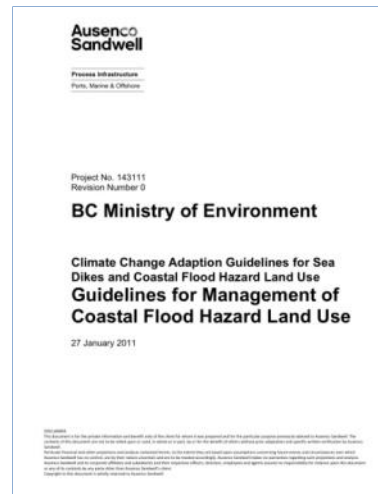
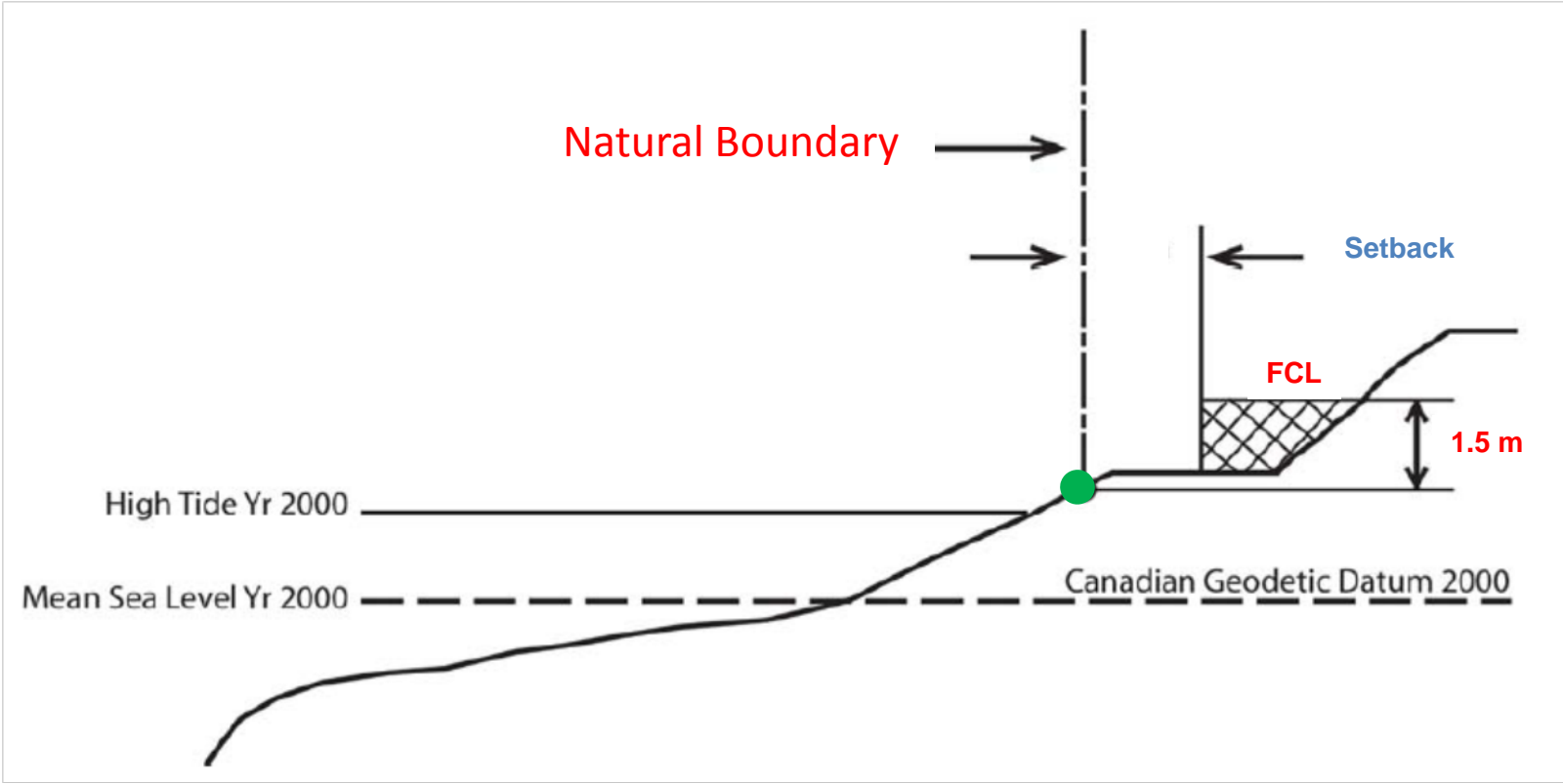


Fundamentals of Coastal Flood Hazards

John Readshaw, P. Eng.



Existing Definitions



Existing Definition

Natural Boundary:

Defined in Land Titles Act:

“the visible high water mark of any lake, river, stream or other body of water where the presence and action of the water are so common and usual and so long continued in all ordinary years as to mark upon the soil of the bed of the lake, river, stream or other body of water a character distinct from that of the banks thereof, in respect to vegetation, as well as in respect to the nature of the soil itself (Land Act, Section 1). In addition, the natural boundary includes the best estimate of the edge of dormant or old side channels and marsh areas. For coastal areas, the natural boundary shall include the natural limit of permanent terrestrial vegetation”

- | | | |
|--|---|--|
| • visible high water mark...long continued | ≈ | near or above high tide |
| • action of the water | ≈ | includes exposure to and action of waves |
| • long continued...to mark distinct character
...vegetation...nature of soils | ≈ | erodibility of shoreline sediments |
| • natural limit of permanent vegetation | ≈ | past storm consistent with growth rate of terrestrial vegetation |
| • common and usual and so long continued
in all ordinary years | ≈ | some “average” storm |

Existing Definition

Natural Boundary:

- Natural Boundary is an established concept in BC law
- Defined by a BC Legal Land Surveyor at time of survey
- A snapshot record of recent antecedent tide, storm surge and wave runup effects (and coastal processes)
- Site and time specific
- **Elevation of Natural Boundary is variable from site to site and time to time**
- Location and elevation of a Natural Boundary will change from time to time due to sea level rise and whatever storms and waves occur
- It will likely lag sea level rise.
- **Future location can not be predicted**

Examples of “Natural Boundaries”



6.7 m CD

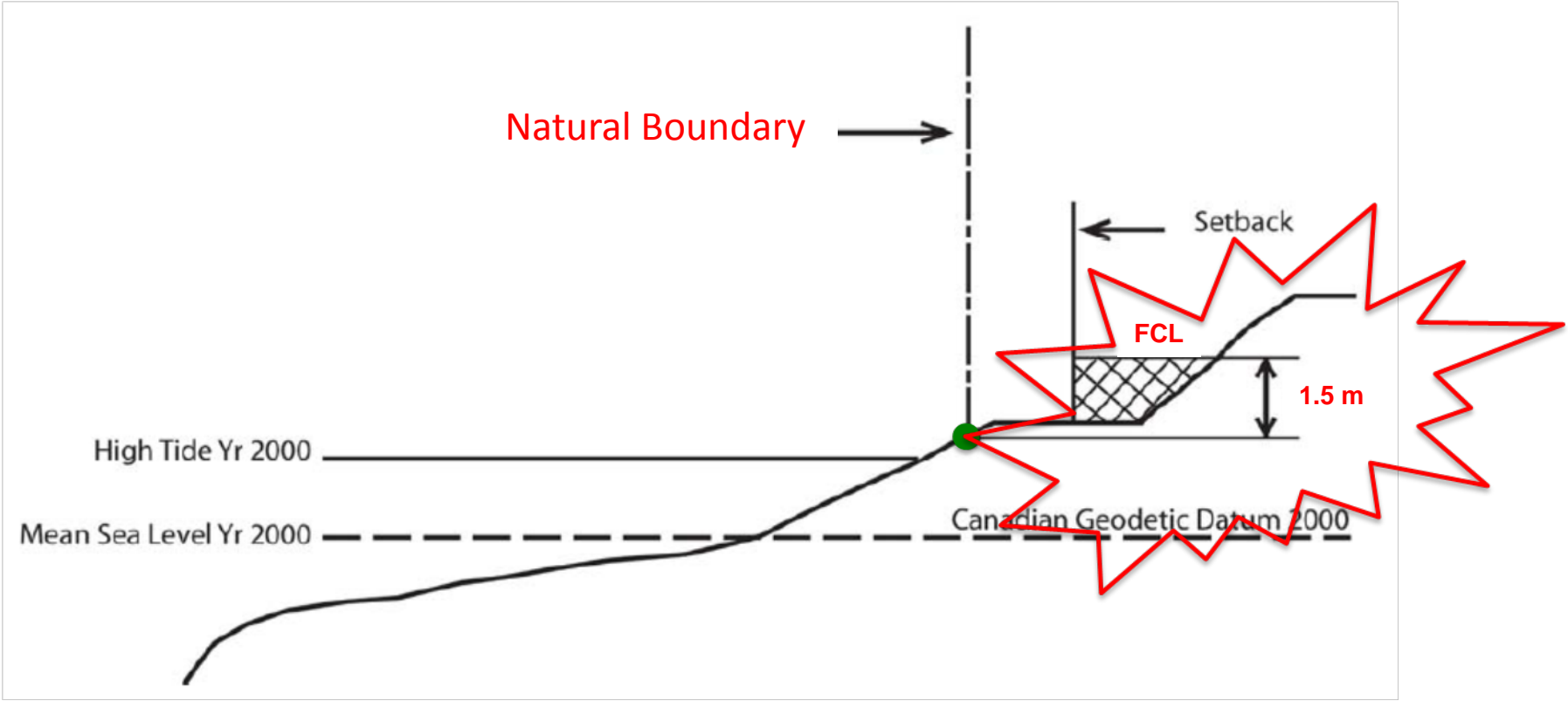
HHWLT = 5.1 m CD

4.7 m CD



Examination is showing there are many inconsistencies around the Province

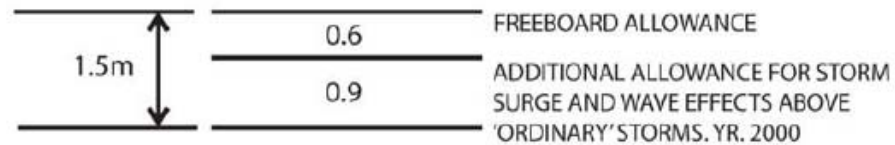
Existing Definitions



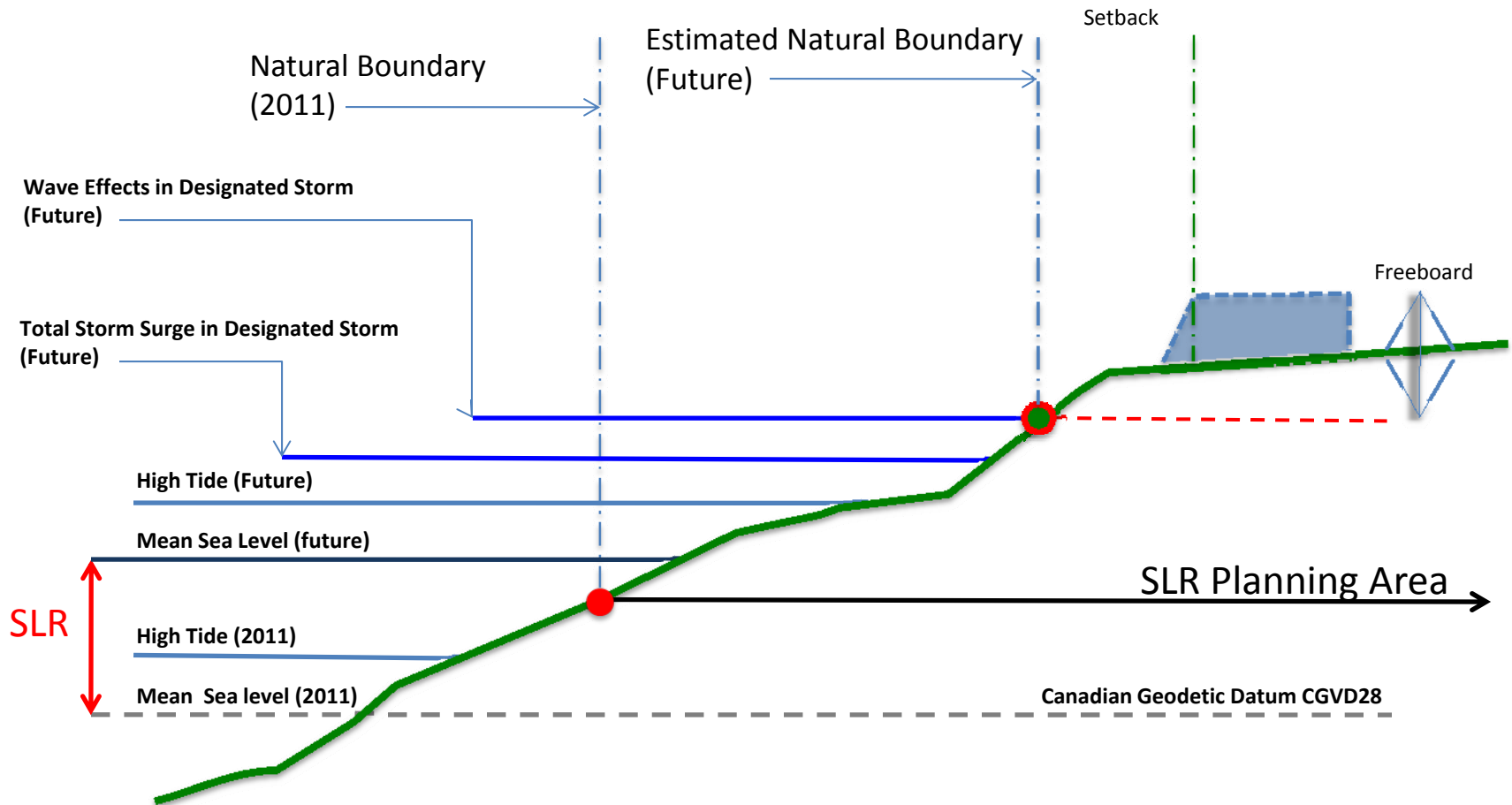
Flood Construction Limit

FCL shall be at least 1.5 m above the Natural Boundary of the sea....

Basis of 1.5 m vertical shift is not stated:



Re-assembly of a Rational Definition



Present Calibration of Re-Assembly

- Based on Victoria waterfront
- From 2010 survey data of a natural waterfront

Based on 2004 Definition		Based on 2010 Definition	
Elevation of Natural Boundary	+ 2.5 m CGVD	HHW	+ 1.5 m CGVD
		Storm Surge <i>(high value waterfront)</i>	1.3 m
		Wave Action <i>(associated with surge event – gravel beach)</i>	0.65 m
FCL Allowance	1.5 m	Freeboard	0.6 m
FCL	+4.0 m CGVD		+4.05 m CGVD

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