

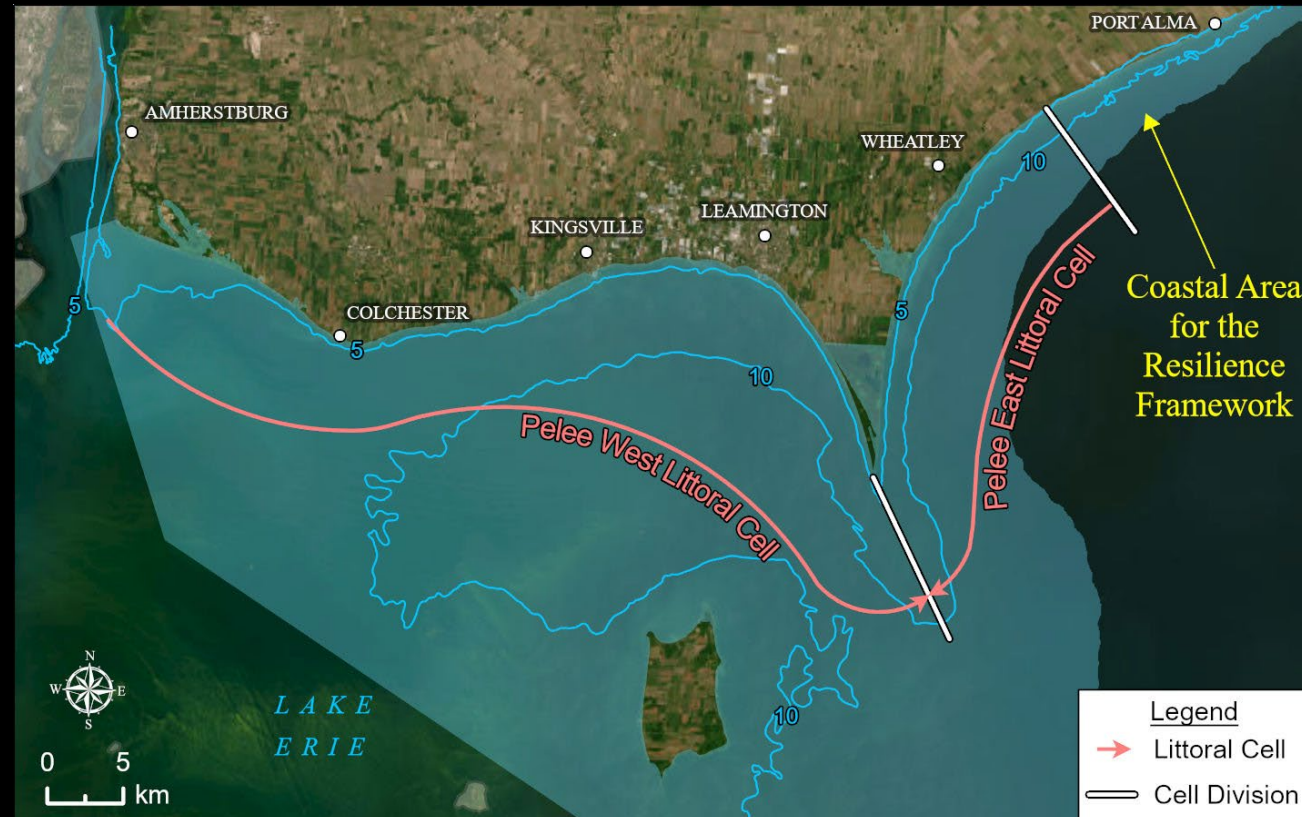


Development of a Coastal Resilience Framework & Pelee Coastal Resilience Committee

Pete Zuzek, Linda Mortsch, Larry Hildebrand
March 22, 2024

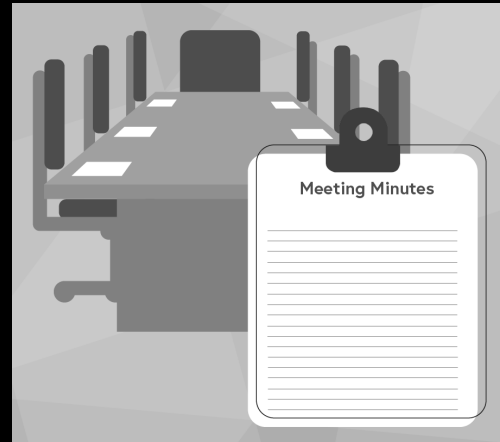


I – WELCOME AND INTRODUCTIONS





II – REVIEW OF MINUTES FROM JANUARY 26, 2024



Pelee Coastal Resilience Committee Meeting 4 Notes

Friday January 26, 2024: 10:00 am - 12:00 pm on Teams

Attendees:

Consulting Team

- Pete Zuzek, Zuzek Inc. (PZ)
- Linda Mortsch, University of Waterloo (LM)
- James Knott, LURA (JK)
- Susan Hall, LURA (SH)

Leamington

- Rob Sharon (RS)
- Bill Fuerth (BF)

Lower Thames Valley CA

- Mark Peacock (MP)

Essex Region CA

- James Bryant (JB)
- Jenny Gharib (JG)

Fisheries and Oceans Canada

- Emily Champagne (EC)
- Cynthia Mitton-Wilkie (CM)

County of Essex

- Rebecca Belanger (RB)

Absent:

Fisheries and Oceans Canada

- Yamin Janjua

Ontario Greenhouse Vegetable Growers

- Aaron Coristine

Parks Canada

- Martha Allen

Environment and Climate Change Canada

- Laud Matos

Caldwell First Nation

- Susan Sullivan (SS)

Municipality of Chatham-Kent

- David McBeth (DMc) on behalf of Edward Soldo

Pelee Citizens Advisory Committee

- Charbel Saad (CS)

Leamington and District Chamber of Commerce

- Diane Malenfant (DM)

Leamington Landowners Association:

- Wayne King

Town of Essex

- Ryan Brown (RBr) on behalf of Kevin Girard

Parks Canada

- Scott Parker (SP)
- Tammy Dobbie (TD)
- Julie Charlton (JC)
- Rachel Windsor (RW)

Environment and Climate Change Canada

- Jody McKenna (JM)
- Greg Mayne (GM)

Wheatley Harbour Authority

- Mario Figliomeni
- Bobby Cabral

Presteve Foods Ltd.:

- Vald DeMelo

Meeting Purpose:

- Present an overview of the NRCan application.
- Discuss the baseline assessment and brainstorm coastal vulnerabilities and threats.
- Discuss what the group needs to best function moving forward.

Overview of the NRCan Application

Pete Zuzek provided an overview of the application for committee members, including key details of the work plan and budget. Committee members were given the opportunity to ask questions, summarized below.

Questions regarding the NRCan application were as follows:

- WK – Is the \$290,000 in the application for actual coastal resilience projects?
- PZ – The funds are to implement projects (e.g., buying native plants or hiring a contractor). The committee will determine how funds are allocated based on what they believe to be the best options for coastal resiliency.

Overview of Elements of a Baseline Assessment

Pete Zuzek and Linda Mortsch reviewed the baseline assessment process and considerations for undertaking it. Prior to a group discussion on considerations, committee members were given the opportunity to share comments and/or ask questions, summarized below.

Comments/questions regarding the Baseline Assessment process were as follows:

- GM – When you spoke about the baseline, it seemed like a hazard exercise; now, I see it goes beyond. The [Canadian Great Lakes Baseline Coastal Habitat Survey](#) has information for Lake Erie specifically. All the information is spatial and used to identify habitat conservation. This is an integrated approach that includes the ecological values and best information. The CAs could augment the information. The two (nearshore and coastal) should come together.
- PZ – Great points. If funded, we will leverage that resource.
- LM – One of the key parts of the framework is to look at physical, ecological, social and economic factors. For example, is there value in including an understanding of the location of vulnerable populations? We need to think beyond the ecological baseline. Part of the challenge is to look at those groups not normally included in planning processes and consider an equity, diversity and inclusion lens in the solutions.
- JM – Through the [Canadian Great Lakes Nearshore Assessment](#), ECCC looked at the zone of influence and the zone of impact. We should consider a broader scope when considering the zones to capture the coast's social and economic aspects and uses.
- GM – There was a Quality Committee (IERQC) Monthly Webinar Series on January 25, 2024 – Cultural Ecosystem Services: A Case Study in the St. Louis Estuary that provides some valuable information from Minnesota, the St. Louis Estuary, and the social values of the estuary and how it was assessed. Link: <https://www.ser.org/events/eventdetails.aspx?id=1818040>
- Also an example of mapping ecosystem services indicators for Great Lakes Areas of Concern (AOCs): <https://www.sciencedirect.com/science/article/abs/pii/S038013301630034X>

Baseline Assessment Considerations

Through a roundtable discussion, committee members were asked to identify social, economic, ecological, and physical considerations for a baseline assessment. Discussion is summarized as follows:

- GM – We funded the Ausable Bayfield Conservation Authority to do a social value of their beaches a few years ago. We can borrow from cases in terms of inventorying, assessing, and working with local groups (*contact Pete if you would like a copy; pzuzek@zuzekinc.com*).
- WK – Certainly, in our community, there is anxiety about what has transpired over the last 50 years and the economic impacts of protecting residents from lake impacts, which is hard to measure. Approximately 20-30 homes have been completely lost. Every time there is a wind event, everyone worries about the impacts on their properties.
- CS – I agree there has been anxiety within the community. The effects and consequences for people living around the area are important to consider.
- WK – Many people formerly used Hillman Marsh and now do not.
 - LM – Is this framed as a high-water level issue? To be truly resilient, we also need to consider low water levels.
 - WK – We just experienced a low water event that impacted Hillman Marsh and the wildlife it supports.
- WK – There has not been much action taken over the years, so community skepticism exists.
- SS – For Caldwell First Nation, some interest might be in looking at traditional shoreline uses. We are building houses at Caldwell that bring new community members. We do not know who will be out hunting, fishing or gathering, but we are excited to see the traditional activities continue and expand. There are new opportunities for youth and children to participate and increase the activity level.
- SS – There is a lot of sensitivity within Caldwell First Nation with respect to being studied. There will be sensitivity to data collection and analysis. We are looking at data sovereignty internally and will need to work with leadership to resolve those aspects of our projects.
- JC – The Park has approximately 500,000 visitors annually, and the beach and picnic areas are a big draw. Their use of the beaches has impacts, while the economy has positive benefits.
- JC – Archeological resources are also valuable for the Park and should be considered. East Beach is mostly inaccessible now. We are already losing out on areas that are special to our visitors.
- TD – The University of Windsor has worked with Parks Canada to offer a "Coastie" program (<https://coastiecanada.ca>) to document changes on the shoreline. People can take a photo at a specific location that transfers the data to support citizen science. People are very interested, and there has been a lot of participation in the Park.
- TD – The University of Windsor is also doing several inventory studies (breach at Point Pelee, looking at inventory of hardened structures, etc.). They are interested in participating in the process through the [Coastal Research Group](#) (Chris Houser). Chris is interested in being part of the committee.
- DM – Certainly, there are impacts on the businesses on the coastline, but the fulsome tourism industry is also impacted. As there are more impacts on the coasts, there are more impacts on the people who want to visit our region. There are also social impacts for permanent residents if there are fewer tourists and businesses close, regarding what offerings are available for locals.
- MP – There are several properties zoned and designated for development that we will not allow to develop. They are losing the value of the development and the property tax implications of being zoned as such. If we talk about retreat, we must discuss the reduction in developability and tax implications. A number of the developers have looked to offer the properties to others, but that has not been resolved.

- WK – I always get inquiries about lifting what callers call building bans (permits being denied for new development).
- BF – The measure we use in determining if a permit is being denied for new development in the floodplain at a depth of 0.5m or greater. If the depth of flooding reaches this level, then there is no safe ingress or egress. ERCA will ask about ingress and egress when a permit is requested. This is truly an economic impact. I do not know if any form of coastal resilience will address that problem when lake levels are rising.
 - WK – Are the current bans based on the most recent floodplain/flood hazard mapping? And are those maps available publicly?
 - BF – There are a variety of reports that can shed light on the areas that are at risk. The [South Leamington Graduated Risk Flood Plain Mapping Project](#) is available on Leamington's webpage.
- BF – There are economic impacts to ratepayers; as the flood waters come up we need to update and maintain the infrastructure needed. This is the largest dollar value for the municipality.
- SS – We are looking at conservation finance to create a sound business case and competitive plan to incentivize conservation over development. I wonder if there is a path forward that sees an economic benefit to those landowners and ecological gains for parcels. This would create financing support for the landholder and create a double win. We are exploring the creation of an impact bond ([Deshkan Ziibi Conservation Impact Bond](#)). The conservation impact bond is complex and new but a promising approach. There is also some research from the University of Guelph that we can share.
- JM – There is a [Task Force on Flood Insurance and Relocation](#) by Public Safety Canada, looking at relocation services for vulnerable/impacted people by flooding. A [survey](#) is underway where participants are invited to share experiences about recent flooding to inform a new national digital resource.
- TD – Parks Canada and other working groups are discussing best practices on connectivity, and we are looking at values of how to support ecological connectivity. Connectivity as a process should be considered.
- GM – [The Adapting to Climate Change Solutions to Enhance Great Lakes coastal wetland resilience](#) white paper is another good resource.
- GM – The baseline habitat survey was completed based on coastal units. This would be another beneficial resource.

Overview of Aspects of the Vulnerability and Risk Assessment

Pete Zuzek and Linda Mortsch provided an overview of what a vulnerability and risk assessment is. Committee members were asked to identify any further considerations, identified below.

Vulnerability and Risk Assessment Considerations

- JB – We partnered with the County of Essex to conduct a risk and vulnerability assessment at a high level. MNR also did some work on social and economic benefits from 2014, and I can share this document.
- EC – On the vulnerability side, DFO is creating a framework for identifying priority fish habitat restoration, noting coastal wetlands and the lower tributaries going into Lake Erie. If we can find points of alignment, that would be great.

- TD – Part of the problem is we do not know vulnerability for some sensitive species. We have threat information, and habitat fragmentation impacts are a key part of the recovery strategy. We do not have details on the vulnerability and best course of action for species such as Eastern Fox Snake or Blanding Turtle. There are studies needed to ensure there are quantitative data to support the best course of action needed.
- SP – The following link has several resources: <https://www.greatlakescoastalassembly.org/resources.html>, including the LimnoTech 2023. [Great Lakes Coastal Wetland Framework. Synthesis of Relevant Studies and Assessment of Lake Erie Current Conditions and Trend](#)
- JC – We have a proposal for a climate change vulnerability assessment done for the Park to support the identification of assets that require investment. I believe the findings will be useful for this discussion.

Reflections on the Pelee Coastal Resilience Committee to Date

The group was asked to reflect on the first four meetings and identify possible areas for improvement moving forward, summarized below.

- PZ – Membership may need to be expanded to include a more fulsome EDI lens. Suggestion today that the University of Windsor Coastal Research Group be included.
- JM – Our approach needs the flexibility to engage with different members who have been unable to attend our meeting times (i.e., commercial fishers). Investigate the best formats for engagement, whether it is through online or in-person approaches.
- DM – Subcommittees might be worth considering that bring together experts in each of the areas (particularly when needing insights and input to impacts on social, economic, ecological, and physical aspects).
- JM – When we meet as one group it allows diverse perspectives to come together and understand each other.
- PZ – In the submission, we speak to hosting a combination of these committee meetings and alternative formats for additional perspectives to be shared and integrated.
- WK – We need a mechanism to communicate with the community. The community does not know this group exists. It would be great to have the support of the community.
 - PZ – The Zuzek Inc website is publicly available if there are interested community members you want to share it with. We envision a more public-friendly web presence when we become a formal committee.
- DM – If the submission is successful, we should create a media event to launch the committee formally. For the website, you can have a public page, then a link to Zuzek Inc information that is more detailed. All committee members could include the link to the Pelee Resilience Committee on their respective websites.
- TD – Carolinian Canada recently had a graphic facilitator attend and summarize the meeting. The visual summary was a great format to convey information that reaches audiences in a more accessible way.
- PZ – We are considering if we need a brand identity as well.
- GM – See this link for an example of communication of the overall project. There is also a video [Hillman Marsh Restoration Plan | ERCA \(essexregionconservation.ca\)](#)

- JG – Include an online feedback form or space for comments by the community or for sharing their stories.

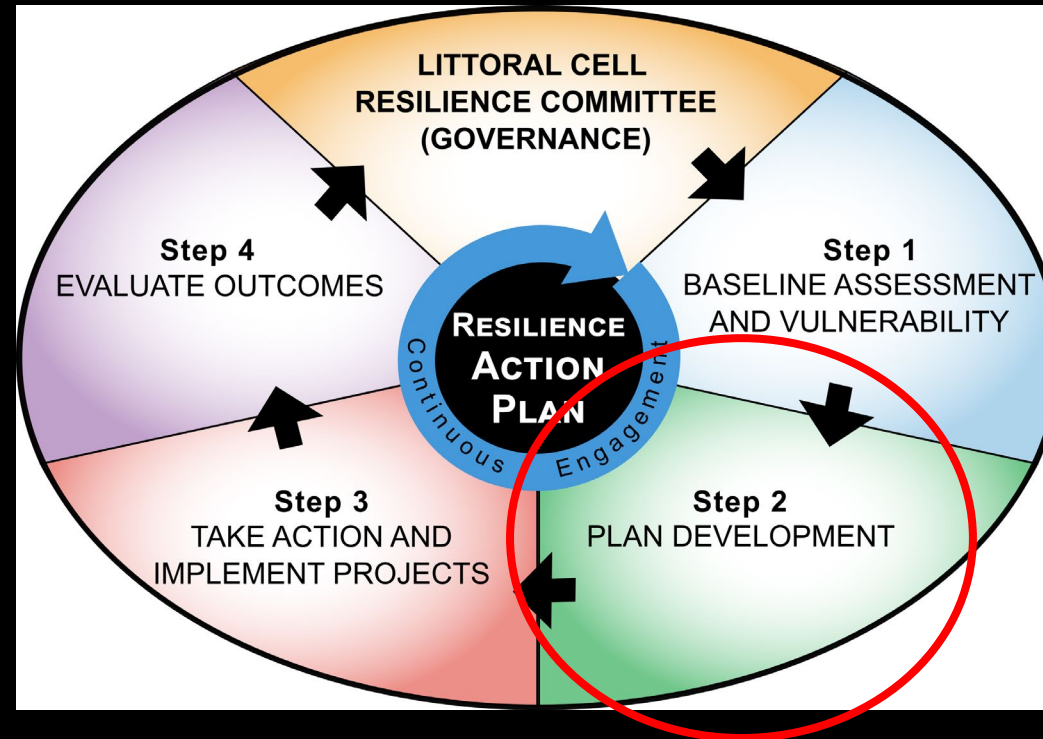
Future Meeting Dates

- February 23, 2024, 10am-12pm via Teams

Meeting adjourned at 12pm.



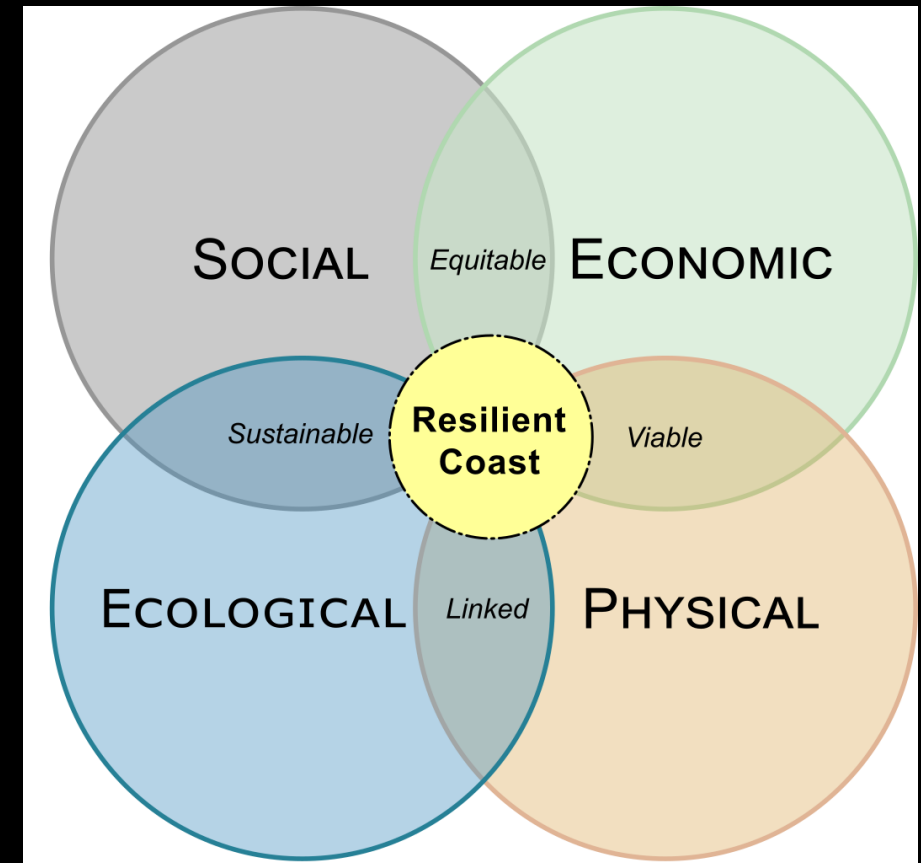
III – DEVELOPING ACTIONS / ADAPTATIONS TO INCREASE COASTAL RESILIENCE





Consider all Aspects of the Integrated Coastal System

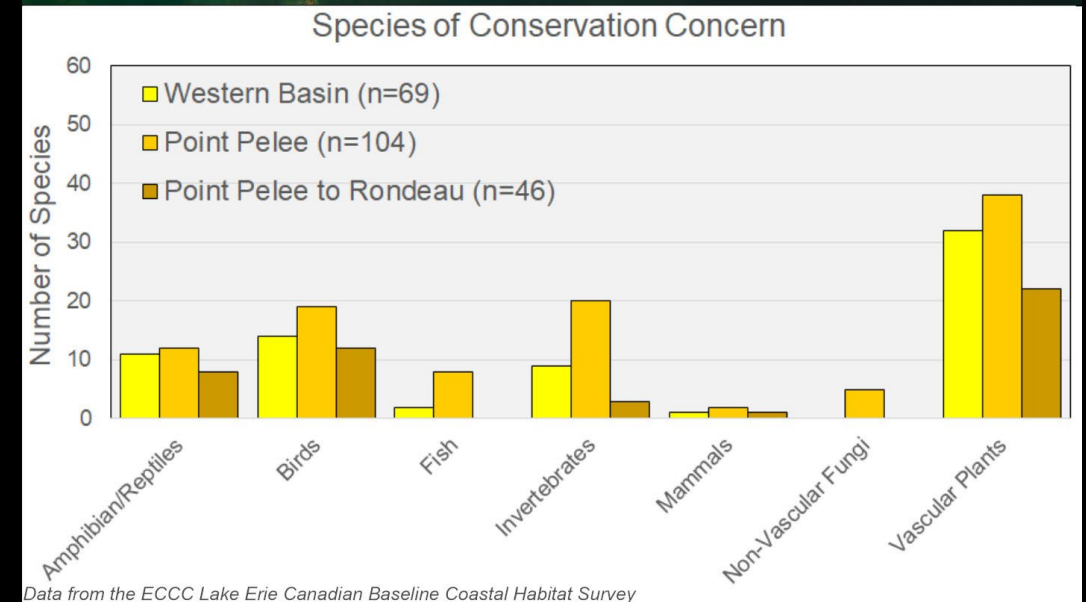
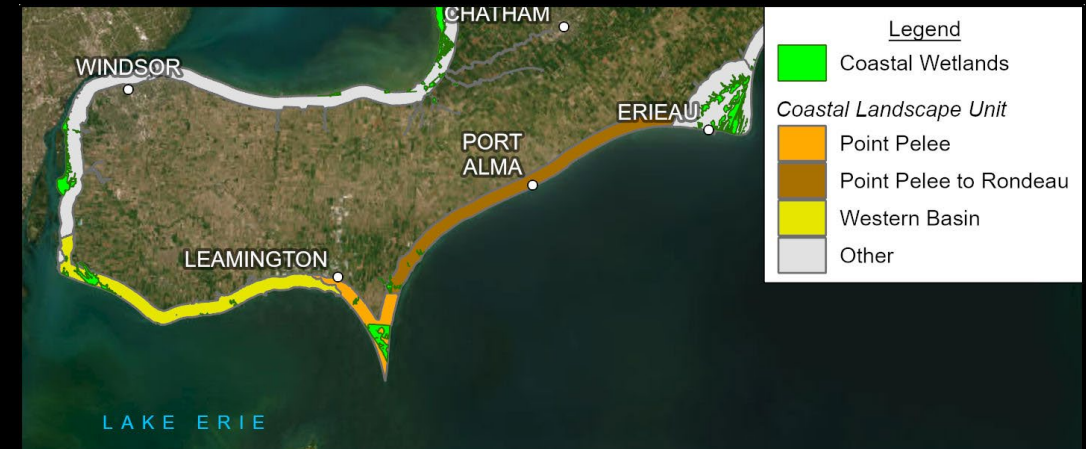
- Social: values, usage, property, solace
- Economic: coastal economy, vulnerable infrastructure, equity
- Ecological: goods and services provided by nature, habitat, endangered species, migratory flyways
- Physical: natural shoreline processes





Actions and Adaptations to Increase Coastal Resilience

- Will be informed by the baseline assessment and vulnerability
- Scale of projects could vary:
 - Structure-specific (floodproofing)
 - Community to regional scale
 - Large complex transformative adaptations





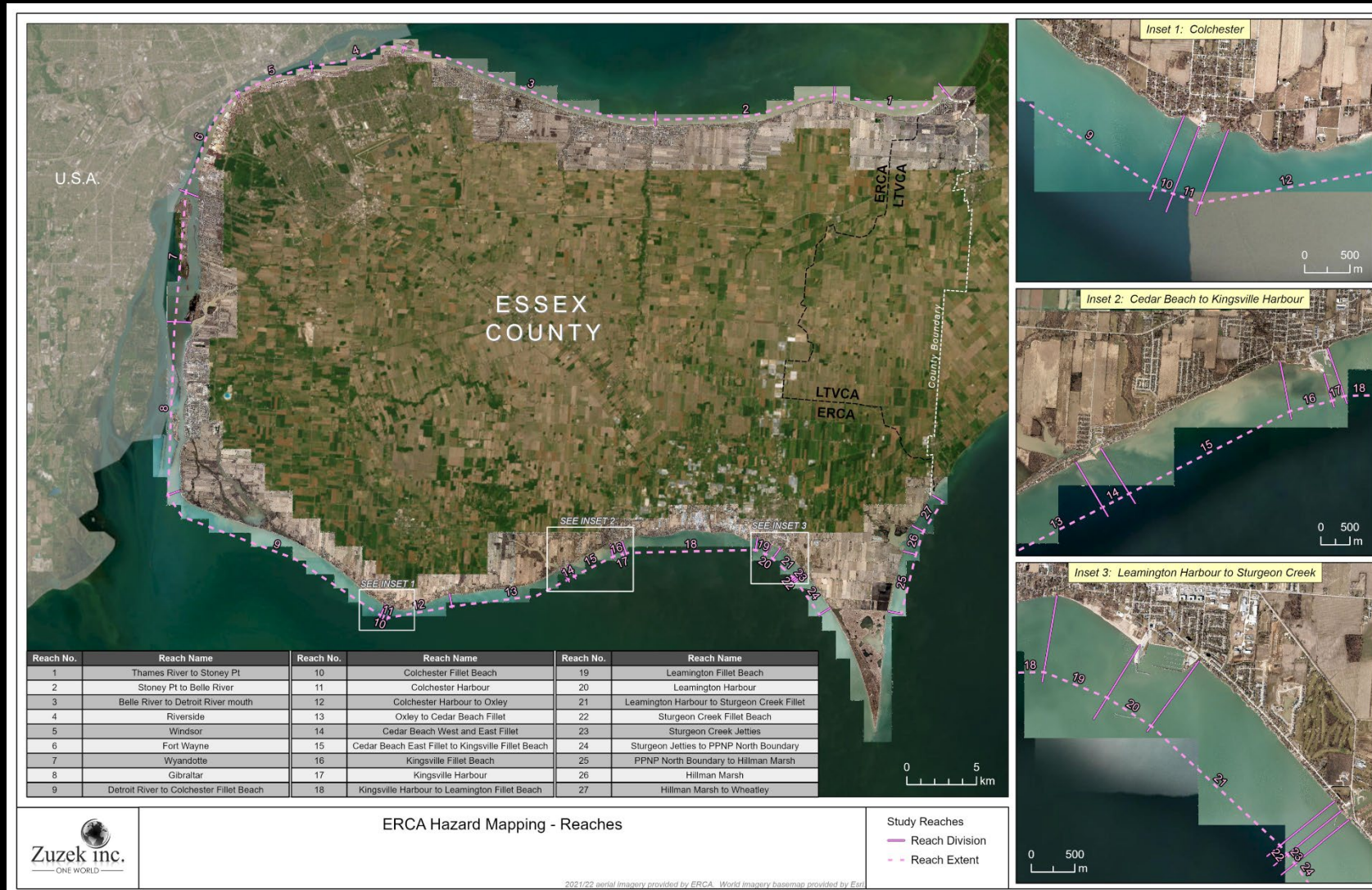
Solutions Must Be Co-development

- Co-develop solutions with the Committee, communities/stakeholders/landowners (all-of-society). By everyone, for everyone
- In a fully funded project, Step 2 could include:
 - Workshops to brainstorm ideas and develop early concepts
 - Progress the most promising ideas to preliminary design to further evaluate (benefits, costs, feasibility, permitting, etc.)
 - Then advance the preferred alternative(s) to implementation, which could range from policy changes to construction projects
- Some examples of adaptations from our NRCan submission are shared





Review of Land Use Zoning, Bylaws, and Regulations





SHORELINE HAZARD MAP

County of Essex and Essex Region Conservation Authority

LEGEND:

Hazard Mapping:

- 100-year Flood Level (Historical)
- Light Blue Flood Hazard Limit (Historical)
- Dark Blue Flood Hazard Limit (Mid-Century RCP4.5)

DEFINITIONS:

100-Year Flood Level
The 100-Year Flood Level considers both static lake level and storm surge, having a combined probability of being equaled or exceeded during any year of 1% (i.e., probability, $P=0.01$).

Flood Hazard Limit
The Flood Hazard Limit is defined as the 100-Year Flood Level plus an allowance for wave runup and uprush. Refer to the FHIMP Report for additional details.

Stable Slope Allowance
The Stable Slope Allowance is defined as a horizontal setback equivalent to 3 times the height of the bank or bluff. Local studies may be required by the Conservation Authority to verify site specific conditions.

Erosion Hazard Limit
The landward extent of the Erosion Hazard is the sum of the 100-year erosion rate plus the Stable Slope Allowance, measured horizontally from the toe of the bank, bluff, or shore protection.

Dynamic Beach Hazard Limit
The Dynamic Beach Hazard Limit is defined as the sum of the Flood Hazard plus 30 metres measured horizontally. The offshore limit accounts for the movement of sand in the shallow nearshore zone. Local conditions may require a modified mapping approach if the beach is eroding or a barrier beach. Refer to the FHIMP Report for additional details.

INTERPRETATION OF THE HAZARD MAPS:

The hazard maps were prepared to support the Flood Hazard Identification and Mapping Program. The hazard limits are not the official regulatory limits of the Conservation Authority. Please contact the Conservation Authority for additional details on the regulatory limit and implications for new development.

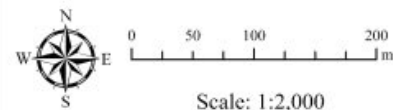
Datums:

Horizontal: UTM 17N NAD1983, metres.
Vertical: IGLD85, metres

Datum Conversion:

IGLD1985 - CGVD28 = -0.01 m (average)
IGLD85 and CGVD28 can be considered equal for the project study area.
IGLD1985 - CGVD2013 = 0.47 m (average)
To convert from IGLD85 to CGVD2013, subtract 0.47 m.

Note: There may be local variations along the reaches within Essex Region. Refer to the FHIMP Report for additional details.



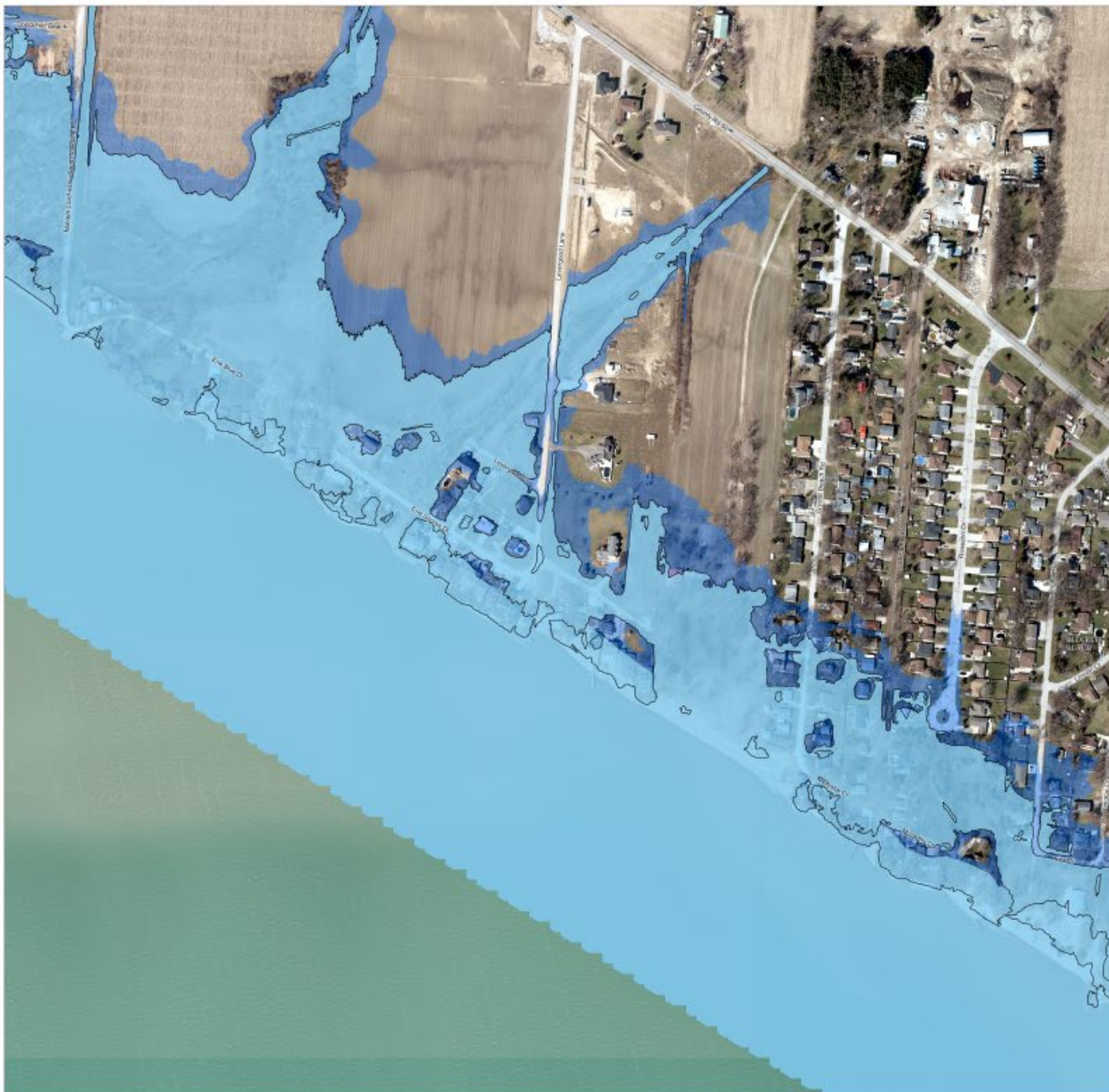
DATA SOURCES:

- 2022 Orthophotography provided by ERCA (from County of Essex).
- 2021 Orthophotography at Windsor obtained from County of Essex Web Services.
- 2017 LIDAR Digital Terrain Model provided by ERCA and referenced to CGVD2878 vertical datum.
- Road network obtained from County of Essex Open Data (opendata.countyofessex.ca).
- Geographical Names data obtained from Natural Resources Canada. Contains information licensed under the Open Government Licence - Canada.
- Inset Map: © OpenStreetMap contributors

Every reasonable effort has been made to ensure the accuracy of this map. However, neither the County of Essex, Essex Conservation, Zuzek Inc., SJL Engineering Inc., or any other affiliated party assume any liability arising from its use. This map is provided without warranty of any kind, either expressed or implied.



PREPARED BY:



This map was prepared by Zuzek Inc. and SJL Engineering Inc. and was published February 2024. The mapping of hazardous lands, including erosion, flooding, and dynamic beach areas, is subject to change. The proponent of a proposed development on or adjacent to the hazardous lands should contact Essex Region Conservation Authority to discuss permit requirements.





Wild Rice Restoration Pilot Project with Caldwell FN

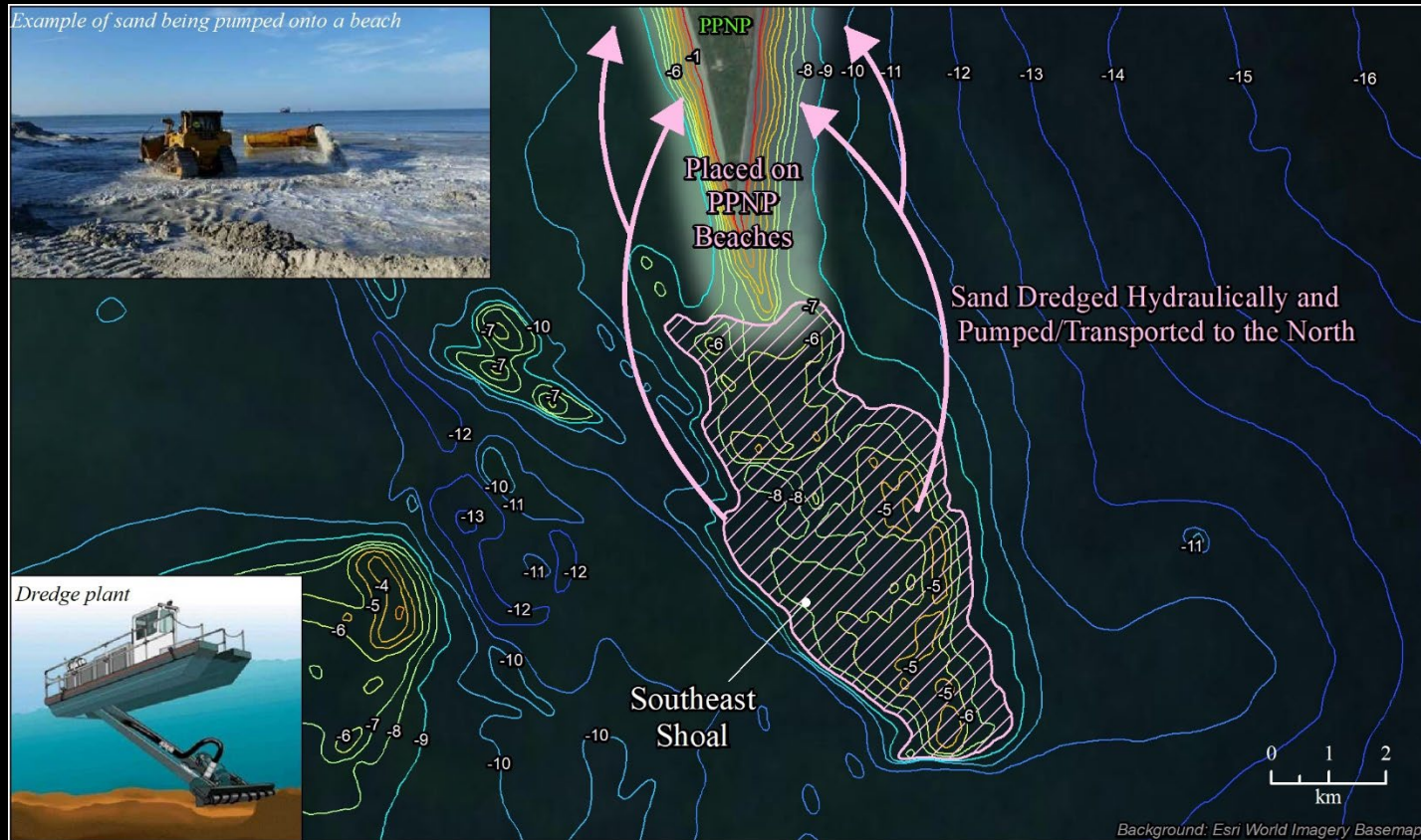
- Shallow water, minimal currents, and limited wave exposure





Sediment Backpassing from the Southeast Shoal

- 120 to 150 million m³ of sand in the Southeast Shoal
- Enough to fill the Rogers Centre 75 to 90 times





Explore Innovative Dredging Technology to Increase Resilience of Beaches





Actions and Adaptations to Increase Coastal Resilience

- Role of the Committee:
 - What role would the Committee play in identifying issues?
 - How would priorities be established (geographic and thematic)?
 - How will the Committee choose between projects if a consensus isn't reached?
 - Other potential challenges?



IV – PATH FORWARD WITH THE COMMITTEE





Options

- NRCan Application is Successful
 - Confirm membership and add additional parties, as required
 - Establish quarterly meeting schedule (in-person)
 - Review and revise the Terms of Reference, as required

- NRCan Application is Not Successful
 - Committee continues to work together and pursue other funding sources?
 - The partners agree to provide the \$390k in matching cash which supported the application and use it to initiate the project and look for additional sources of funding?
 - Other thoughts?



V – NEXT STEPS





MEETING ADJOURNED

