

The challenges of surveying legal coastal boundaries and lines

Jennifer Whittal

Session 5 – International Experiences

8th Universities Conference

Dakar 2019



Regional Capacity Development Network

Africa Regional Network



Coastal land and resources

- **Land:** the solid earth, coastal water, solid earth below coastal water, fresh water and the air space above these, to the full extent of the state's sovereignty
- **Coastal zone:** internal waters (which includes the seashore and estuaries), territorial waters, exclusive economic zone and continental shelf; land, water and air within these limits; all land defined as littoral or under coastal environmental protection and used for public coastal purposes and access to the seashore

Land Administration

- **Cadastral system:** Surveyor-Generals Offices, Deeds Offices, land use planning and development legislation at national, provincial and local levels
- **Coastal land**
 - Increasing in desirability & value
 - Increasing in complexity
 - Overlapping laws and government departments
 - Many diverse users
 - High value land
 - Geographical extent of laws and governance by Depts
 - Climate change and increased risk

Milnerton Case Study Aug 2015



Milnerton Case Study Sept 2018



Milnerton Case Study Sept 2018



Milnerton Case Study Aug 2015



Milnerton Case Study Aug 2015



Milnerton Case Study July 2016



Milnerton Case Study July 2017



Sovereignty and jurisdiction are distinguished as:



Sovereignty: the absolute authority of a state or monarch – including the authority to govern.

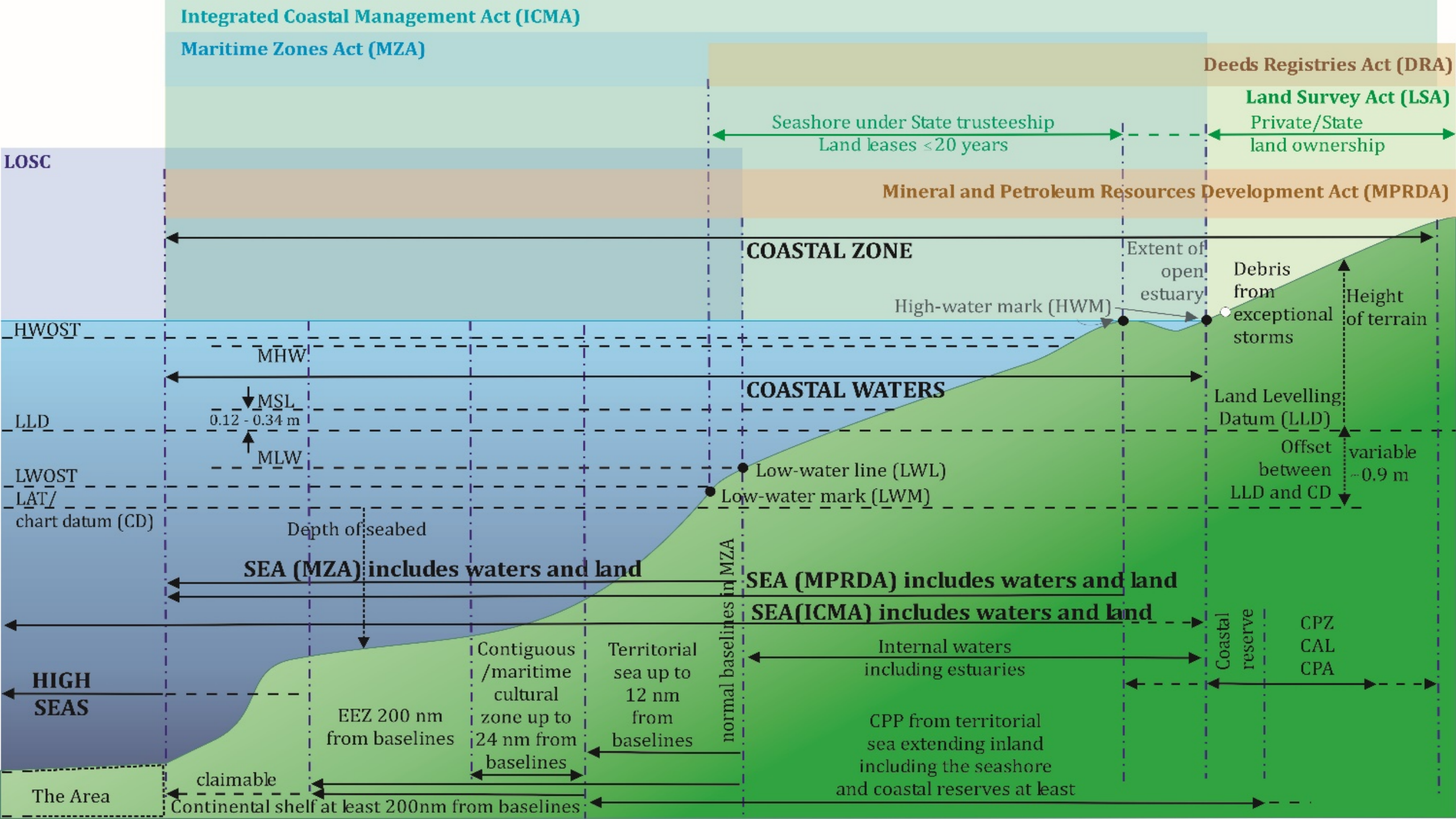


Jurisdiction: the official power to make legal judgments and decisions.

Complex: Deeds Office up to LWM
SGO not specified
diagrams need to be generated for offshore rights

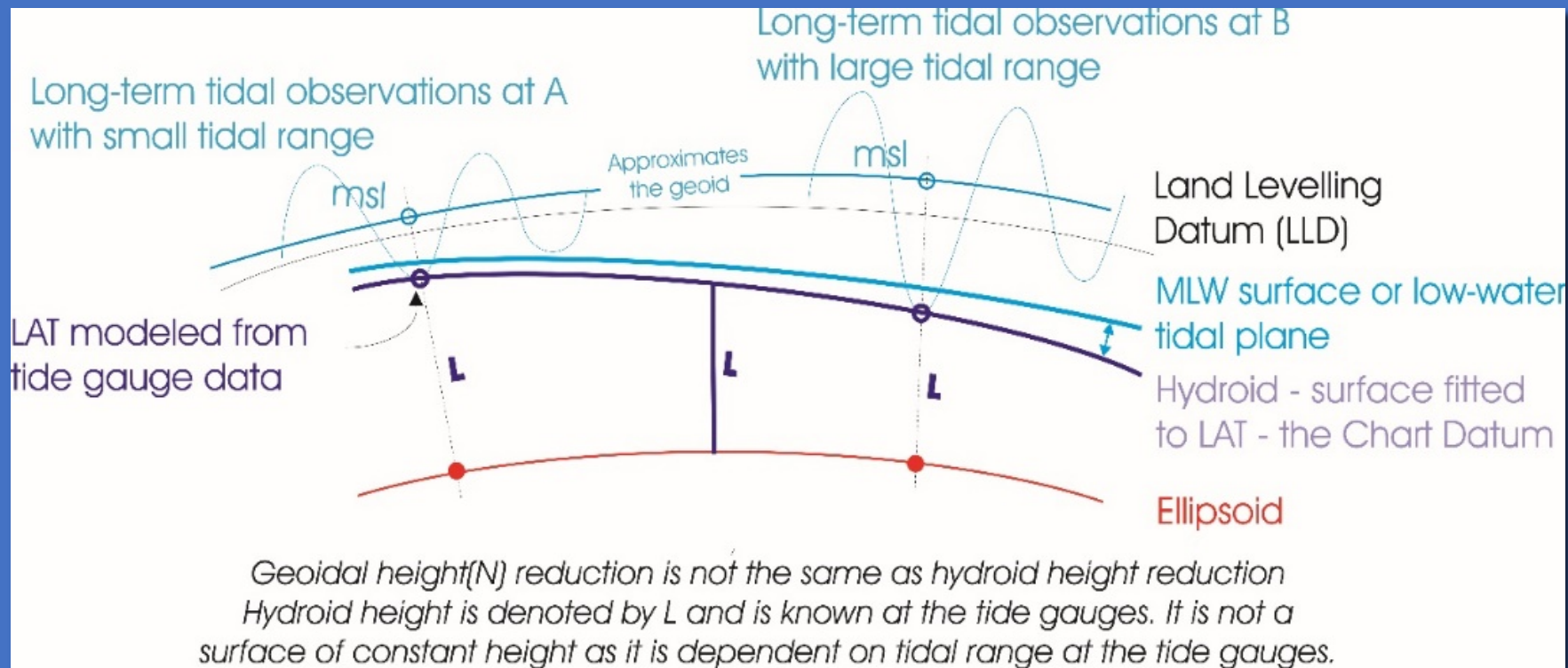
Land rights boundaries

- Low-water mark
- Low-water line
- High-water mark
- Onshore and offshore diagram boundaries
 - Ownership
 - Limited real rights (servitudes, leases, mining and petroleum rights)
 - Permits and permissions (fishing, aquaculture, electricity generation, other mineral and petroleum rights)
- Maritime zone boundaries
- Coastal zone set back lines and other boundaries



Low-water line

- low-water means the *mean* height of low-water for a tidal cycle of 18.6 years
 - Determined by the hydrographic office which manages the tide gauges



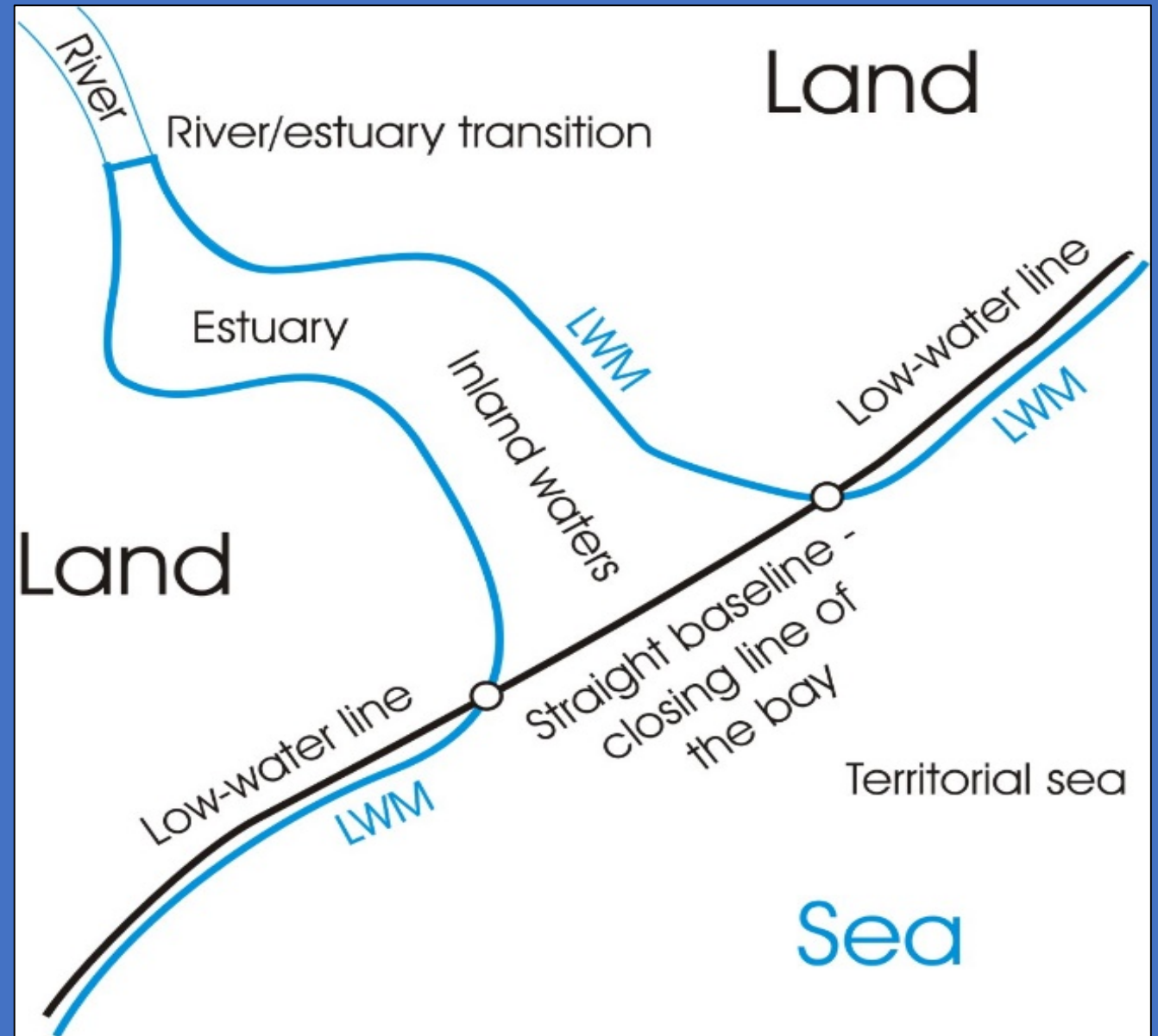
MLW tidal surface

- **low-water line** means the intersection of the low-water tidal plane with the land and includes the low-water line on a low-tide elevation
 - **Land-sea interface terrain model to generate the intersection**
 - Onshore and offshore surveying (hydrographic office and national mapping office)
- **Low-water line is used in generating maritime boundaries**
 - Offsets seaward and median lines between adjacent states Very important.
 - Errors in low-water line determination can magnify into maritime boundaries offshore

Low-water mark

- the lowest line to which the coastal waters recede during spring tides
 - spring tides twice per month at new and full moon
 - lower than LWOST and MLW, higher than LAT
 - backwash
 - not a contour
 - coastal terrain and energy of coastline
- Cadastral boundary of the seashore
 - custodianship of the State
 - surveyed by PLS instructed by the State on site or using aerial photography at spring low-water
 - estimates (e.g. LWOST, LAT, MLW, satellite remote sensing) do not generate legal LWM

LWM vs. Low-water line



High-water mark

- highest line reached by coastal waters, but excluding any line reached as a result of
 - (a) exceptional or abnormal weather or sea conditions; or
 - (b) an estuary being closed to the sea
 - Swash, wind, swell, tides
 - Not a contour
- Cadastral boundary of the seashore
 - custodianship of the State
 - surveyed by a PLS on site from visible evidence
 - estimates (e.g. HWOST, HAT, MHW, satellite remote sensing) do not generate legal HWM

River-estuary transitions



State trusteeship vs. custodianship

Duties of Trust

- executing legal duties of care
- acting in the interests of the beneficiaries - the citizens
- even when this conflicts with the trustee's (read the State's) own interests

Human focus



[This Photo](#) by Unknown Author is licensed under [CC BY](#)

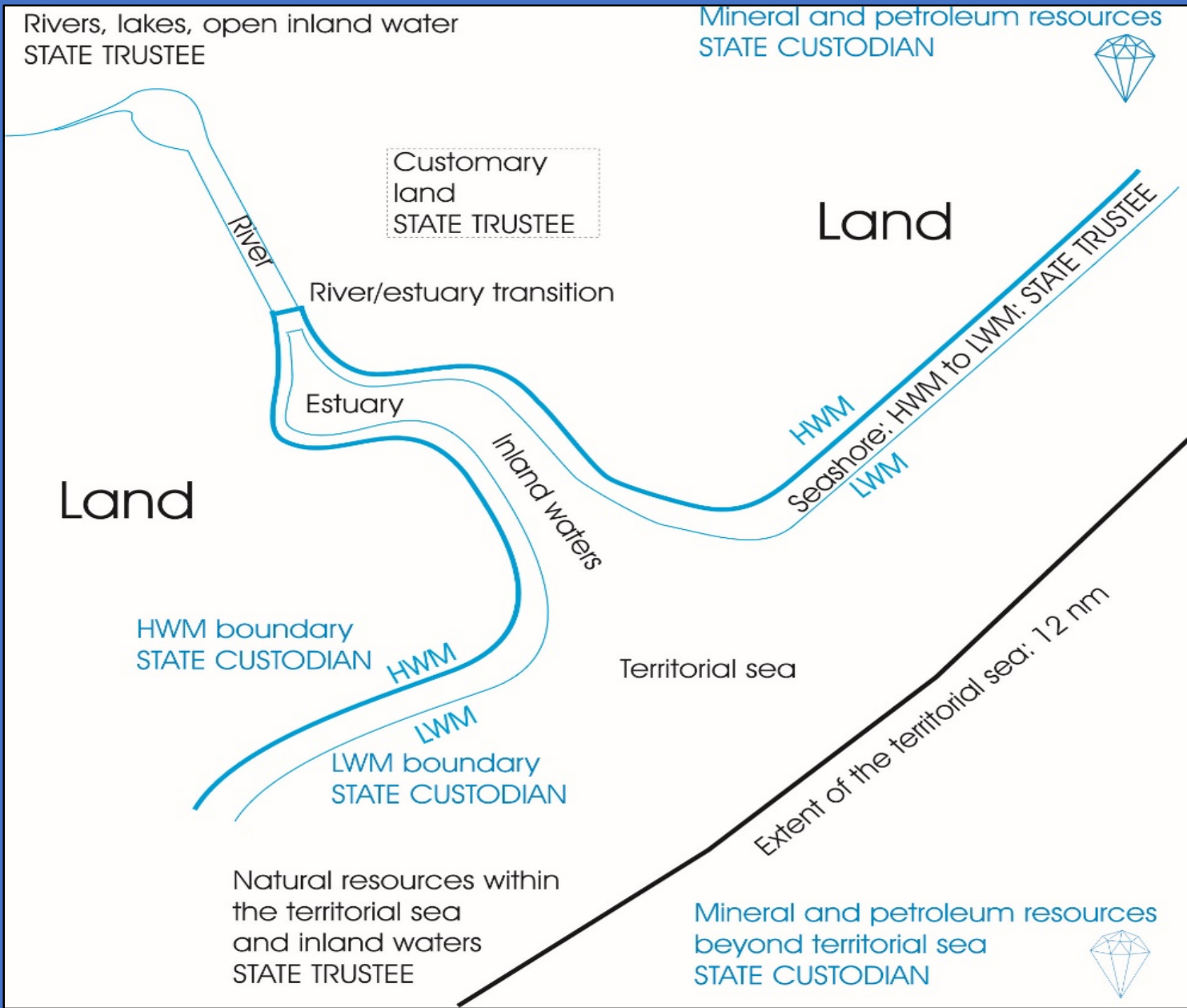
Duties of Custodianship

- manage and maintain the resource
- as an asset for the citizens
- may include exploitation in the public interest

Resource focus?



[This Photo](#) by Unknown Author is licensed under [CC BY-NC](#)



State trusteeship vs. custodianship

The State has a
custodial (blue)
or
trustee (black)
responsibility

Conclusions

- I have not included:
 - the property boundaries of registered parcels on and offshore, above and below the surface
 - set back lines and how to create these a set distance from the HWM
 - offshore maritime boundaries
- The boundaries in the coastal zone are complex
- Their definition in space is the task of a professional team including a PLS
- High stakes