centre has a wide range of resources on composting technologies, compost and soil science and waste reduction tools. Your supervisor is a certified Compost Facility Operator and Soil Ecologist with many professional contacts in the commercial composting industry.

Challenge: Donor Behaviour Survey

Organization Name: Habitat for Humanity
Municipality: Victoria / Langford
Website for organization: <http://www.habitatvictoria.com/>

To increase diversion of reusable materials from the landfill, survey and analyze the ReStore's donor behaviour and make recommendations for improvement.

Habitat for Humanity Victoria is a local charity mobilizing volunteers and community partners to build affordable housing and promote homeownership as a means to breaking the cycle of poverty. Habitat Victoria builds safe, decent, affordable homes and sells them to selected families who need a 'hand up' to qualify for a mortgage.

The more donors we have the more material we can divert away from landfill to be re-used and recycled. Diversion of waste from the landfill builds resiliency and reduces the impacts from waste on climate change.

The two ReStores, in Langford and Victoria support Habitat's vision by providing funds to the charity and its building activity through the sale of new and gently used building supplies, furniture, appliances and much more. Everything we sell is donated by businesses and the public. We actively divert other peoples' waste away from landfill for re-use and recycling and we provide a source of affordable products to lower income families for their homes. Together, operating with a small staff and a significant volunteer base our positive impact spans individual families, local communities, businesses in Victoria and the wider environment.

One of the most valuable assets for any not for profit organization is its donors. It is far more costly to continually recruit new donors than it is to retain existing ones. Repeat donors tend to get more involved in an organizations work, become community ambassadors who recruit others and potentially volunteer directly within the organization. In order to retain donors we need to understand them better. We do this by establishing what our retention rate is and how we can better serve our donors, to make sure they come back to us again and again.

Your challenge is to:

- establish what our residential donor retention rate is.
- determine our geographic donor base i.e. how far are people currently willing to travel to donate to us for each of our two stores. This is particularly relevant for the Victoria store which has only been open since August 2015.
- design and complete a survey that will tell us what our donor experience is like during collections and at the back door for drop off donations and find out if there are areas where we can improve to try and turn one time donors into repeat donors.
- determine how the donor heard of us, are they responding to word of mouth, advertising or another source like a building contractor. To understand why people donate to us and what feedback they want to receive from us about how their donations help our organisation i.e. what makes them feel valued so they are happy with their experience and will donate again.

Desired format for final project results:

To complete a report with statistical analysis and interpretation of the results gained from:

- face to face back door surveys at each store of drop off customers
- phone survey of pick up customers after service has been completed
- desktop analysis of current vs historical data on collections kept by the organisation

Outcomes of the report should be presented in summary to the Habitat/Restore Team.

Other relevant information that could be shared with students:

Contacts to support this project will be the ReStore Manager and the ReStore Procurement Officer.

Historical and current collection data will be provided for the desktop analysis along with support to design the surveys.

Challenge: **Effects of Climate Change of Migratory Birds Display Materials**

Organization Name: Rocky Point Bird Observatory
Municipality: Victoria
Website for organization: <http://www.rpbo.org/>

Research and develop education resources for an outreach table display that showcase the effects of climate change on migratory birds and actions residents can take to assist these birds.

Your challenge is to research and develop education resources for an outreach table display that showcase the effects of climate change on migratory birds and actions residents can take to assist these birds.

Rocky Point Bird Observatory seeks to influence and inform conservation and ecological management practices of migratory birds in western North America through monitoring, scientific research and public education.

RPBO is currently expanding their public education offerings. Starting with a Grade 7 fall field trip program on the topics of migrating songbirds and ecological monitoring, we are now developing programs to suit Grades 1 – 7, as well as developing programs that can be done on school grounds, to eliminate the transportation costs associated with a field trip at a remote location.

It is the intention of RPBO to create versatile educational resources that can be used in a variety of educational settings (classrooms, community events, etc.), and materials that deal specifically with local species that CRD residents may find in their own backyards. Climate change affects many bird species that migrate through southern Vancouver Island every year. Many of the bird species that migrate through southern Vancouver Island have summer breeding ranges in the Arctic or boreal forests, making them extremely vulnerable to climate change. As ranges shift and contract in response to climate change, many bird species are put under increasing pressures. Luckily, there are many actions on an individual's level that can be done to support our birds.

We wish to partner with students who have an interest in species conservation and environmental outreach to help us create materials for an educational event table illustrating how birds migrating through southern Vancouver Island are affected by climate change, and the simple actions community members can make to assist these birds (for example, reducing pesticide use, or fitting your cat with a bell to wear outside to prevent them from catching birds).

Ideas to consider:

- How can we create eye-catching material catered to a wide audience – pictures, maps, etc.?
- What are some recognizable local bird species that could be negatively affected by climate change?
- How can we make our material suitable for all ages? Are there props or activity sheets we can use?

Desired format for final project results:

- Brochure outlining how climate change affects migrating birds, and the actions residents can take to support avian species conservation (data file required)
- Poster board that can be set up at an event table
- Excel sheet outlining budget for any props that would need to be purchased
- 1 – 2 page report outlining table setup and background information needed for staff manning table

Other relevant information that could be shared with students:

- Old progress reports from previous education programs
- List of biological specimens and props owned by RPBO
- List of relevant links to useful background information
- Pictures

Challenge:**Residential Actions Impacts of Salish Sea Video**

Organization Name: Shaw Ocean Discovery Centre
Municipality: Sidney
Website for organization: www.oceandiscovery.ca

Produce an outreach video demonstrating how our actions on land affect the biodiversity of the Salish Sea.

The Shaw Ocean Discovery Centre (SODC) requires a visual and dynamic presentation demonstrating how everyday actions can affect the health of the Salish Sea watershed. Inspired by our updated mission statement, “to create experiences that engage people to learn about, explore and conserve the Salish Sea Bioregion – its wildlife, waters, land, culture, and people” and the idea everyone can make a difference, the presentation should highlight lifestyle changes (actions) in the home, work, and community that promote water conservation, energy efficiency and waste reduction and their relevance to the health of the biodiversity of the Salish Sea.

This video will be shared in educational programming, during outreach events, on social media and our website.

Desired format for final project results:

Format requested is a short—3-5 min—video demonstrating the connection between residential buildings and the surrounding watershed; coverage to include citizens demonstrating healthy (and/or unhealthy) actions, imagery of watershed components—rivers, streams creeks, forest/green spaces, ocean—and watershed species, along with take action initiatives or challenges. The video can include still images mixed with moving video clips and could be set to a compilation of music, nature sounds, verbal communication and written text overlaid on images.

Other relevant information that could be shared with students:

- Still photos of Salish Sea species
- Access to aquarium for filming of habitats—eelgrass, kelp forests, etc.
- Information/ideas from our previous CRD partnered “Our Ocean is Our Home” exhibit
- Suggested list of local locations for taking photos and video of storm drains, creeks and other watershed components
- Information about the SODC’s own green practices and initiatives, displaying “walk the walk” (may be incorporated into video)

Challenge

Including Indigenous Themes into the Nature House

Organization Name: World Fisheries Trust
Municipality: Esquimalt
Website for organization: www.worldfish.org

Through consultation with neighbouring First Nations, explore how to incorporate indigenous themes and Traditional Knowledge into Nature House displays and education programs.

In 2008, WFT, in partnership with the town of Esquimalt and other local NGOs, opened the Gorge Waterway Nature House, a local community hub of marine and environmental education. Its aim has been to educate the public and key stakeholders about environmental issues and stewardship, using protection of the Gorge, its ecosystems, and urban environments as the focal point. The Nature House has attracted thousands of visitors since its opening, and was renovated in 2012 to incorporate a touch tank of live, local marine animals, a 3-D interactive model of the surrounding watershed, and various activities and displays providing hands-on learning experience about local terrestrial and aquatic ecosystems. Formal school programs are run out of the Nature House on demand, while it is open to the public during much of the week during the summer, and generally on weekends during the fall and winter.

While WFT has been successful in increasing traffic through the Nature House over the years and developing an array of educational programs, we are now looking to further develop the profile and capacity of the Nature House. As a first step, we wish to partner with students who have an interest in public outreach and education, environmental conservation, and indigenous engagement to further incorporate indigenous themes and Traditional Knowledge into Nature House displays and education programs. WFT intends to implement accepted suggestions from the development plan in 2016.

The Plan should include:

- proposals to incorporate indigenous themes and traditional knowledge into the Nature House space and educational programs through consultation with the Songhees and Esquimalt Nations;
- budgets associated with the above aims.

The work would be done in conjunction with WFT staff and volunteers to provide necessary networking, history, and resources as needed.

Desired format for final project results:

A formal report and presentation.

Other relevant information that could be shared with students:

Background on World Fisheries Trust and the Gorge Watershed: World Fisheries Trust (WFT) is a non-profit organization, established in 1995 and based in Victoria, dedicated to the equitable and sustainable use and conservation of aquatic biodiversity in Canada and internationally. Locally, WFT offers an integrated selection of educational outreach programs, including Seaquaria in Schools, in-school and field programs, the Gorge Waterway Nature House and an Eco Learning Hive that connects local educators with environmental-based learning opportunities.

The Gorge Waterway, known as 'The Gorge', is an urban marine waterway connecting Victoria Harbour to Portage Inlet. A number of urban streams make up the watershed, including the Colquitz Creek. The Gorge has a rich cultural history as an important spiritual place and food-gathering area for First Nations, a recreational hotspot for colonial residents from the early to mid 1900s, an open sewer for a period of time, and again as a recreational hotspot in recent years.

Biologically, it is home to a wide variety of marine and avian wildlife and plants, including endangered native oysters, local stocks of Coho salmon, sea—run cutthroat trout, a distinct herring stock, and a variety of invasive species.

WFT, and a network of other non-profits and community stewards, are working hard to monitor the Gorge ecosystem and offer educational outreach programs to raise awareness on the importance of environmental conservation. Many of those educational programs take place in the Gorge Waterway Nature House, readily accessible to the local urban residents – even those with limited resources. This Challenge thus has considerable potential to make a significant impact on both cultural and environmental stewardship of people – specifically how to live positively with nature and our neighbours.

Additional resources provided:

- records of correspondence with members of the Songhees and Esquimalt Nations who have expressed interest in Nature House programming and development
- Nature House Progress and summary reports from 2010 – 2014
- Nature House Business Plans from 2010 – 2014
- select financial records for the Nature House