Coastal Protection Act

Update on Regulations

PRESENTATION FOR: ASSOCIATION OF NOVA SCOTIA LAND SURVEYORS

JUNE 2ND, 2022

NOVA SCOTIA ENVIRONMENT AND CLIMATE CHANGE

For discussion only. All proposed provisions subject to change.

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Update on Regulations

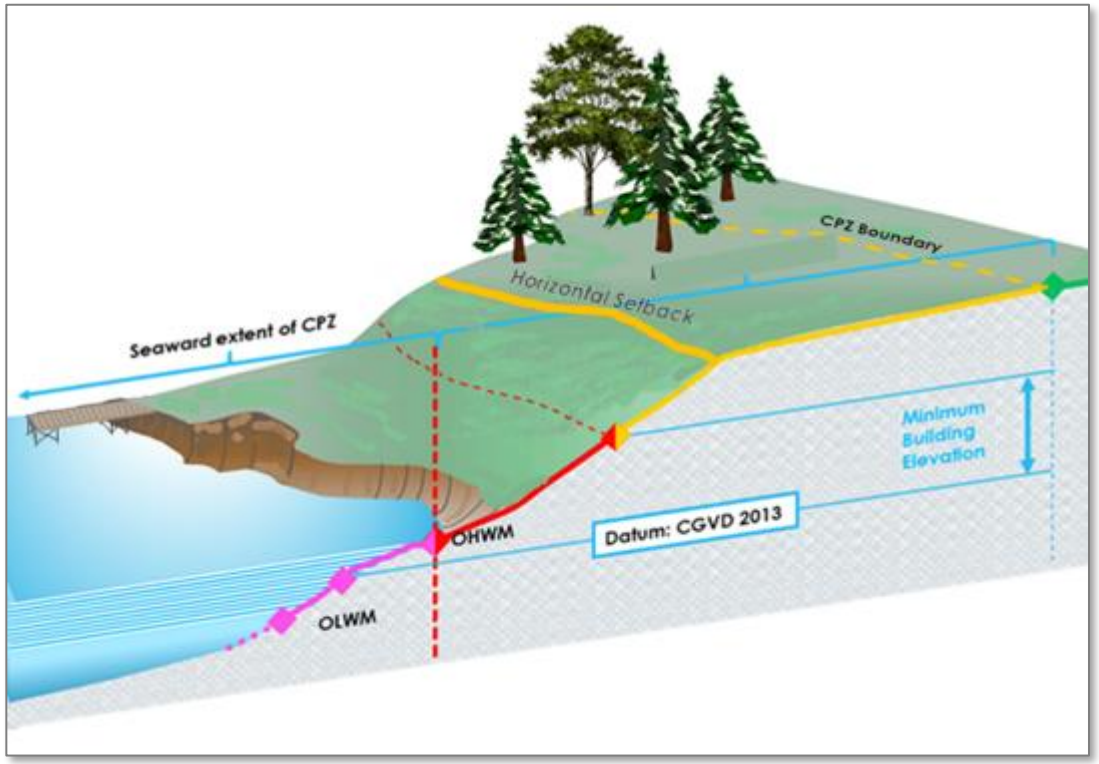
What we'll cover today:

- Introduction
- Stakeholder Engagement Recap
- Update on regulations:
  - Proposed high-water reference line
  - Improvements to the Coastal Erosion Risk Factor Assessment (CERFA) tool
  - Role of the designated professional
  - Proposed training model for designated professionals
- Discussion

Introduction

Bill 106 - The Coastal Protection Act

- The Coastal Protection Act was passed in 2019 to prevent or restrict development and related activity in places where it will:
  - Damage sensitive coastal ecosystems.
  - Put property at risk from coastal flooding and erosion.
- The Act will come into effect once regulations are approved.
- Expected to take effect in 2023.



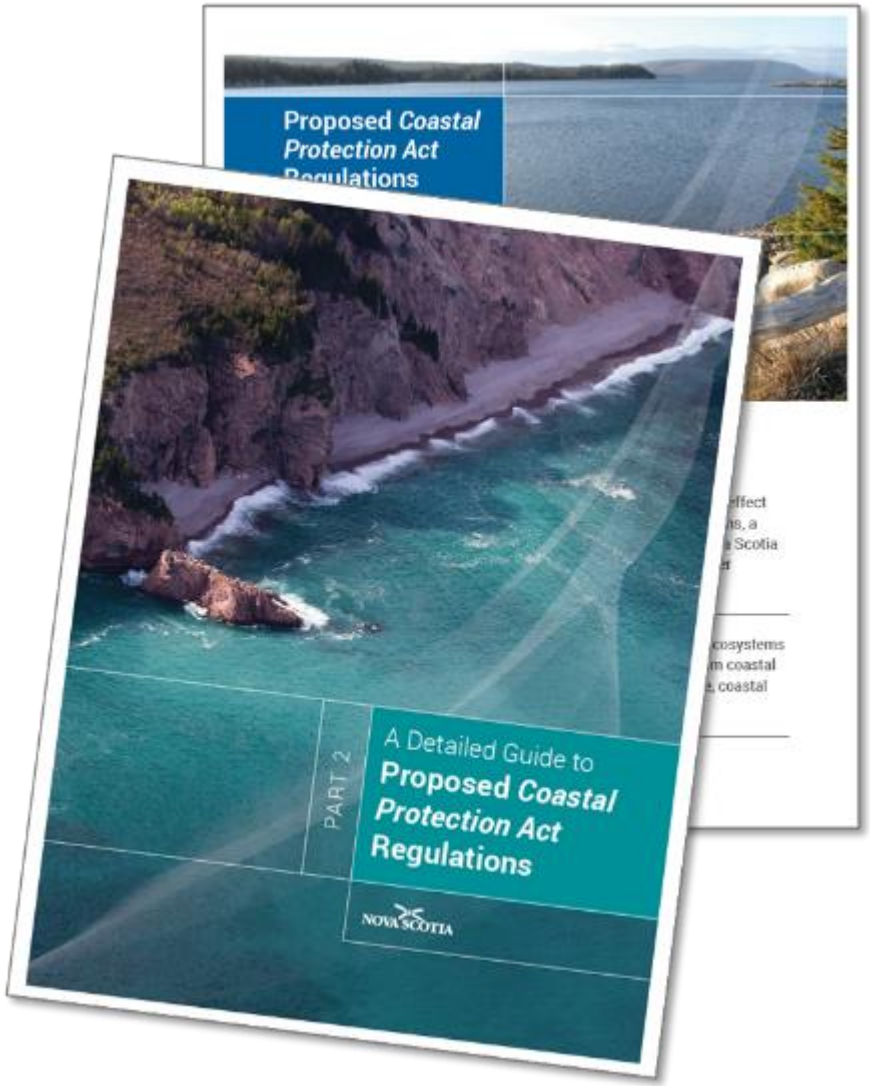
The Act is mostly about "where" structures are built

- The regulations apply within a Coastal Protection Zone – a thin band around the coast.
- The regulatory tools in upland areas are vertical and horizontal development setbacks

- Province wide system of minimum building elevations (vertical setbacks) ensure building occurs higher above projected water levels.
- Site-specific horizontal setbacks move development back from the water depending on the combination and severity of erosion risk factors present.

Stakeholder Engagement Recap

- Consultation in 2018 informed the development of legislation.
- Results from further consultations last summer and fall were released earlier this year. Consultation take-aways relevant to designated professionals:
  - We need to address concerns over use of ordinary high-water mark in certain CPA applications.
  - Accurate measurement in the field is the key to consistency and repeatability or CERFA results.
  - Importance of leveraging current location technology.
  - Clear and specific definition of the role and responsibilities of the designated professional is critical.
  - Training is important to successful implementation.
- Ad-hoc discussions with stakeholders continue to inform development of the regulations and program management supports.



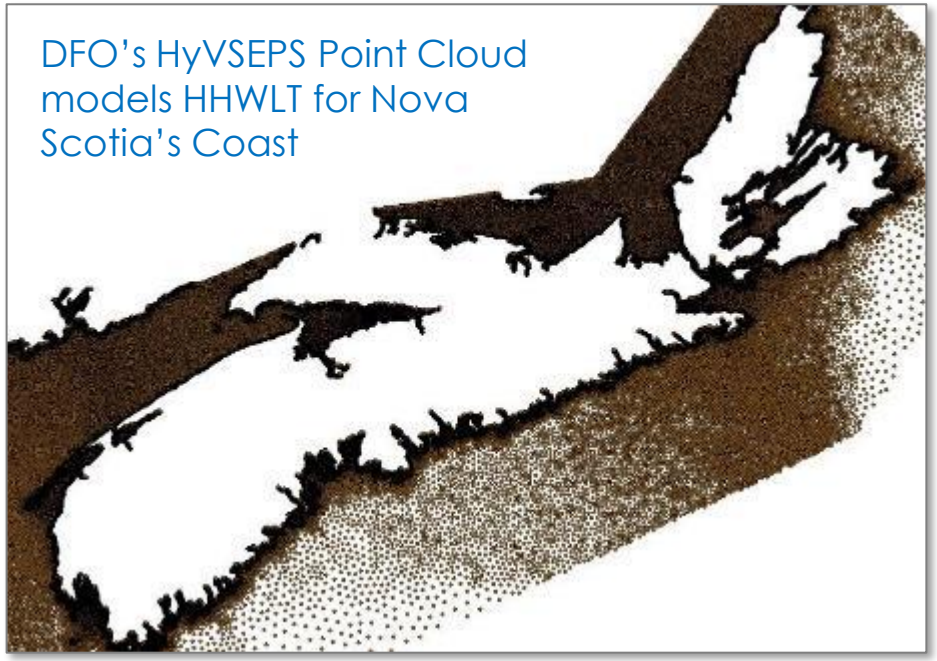
The CPA and the Ordinary High-water Mark

The CPA needs to reference some form of high-water mark for delineating the coastal protection zone, as a baseline for horizontal setbacks and as an input to the coastal erosion risk-factor assessment tool.

- Section 8 of the Act: 1) The Coastal Protection Zone is the prescribed area of land, including land covered by water, on the coast
  - (a) lying to the seaward of the ordinary high-water mark; and
  - (b) lying to landward immediately adjacent to the land described in clause (a).
- The ordinary high-water mark (OHWM) is defined in the Land Surveyors Regulations as:

  "for tidal waters, the mark on the seashore reached by the average of the mean high tides of the sea between the spring and neap tides in each quarter of a lunar revolution during the year excluding only extraordinary catastrophes or overflows"
- Detailed application of the regulations requires a repeatable, consistent proxy for high water levels that can be mapped across the province's LiDAR surface, and that is not related to land title or property boundaries.
- A proposed alternative is to create a ***high-water reference line*** **(HWRL)** based on a prescribed ***high-water reference height (HWRH)*** that intersects with the slope of the seashore.
- The HWRH and HWRL would have no impact on land title, and they do not replace the established use or definition of the OHWM outside the CPA regulations.

Proposed alternative: High-Water Reference Line



- The proposed ***high-water reference height*** (HWRH) will be based on ***higher high-water large tide*** (HHWLT),the average of each of the highest annual tides during a 19-year period.
- HHWLT varies significantly along the coast.
- HyVSEPS point data was stratified into 20 cm increments creating a series of coastal sections.

Each section is contained in a bounding box with assigned values for:

- High water reference height
- relative sea level rise
- storm surge projection
- minimum building elevation

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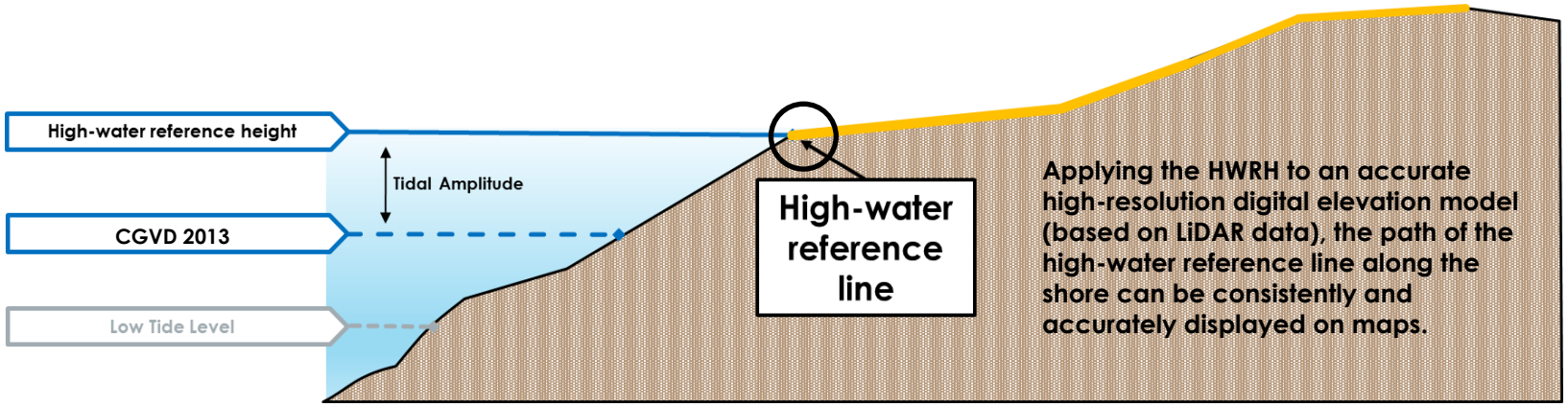
Proposed High-Water Reference Line

- As proposed, using a *specific high-water reference* <u>*height*</u> (HWRH) the high-water reference <u>*line*</u> (HWRL) can be plotted over the Provincial LiDAR- based digital elevation model in each section of the coast.
- Using a prescribed HWRH in each section of coast as a proxy for tidal amplitude can be used for accurate and repeatable:
  - Location of the HWRL, CPZ boundaries and minimum building elevations in the field.
  - Inputs for coastal erosion risk factor assessments and a baseline for site-specific horizontal setbacks.



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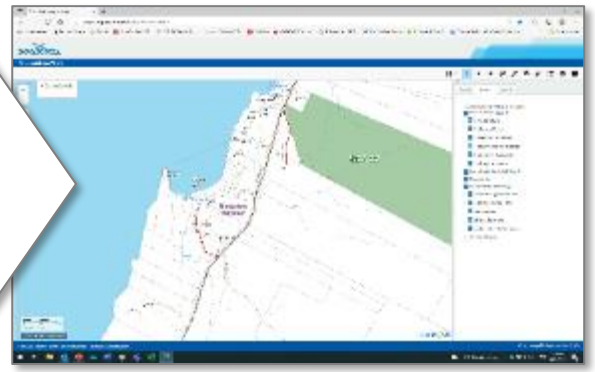
Provincial Map Resources Will Support Implementation

- Maps resources will display HWRL, CPZ boundaries (subzone A and B), and areas below the minimum building elevation.
- Shape files for municipal planning and development departments
- Public-facing web map service, based on clone of Nova Scotia Civic Address Finder platform.
- Map resources will conform to provincial mapping standards:
  - Vertical Datum : CGVD013
  - Projection: NAD83(CSRS)2010.0 v6

Web map service for general public will be based on NS Civic Address Finder



Coastal Erosion Risk Factor Assessment (CERFA) Tool

- Nova Scotia's highly diverse coastline influenced the development of the Coastal Protection Act to include a site-specific approach to horizontal building setbacks.
- A designated professional determines the setback for an individual property, using a (CERFA) tool and method prescribed in the regulations.
- The CERFA assumes the shoreline will shift inland and slightly upward over the planning horizon due to natural coastal erosion, accelerated by sea level rise.
- The setback determined by the designated professional using the CERFA is not a guarantee of safety – it is a regulatory tool to reduce risk.

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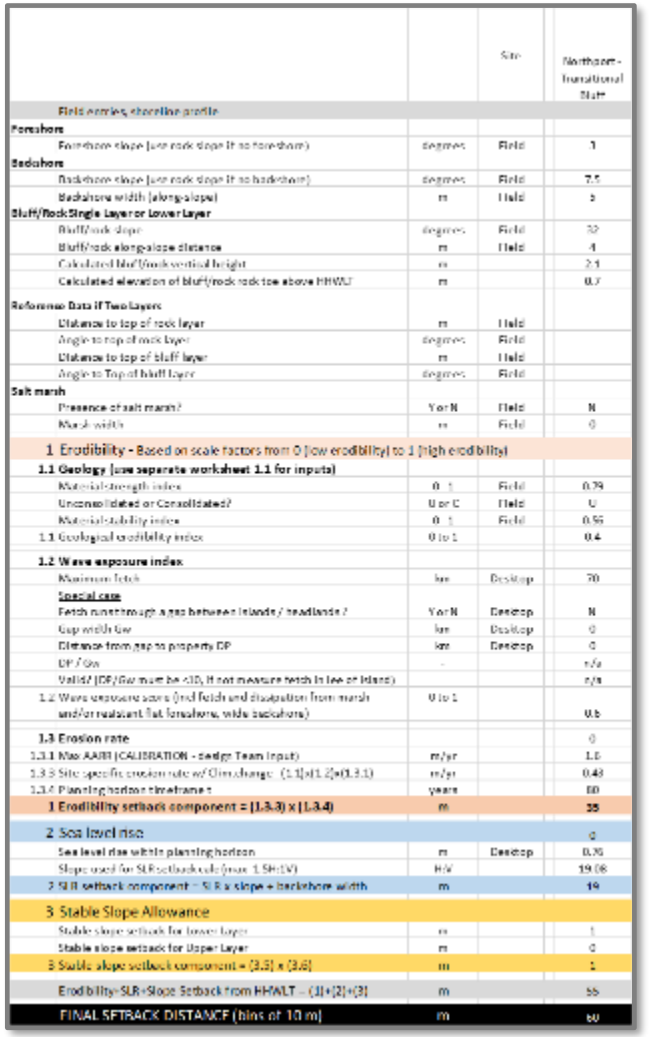
Using the CERFA tool

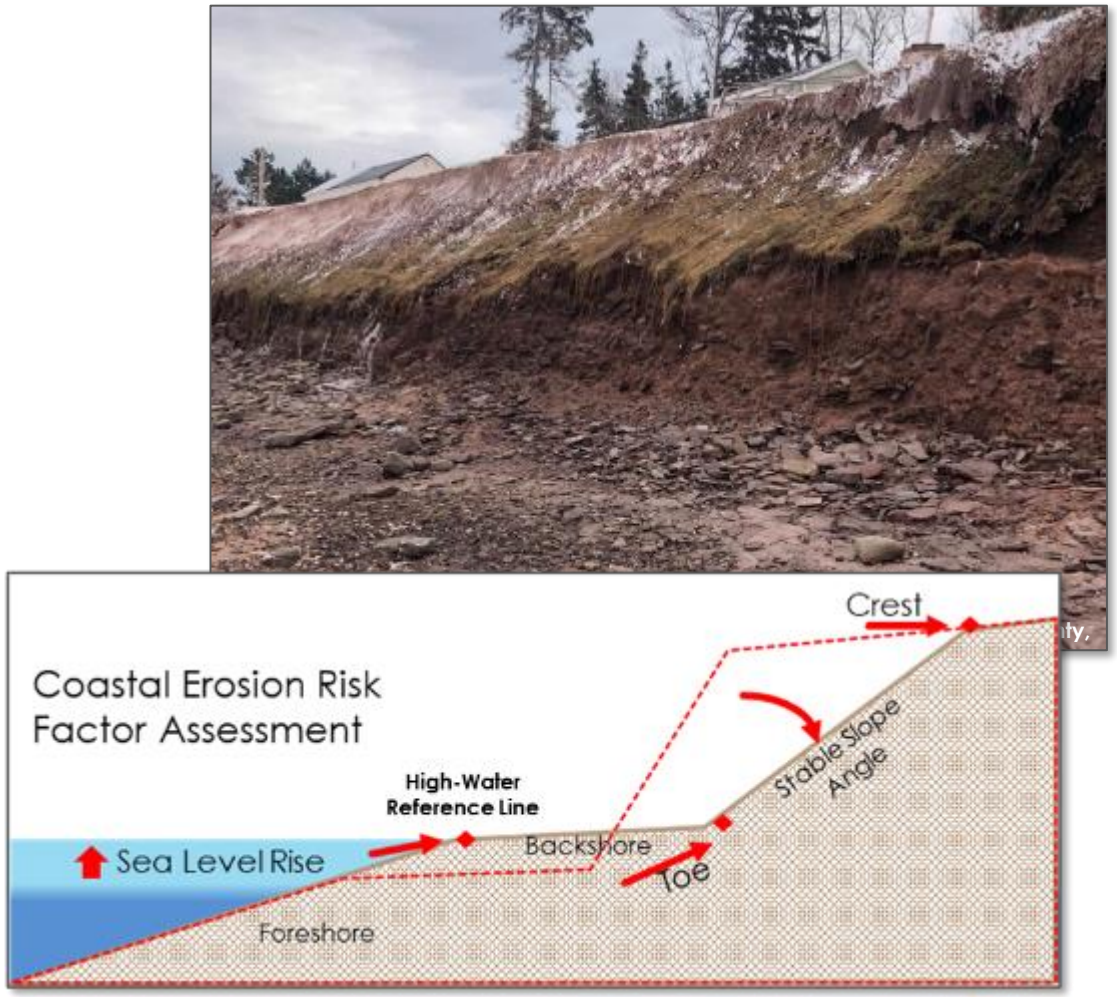
- The CERFA takes the form of an Excel Workbook which will be downloadable from a government website for use by DPs.
- The DP will be required to follow CERFA instructions for:
  - Measuring angles and distances to capture the shoreline profile.
  - Categorizing the geology according to hardness of material, and visible presence of factors that contribute to slope instability.
  - Completing desk research (primarily to determine fetch for wave exposure).
  - Entering data into CERFA Excel spreadsheet and generate report.
  - Certify the result (the horizontal setback) provide report to landowner.

Setback Distance	1. Erodibility	2. Sea Level Rise	3. Stable Slope
High	Erodible material AND high wave exposure	Flat foreshore	Bluff is high AND erodible
Medium	Erodible material OR high wave exposure	Moderately steep foreshore	Moderately high bluff
Low	Resistant material AND/OR low wave exposure	Steep foreshore	Low AND/OR resistant material



Improvements to the CERFA based on Consultation with Professional Associations

- Shoreline cross-section is an important CERFA input used to determine the allowance for a stable angle of slope component of the overall setback.
- Original version captured shoreline cross section as a series of angles and distances and could result in cumulative errors with a significant impact on the setback.
- Next iteration of CERFA tool will accept precise GPS data to reduce the potential for a compounding series of errors from inaccurate angle and distance measurements.
- Combined with using the **high-water reference line** (instead of the OHWM) we can expect improvements in overall accuracy and repeatability of results.



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Proposed time-limited horizontal setback reductions

Time-limited reductions in the site-specific horizontal setback may be granted **by the municipality** for lower erosion risk scenarios:

- Applicable only in the early years of the Act for lots that would otherwise be rendered undevelopable because of horizontal setback.
- No reduction proposed for:
  - high-risk scenarios (high erosion risk combined with a shallow lot).
  - lots on which there is already room to build with an unreduced CERFA setback.
  - lots that were subdivided after the Act came into effect.
- Designated Professionals are not involved in determining eligibility for, or amount of, setback reduction.

Proposed format for Time-limited Setback Reduction Schedule

Draft – All values subject to change.

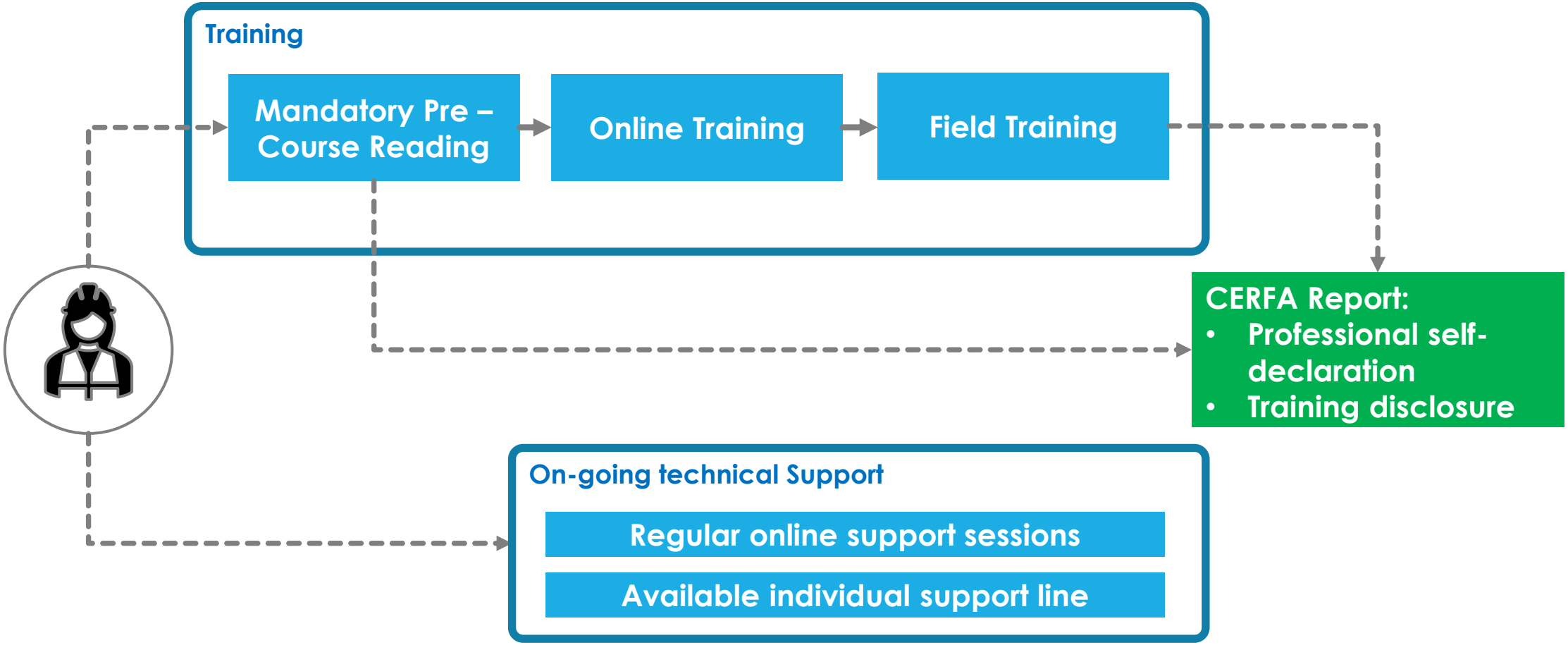
Erosion risk level based on site-specific horizontal Setback from CERFA report	Building Space Available (Distance in meters between HWRL and furthest upland property boundary)				
	< 20	20 - 40	40 – 100	> 100 - 110	> 110
Extreme Erosion Risk	**No Reduction**	**No Reduction**	**No Reduction**	Reduced Setback Possible	**No Reduction**
High Erosion Risk	**No Reduction**	**No Reduction**	Reduced Setback Possible	**No Reduction**	**No Reduction**
Medium Erosion Risk	**No Reduction**	Reduced Setback Possible	Reduced Setback Possible	**No Reduction**	**No Reduction**
Low Erosion Risk	**No Reduction**	Reduced Setback Possible	**No Reduction**	**No Reduction**	**No Reduction**

The role of the designated professional

The regulations need to be precise and specific about the role of the designated professional.

- The role of the designated professional is to determine the site-specific horizontal setback distance from the high-water reference line, in the manner prescribed in the regulations.
- The following are *not* part of the designated professional's role:
  - Professional land surveying, providing location certificates or anything to with land title.
  - Determining whether a proposed building location is within the coastal protection zone.
  - Determining the minimum building elevation for a section of coast.
  - Determining whether a proposed location is compliant with the horizontal setback or minimum building elevation.
  - Marking the setback distance on the ground.
  - Providing advice on mitigating coastal erosion or coastal flooding.
  - Determining eligibility for time limited setback reductions.

Proposed training and support model for designated professionals



Thank You!

For More Information visit:
novascotia.ca/coast

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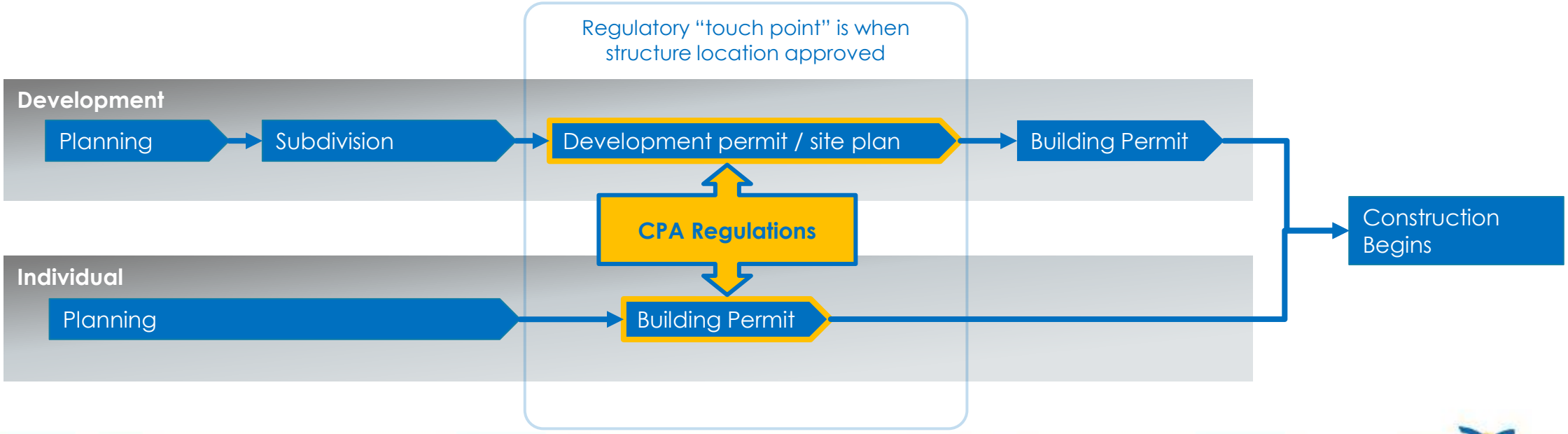
Appendices:

A. Integration with Municipal Permits
B. Delineating Coastal Protection Zone Boundaries
C. Minimum Building Elevations (MBEs)

Integration with Municipal Permits

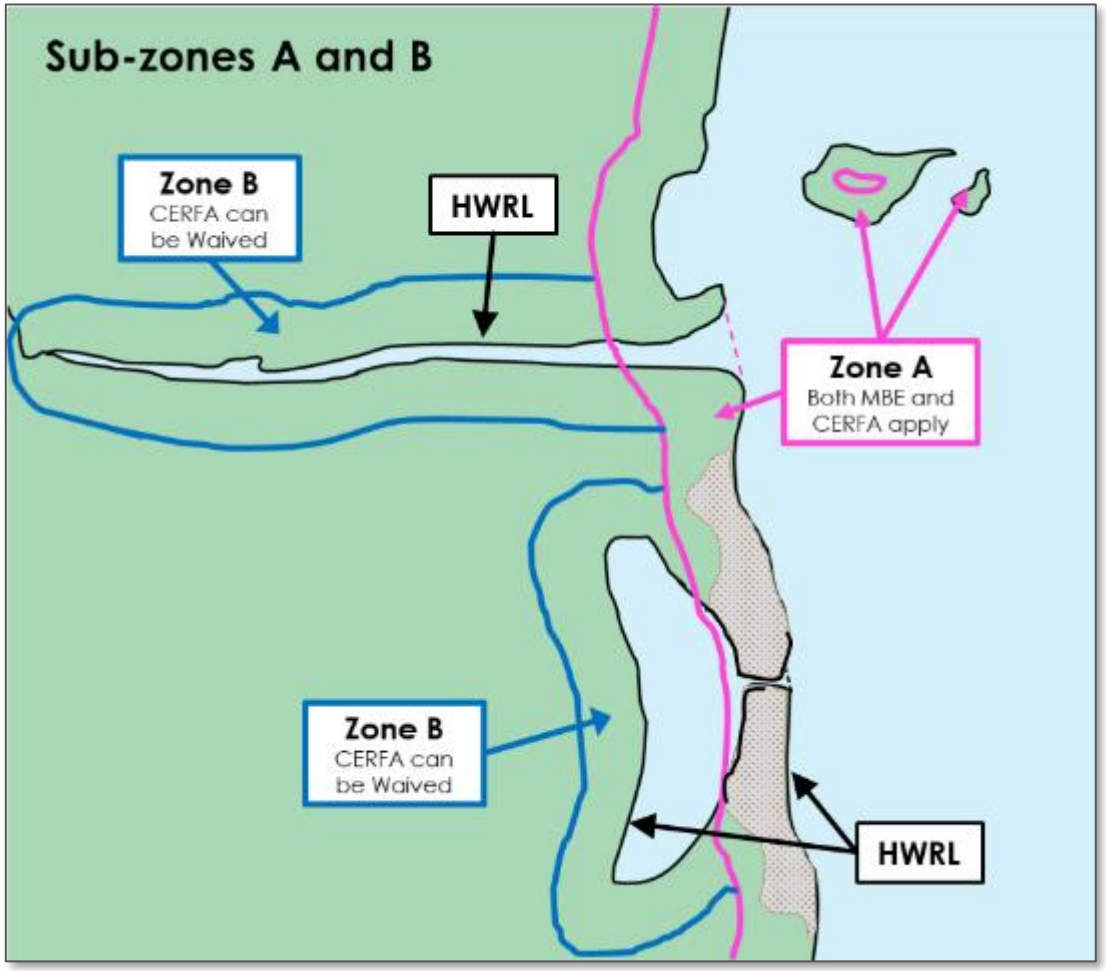
Refining CPA regulatory touch points

- The CPA intersects with municipal permits when a permit application is approved or an extension to an existing permit is being approved.
- The proposed regulations are structured to apply to development permits or building permits (and/or agreements), whichever results in an approval of the location of construction first. In some cases, the CPA could impact occupancy permits.
- This means a developer may need to have a CERFA completed for one or more parts of a development prior to receiving an approval from a municipality for a site plan that forms part of a development agreement.
- There does not appear to be a practical ***regulatory*** touch point that intersects with subdivision regulations. Building awareness of the CPA will be critical to avoiding costly planning processes for land that cannot be developed in the manner anticipated by the owner.



Delineating Coastal Protection Zone Boundaries

- HWRH is used in combination with GeoNOVA LiDAR data to plot the path of the HWRL.
- CPZ upland boundary will be a single fixed distance (TBD: range under consideration is 80 – 100 meters) from the nearest point on the high-water reference line (HWRL) with a few exceptions (e.g., barrier beaches).
- Other delineation rules apply to water control structures, large estuaries and barrier beaches.
- Dividing CPZ into sub-zones A and B recognizes lower risk levels for parts of CPZ that are further inland:
- Proposed that municipalities can waive the CERFA in zone B
  - Minimum building elevation applies throughout both subzones.



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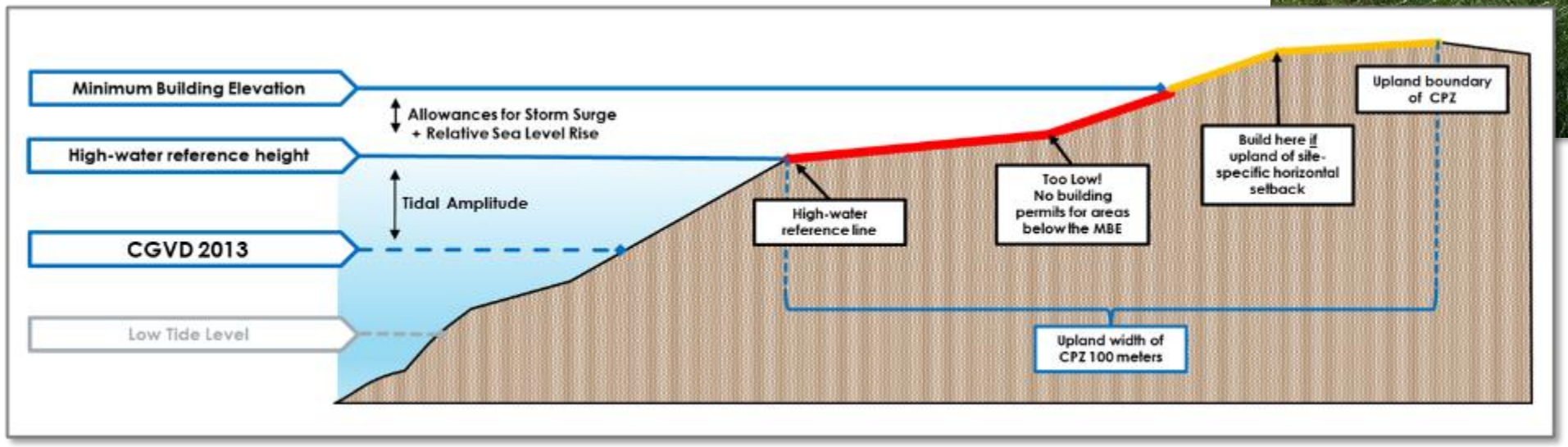
Minimum Building Elevations (MBEs)

- MBEs comprise the CPA's province-wide system of vertical setbacks.
- MBEs are the main risk avoidance strategy against sea level rise and storm surge.
- MBEs for each of 82 sections of coastline will be set out in Schedule A of the regulations.
- MBEs will be expressed as a height above mean sea level to the nearest 20 cm.
- MBEs vary significantly around the province due to large variations in tidal amplitude and smaller variations in relative sea level rise projections and storm surge projections.



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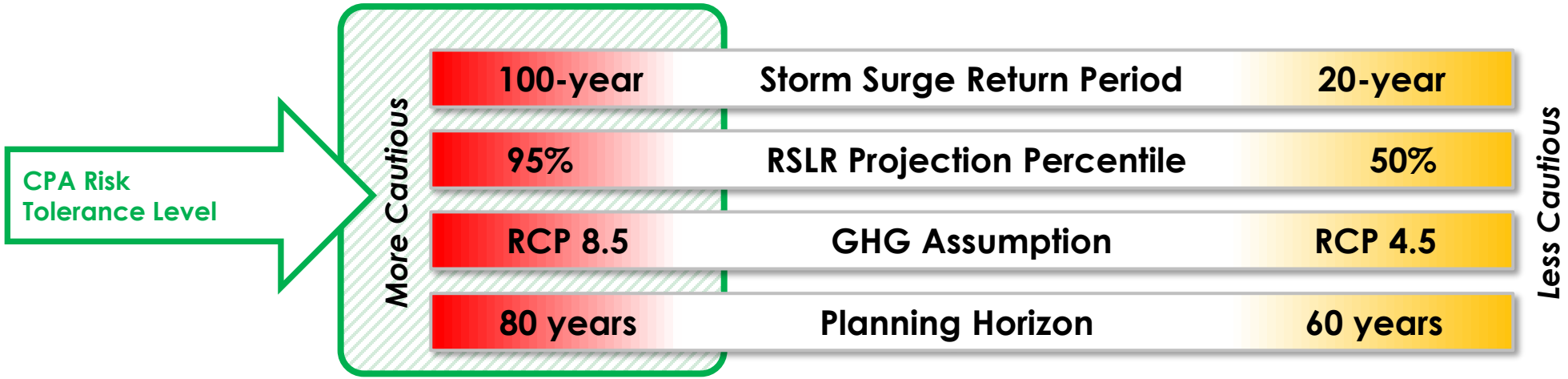
Minimum Building Elevations

Data Sources and Risk Tolerance Level



Parameter:	Standard / Data Source
Vertical datum	Datum used is Canadian Geodetic Vertical Datum 2013 (CGVD2013)
High-water reference height (HWRH)	Based on DFO HyVSEPS modeled higher high water large tide released 2015 rounded to nearest 20 cm
High-water reference line (HWRL)	Proxy coastline - Where the high-water reference height (HWRH) meets incline of the seashore
Allowance for relative sea level rise	ECC adapted from NRCan 2021 95th percentile projection for year 2100 includes global sea level rise + vertical land motion. Allowance is based on an 80-year planning horizon.
Allowance for storm surge	ECC adapted from Bernier et al 2013 rounded to nearest 20 cm.
Minimum building elevation	ECC calculated: high-water reference height + allowance for RSLR + allowance for storm surge, rounded to nearest 20 cm.