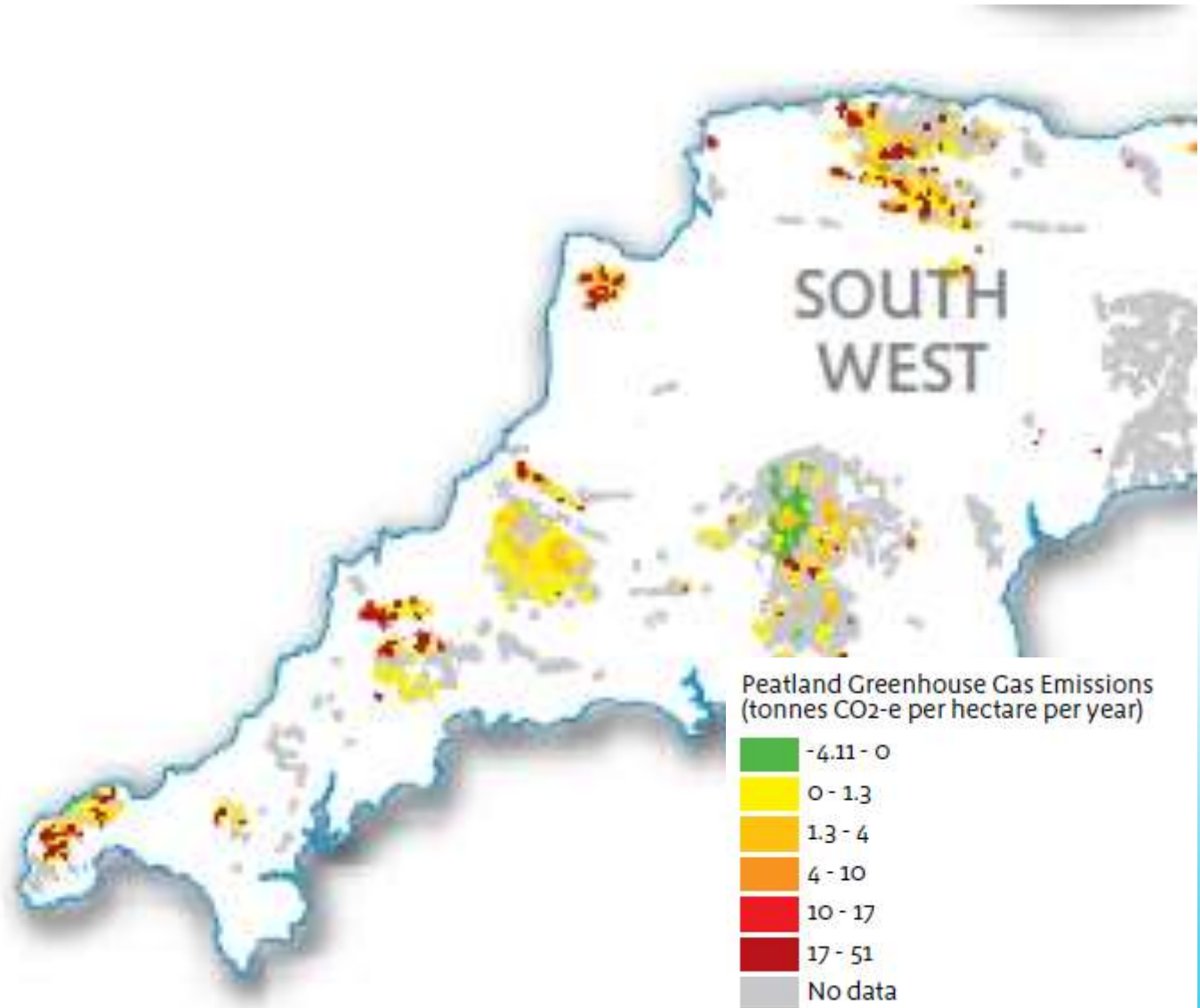




Using Earth Observation to map, measure and monitor peatland for South West Water in the UK

Philip Briscoe, philip.briscoe@rezatec.com
David Smith, dmsmith@southwestwater.co.uk

Distribution of upland peatlands in South West England



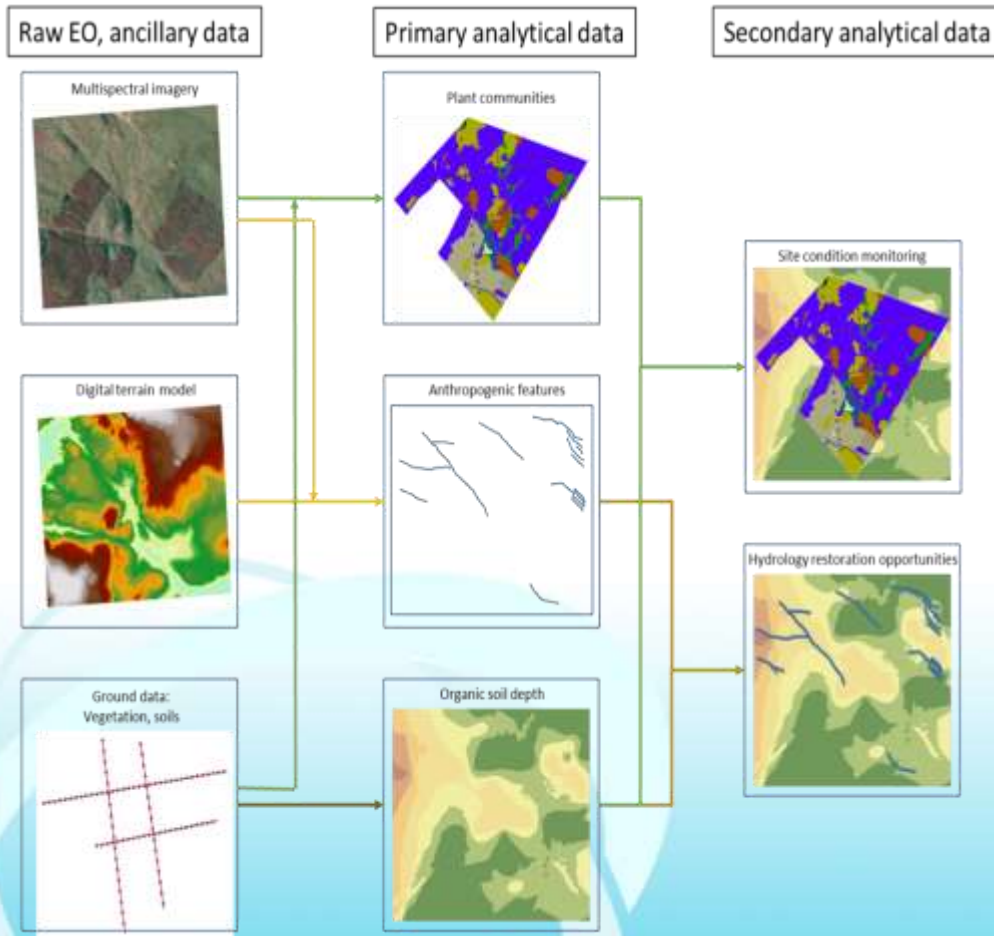
Most of Exmoor's peatlands have been affected by peat-cutting, drainage, or past over-burning and grazing.



Severe Erosion



Solution: Automated, scalable delivery of data products



Product

Pipeline leakage detection



Soil Movement



Vegetation Management



Hazard Risk Management



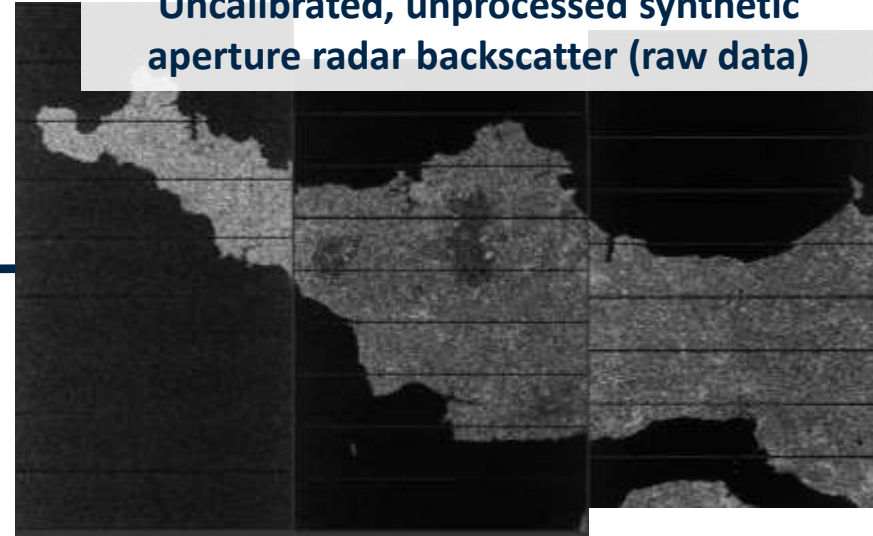
Subsidence

Processing and modelling to extract soil moisture

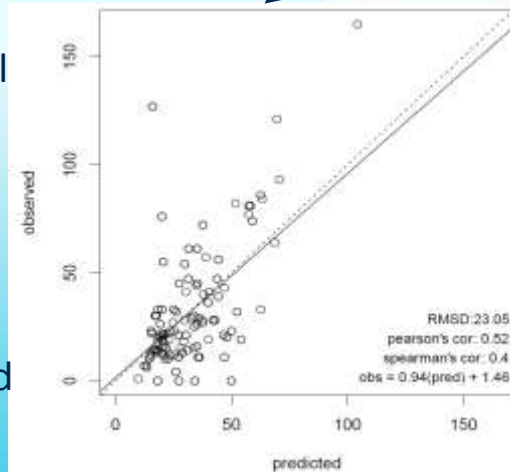
Apply preliminary processing algorithms (e.g. radiometric calibration, terrain correction, debursting, speckle filtering) to extract calibrated, corrected backscatter



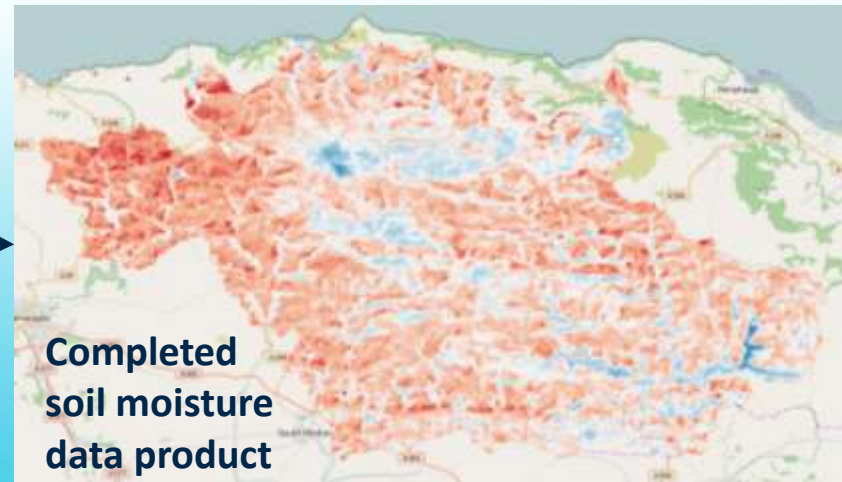
Uncalibrated, unprocessed synthetic aperture radar backscatter (raw data)



Apply empirical modelling to extract relationship between calibrated backscatter and soil moisture



Completed soil moisture data product



Peat Soil Depth



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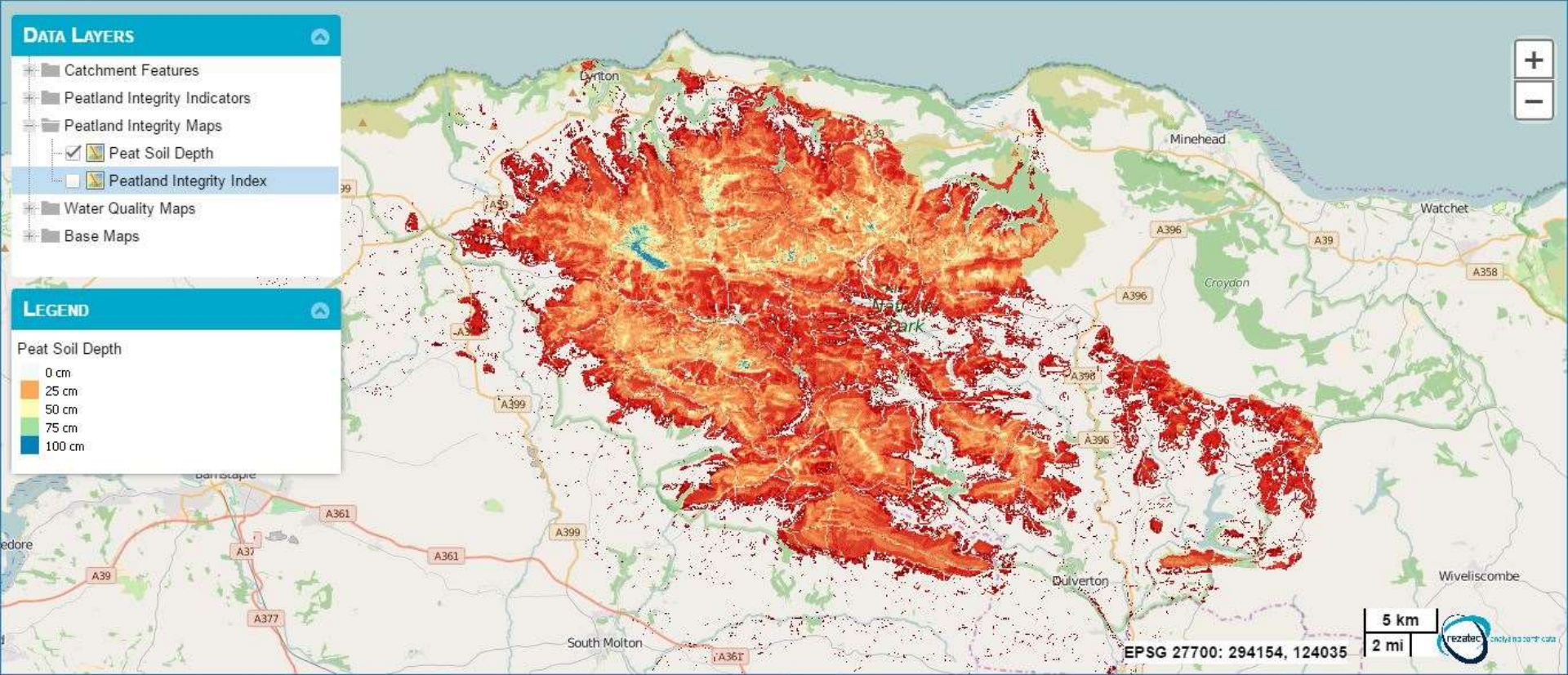
DATA LAYERS

- Catchment Features
- Peatland Integrity Indicators
- Peatland Integrity Maps
 - ☒ Peat Soil Depth
 - ☐ Peatland Integrity Index
- Water Quality Maps
- Base Maps

LEGEND

Peat Soil Depth

- 0 cm
- 25 cm
- 50 cm
- 75 cm
- 100 cm



Soil Moisture



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DATA LAYERS

☒ Catchment Features

☒ Peatland Integrity Indicators

☐ Narthecium (+) Vegetation Map

☐ Eriophorum (+) Vegetation Map

☐ Poaceae (-) Vegetation Map

☐ Molinia (-) Vegetation Map

☐ Calluna (-) Vegetation Map

☒ Relative Soil Moisture

☐ April Exposed Soil Index

☒ Peatland Integrity Maps

☒ Water Quality Maps

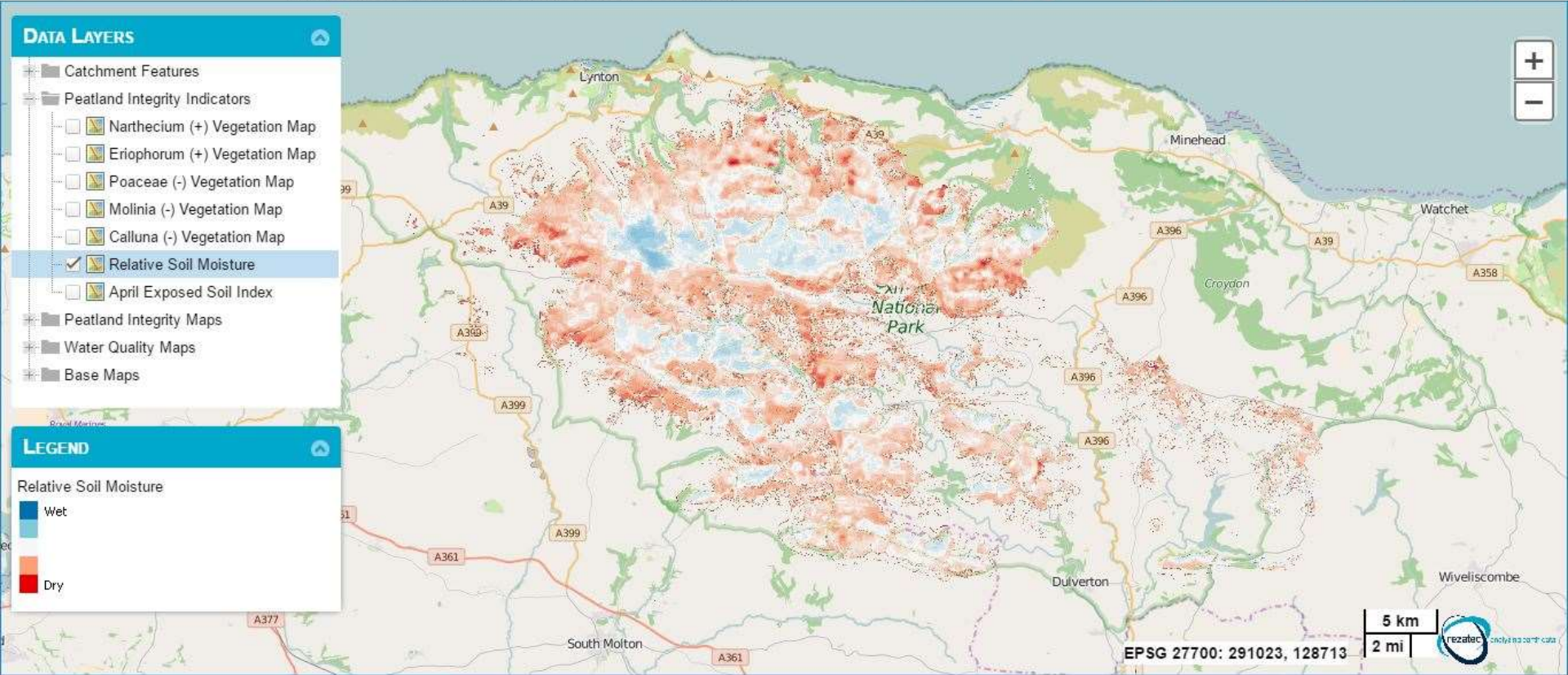
☒ Base Maps

LEGEND

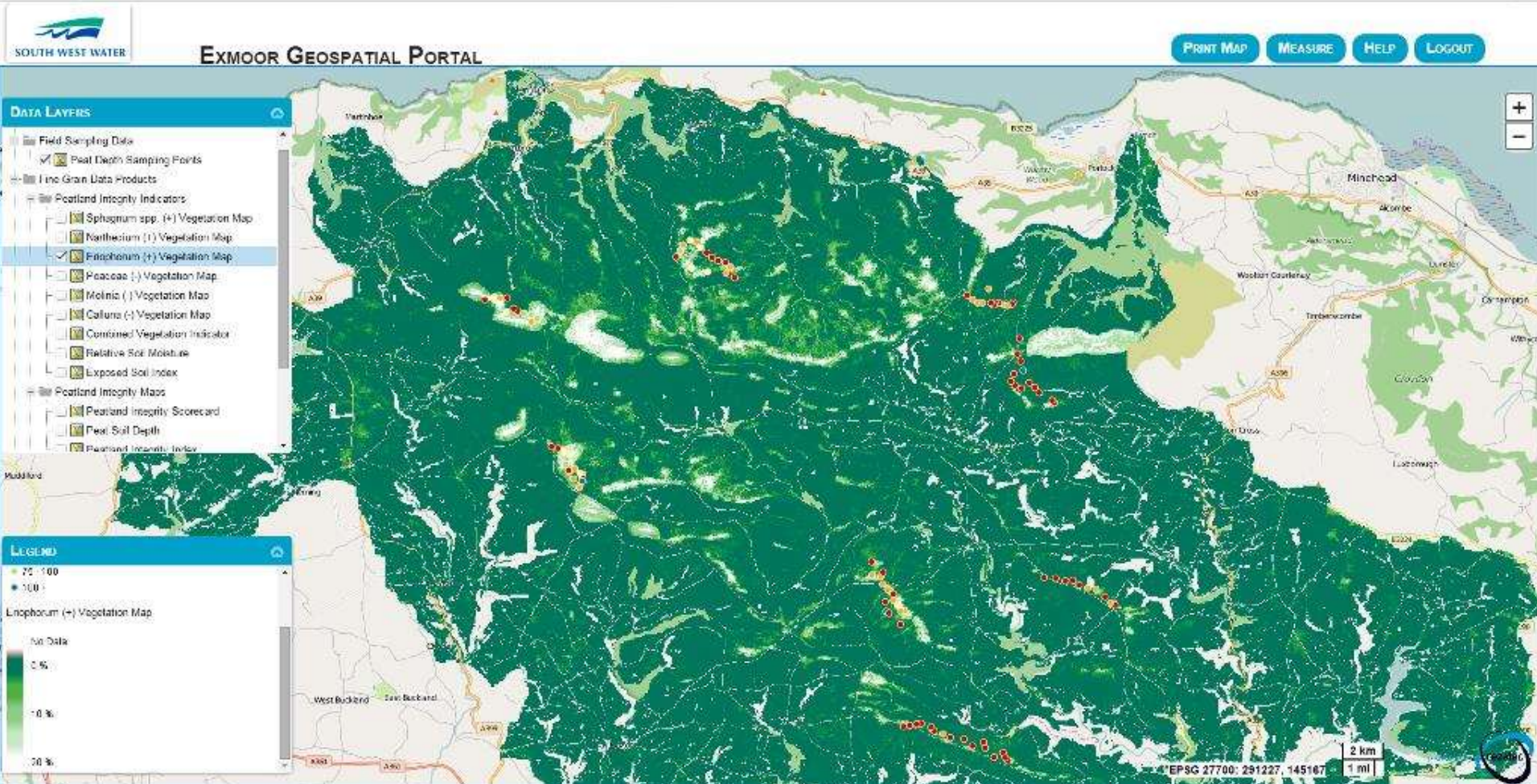
Relative Soil Moisture

Wet

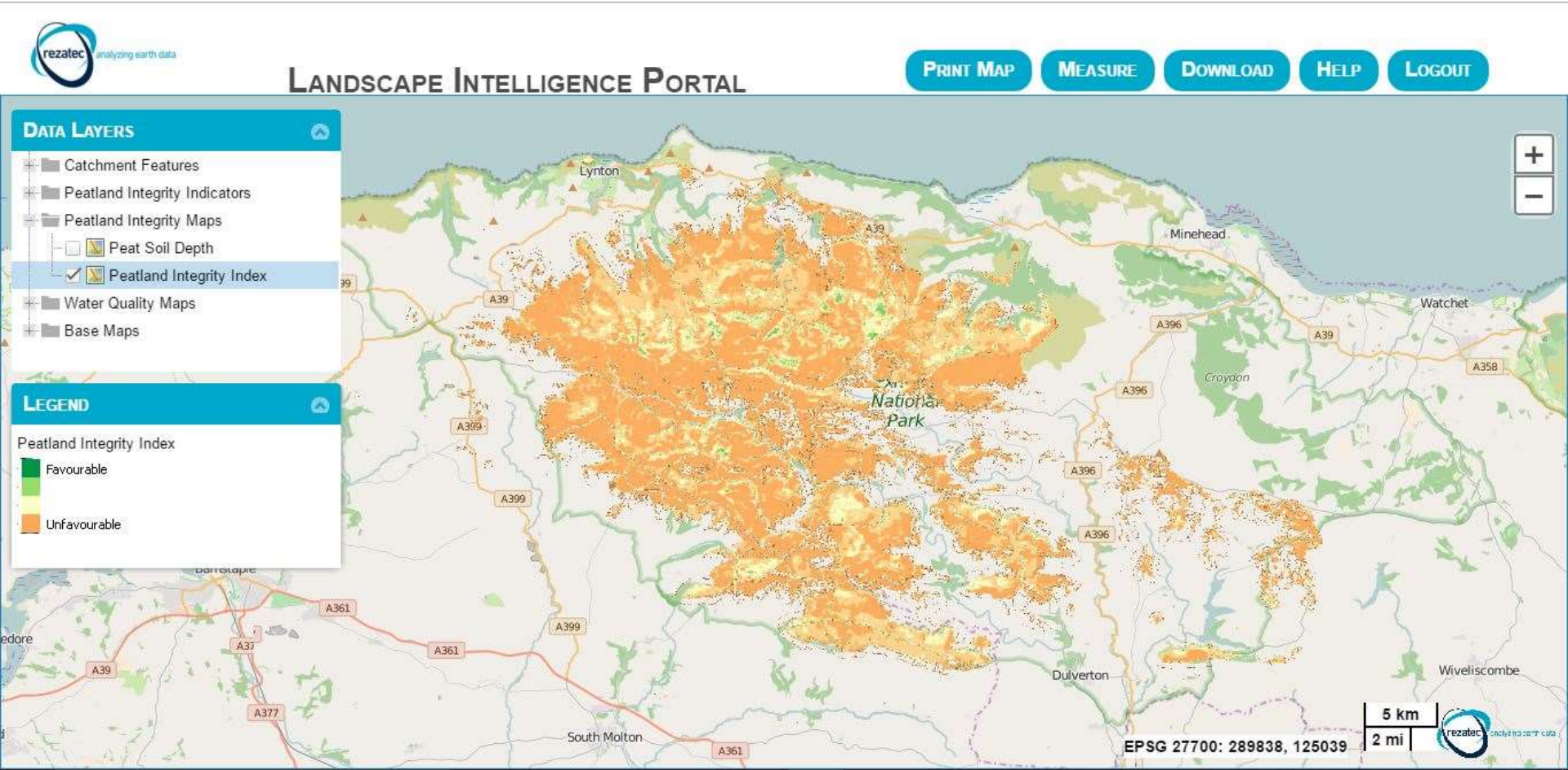
Dry



Vegetation Analysis (+ve & -ve)



Peatland Integrity Index



Water quality risk index



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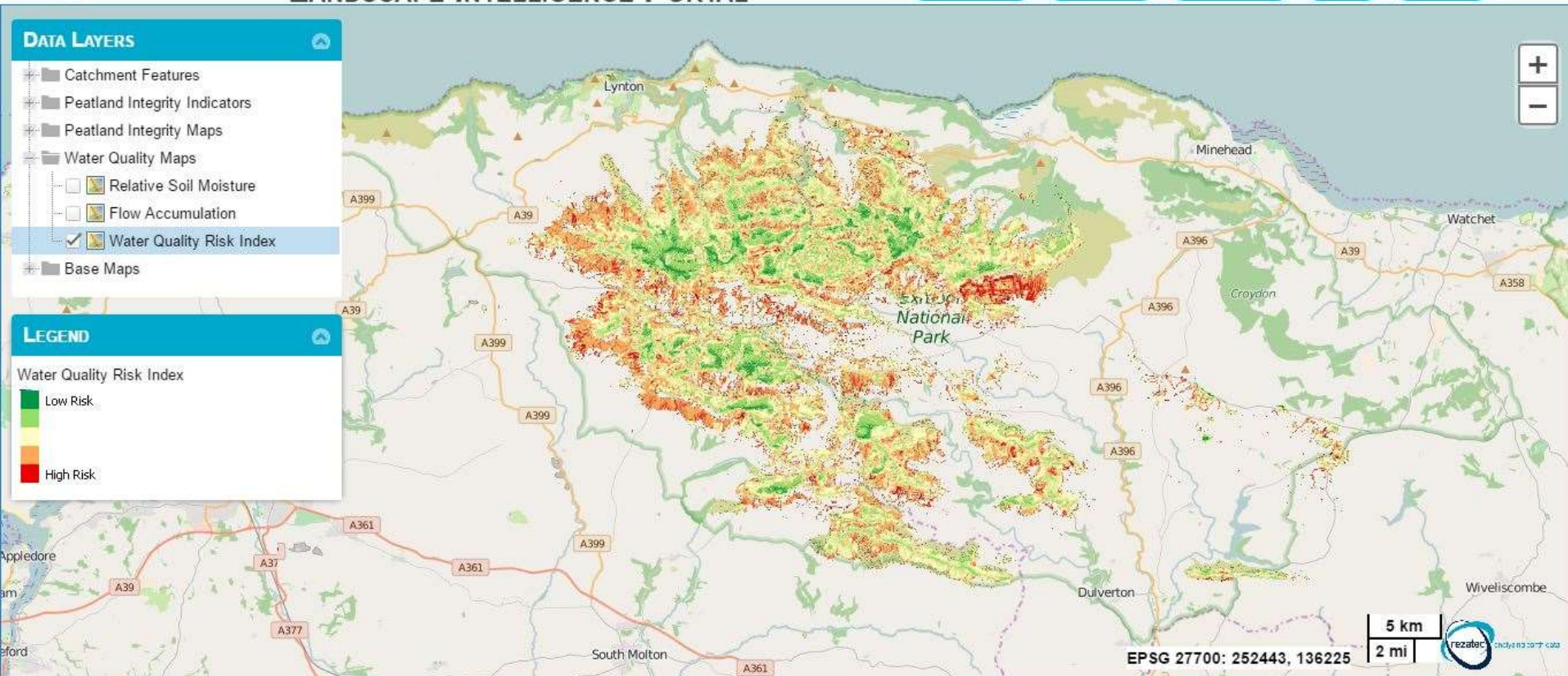

DATA LAYERS

- ☒ Catchment Features
- ☒ Peatland Integrity Indicators
- ☒ Peatland Integrity Maps
- ☒ Water Quality Maps
 - ☐ Relative Soil Moisture
 - ☐ Flow Accumulation
 - ☒ Water Quality Risk Index
- ☒ Base Maps

LEGEND

Water Quality Risk Index

- Low Risk
- Medium Risk
- High Risk



Eroded area after restoration





Thank You

Philip Briscoe, philip.briscoe@rezatec.com

David Smith, dmsmith@southwestwater.co.uk