

Quantifying the influence of grain size and roots on UK salt marsh substrate stability

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- Salt marsh stability is key to ensure provision of ecosystem services
 - resistance to erosion
 - increase in surface elevation at a rate commensurate with sea-level rise
- Resistance to erosion
 - surface resistance
 - resistance at marsh edge
- Geotechnical methods have been used in other environments to assess shear strength of soils

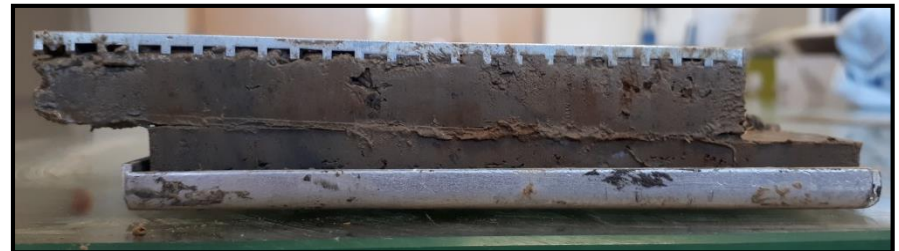


Methods to characterise shear strength

- Shear Box tests
 - Undisturbed sample
 - Determines peak shear strength
- Ring shear tests
 - Remoulded
 - Without roots
 - Determines residual strength (strength retained post-failure)

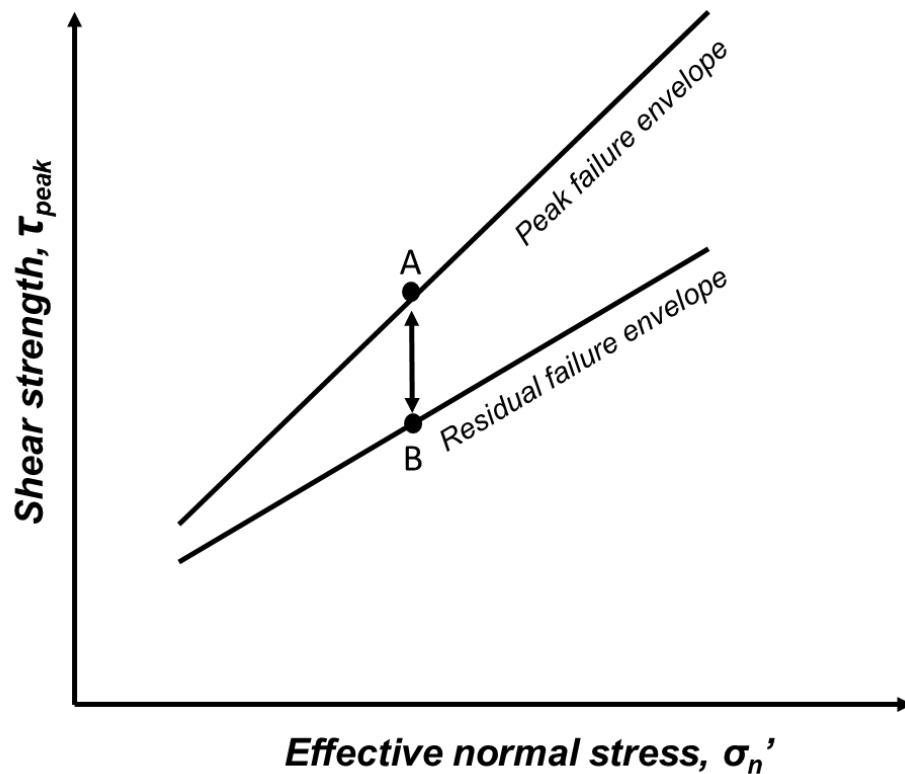


Sample preparation for shear box test. Taken: Feb 2018.



Shear plane created by shear box test. Taken: Dec 2017.

Reduction in strength between peak and residual scenarios



- Shear box and ring shear tests: allow quantification of shear strength properties of salt marsh and tidal flat substrates
 - Behaviour type (brittle/ductile)
 - Shear strength for given normal load
- Difference between strength for a given normal stress for the peak scenario (A) and residual scenario (B) may partly reflect the role of roots