

Marine Renewables and Marine Historic Environment Assessment: An Orkney Perspective

Dr Jane Downes



Preliminary GIS reconstruction
of Orkney 10,000 years ago
(Dawson & Bates)

Fish trap at Weelies Taing,
Papa Westray

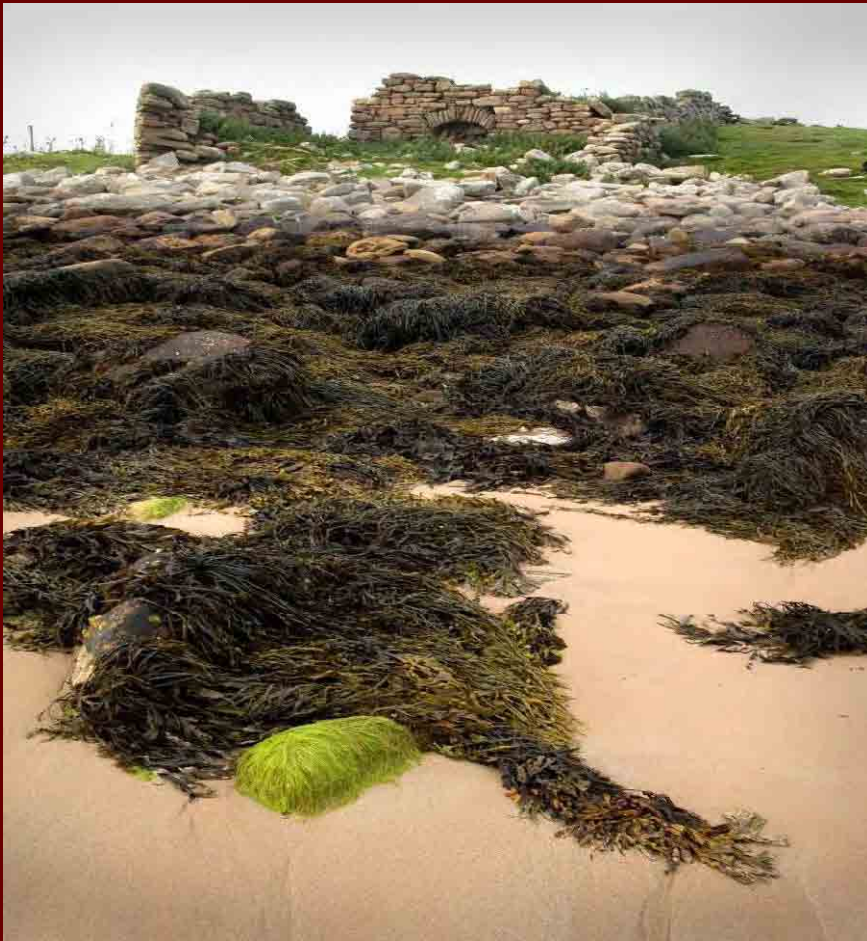


Viking midden eroding out of a cliff
face at Quoygrew, Westray

Eroding burnt mound on
Sanday

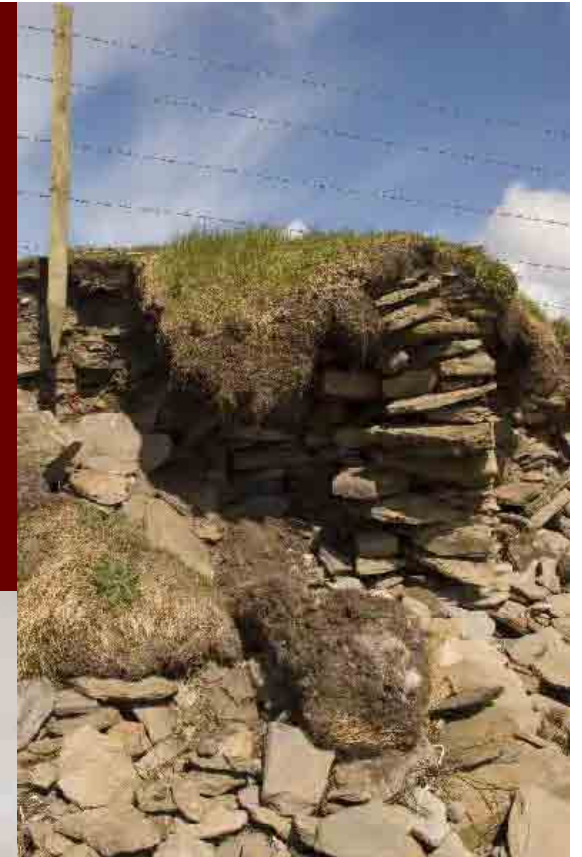


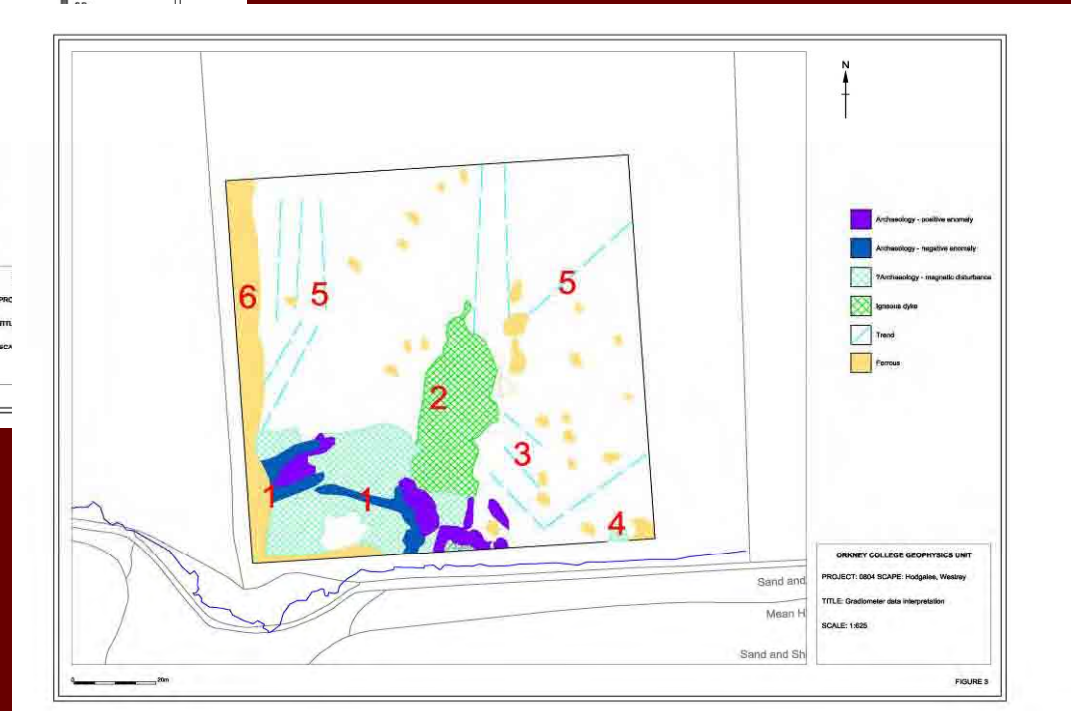
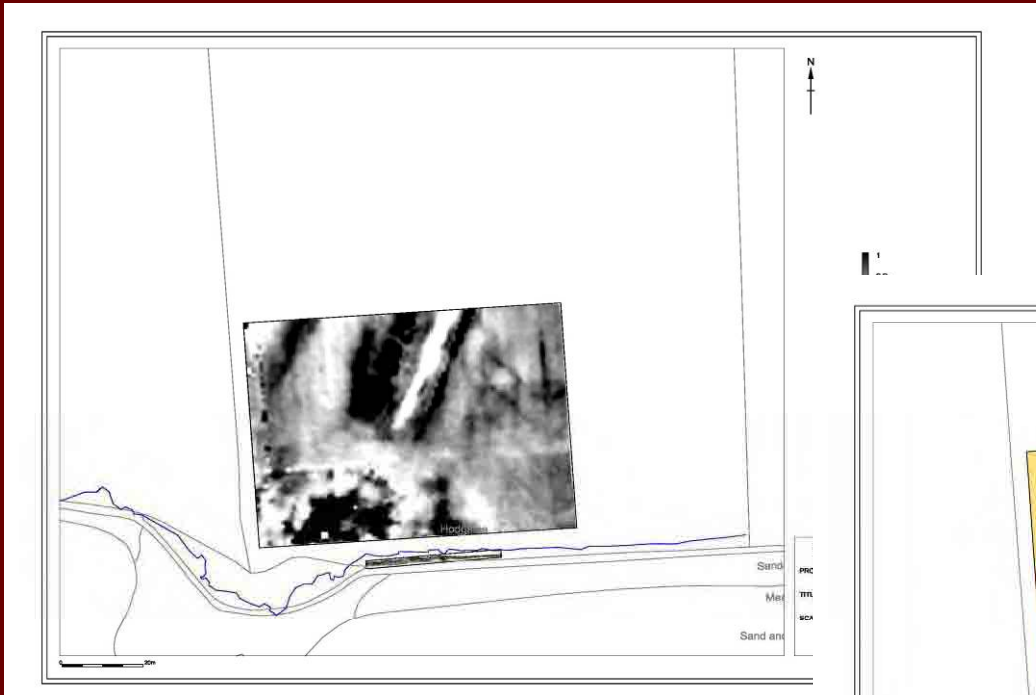
17th century saltworks, Calf of Eday



Eroding WWII searchlight
emplacement

Hodgalee, Westray:
Iron Age broch,
indicator of erosion rates



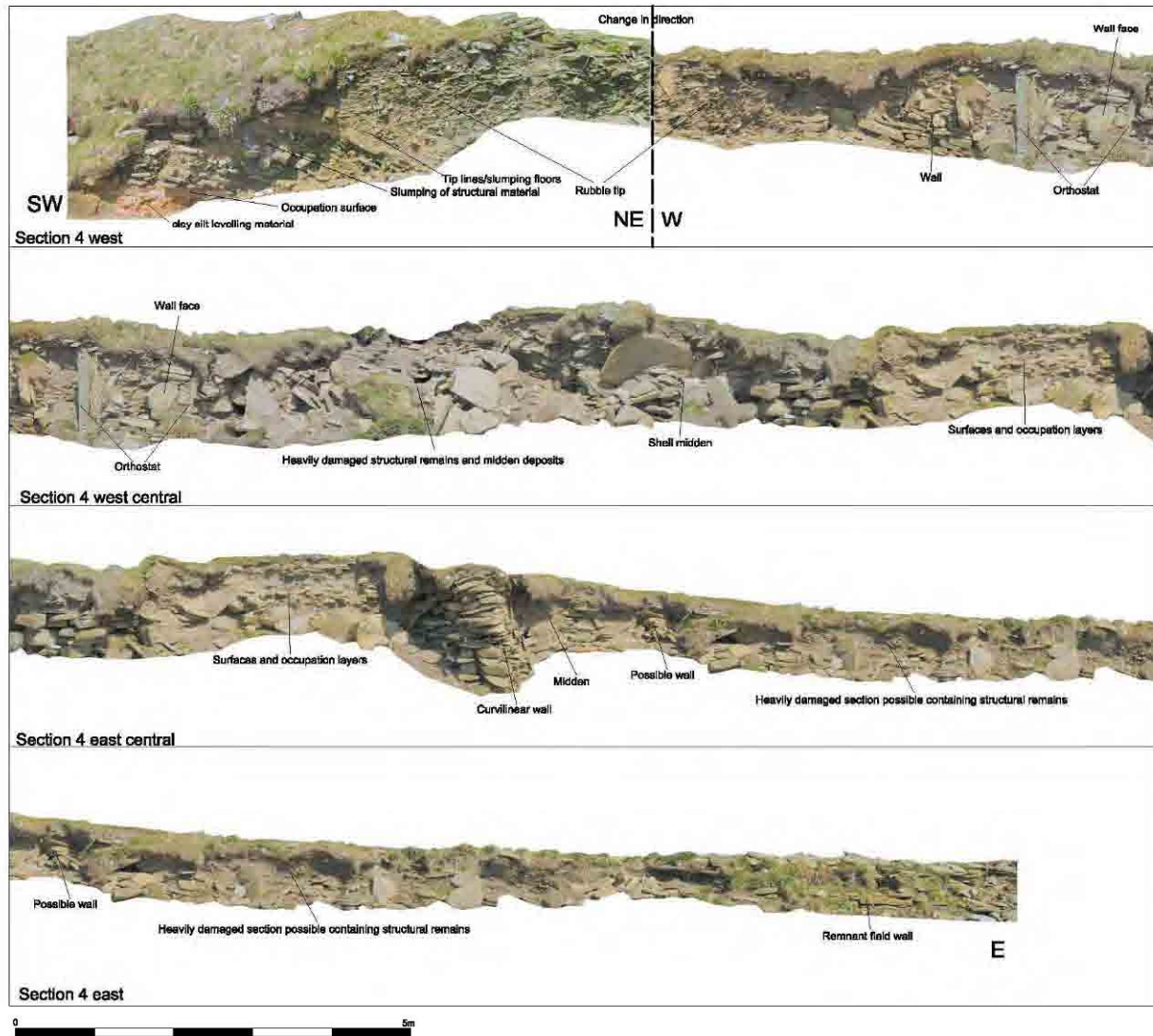


Geophysical survey of eroding broch at Hodgalee,
Westray



ORCA

Orkney Research Centre
for Archaeology



ORKNEY COLLEGE GEOPHYSICS UNIT
 PROJECT: 0804 SCAPE: Hodgalee, Westray
 TITLE: Geo-rectified coastal section 4
 Enhanced Images
 SCALE: 1:50

FIGURE 13

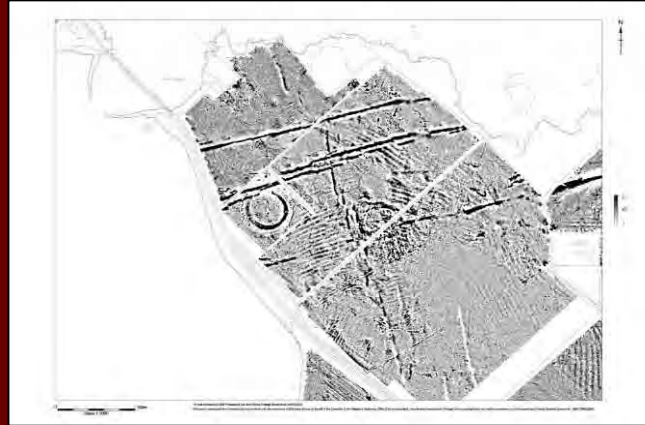
Geo-rectified elevation of eroding section of Hodgalee broch, Westray

Geophysics and Survey capabilities

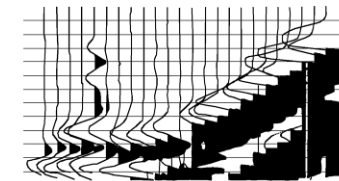
Seismic refraction/
reflection



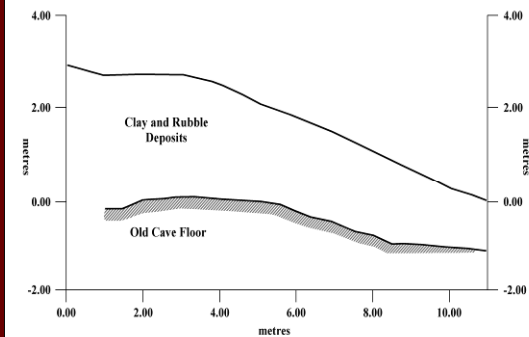
Magnetometry



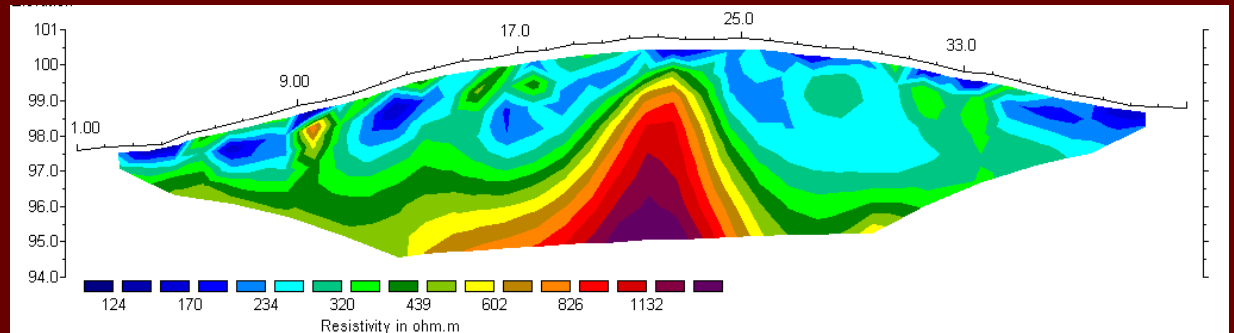
Seismogram



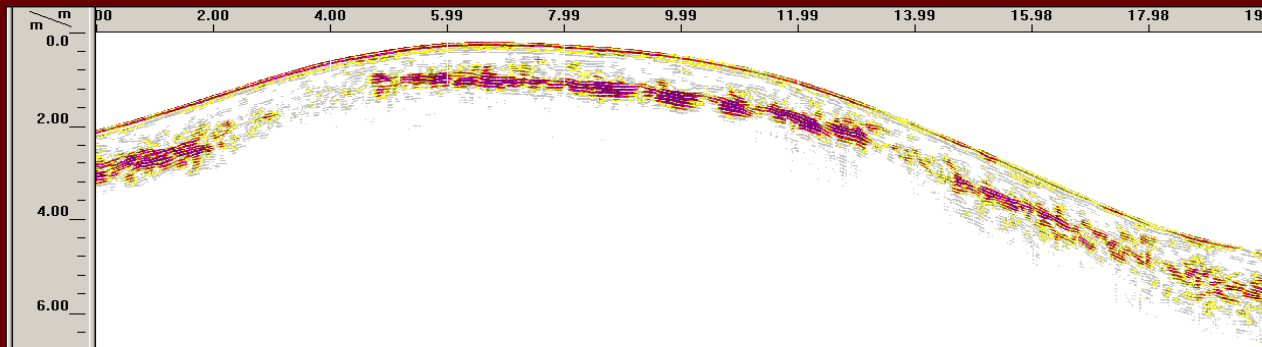
Graphical Interpretation



Electric resistance



Ground penetrating radar



Resistance



Earthwork and standing building survey

Coring



Surveying a crannog in the Loch of Harray



ORCA and SULA Diving
partnership





ORKNEY COLLEGE GEOPHYSICS UNIT
PROJECT: 0905 Binay Skail Landscape Project
TITLE: Summary grayscale
SCALE: 1:8000

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FIGURE 5



ORKNEY COLLEGE GEOPHYSICS UNIT
PROJECT: 0905 Binay Skail Landscape Project
TITLE: Bay of Skail overall interpretation diagrams
SCALE: 1:8000

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FIGURE 6

Skail Bay - gradiometry survey



Skara Brae
Neolithic Village

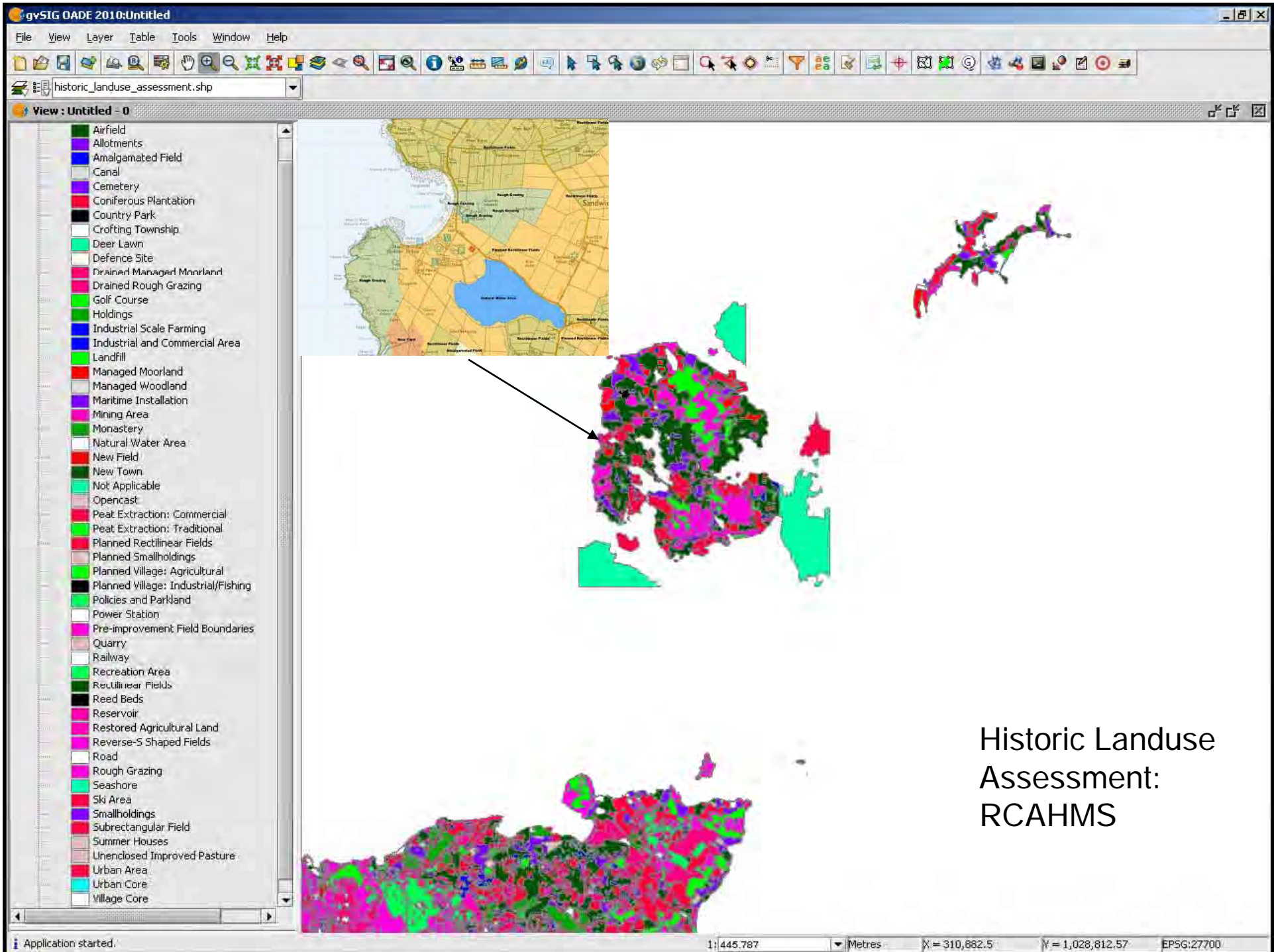
Offshore renewables and utilities have an impact on the land



Landing a fibre-optic cable at
Skail Bay near Skara Brae

The other end of the cable
at Dunnet Head, Caithness

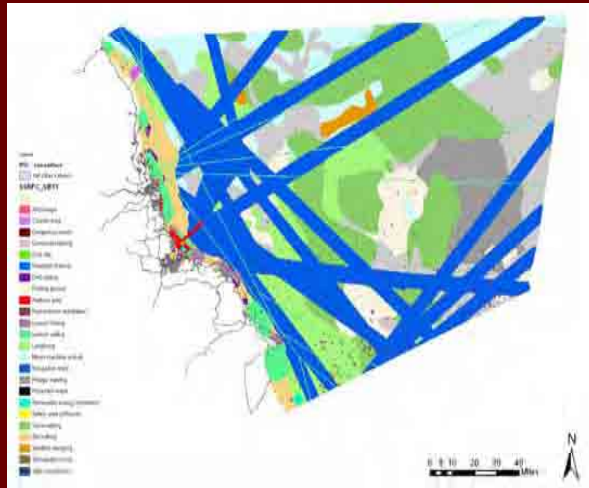




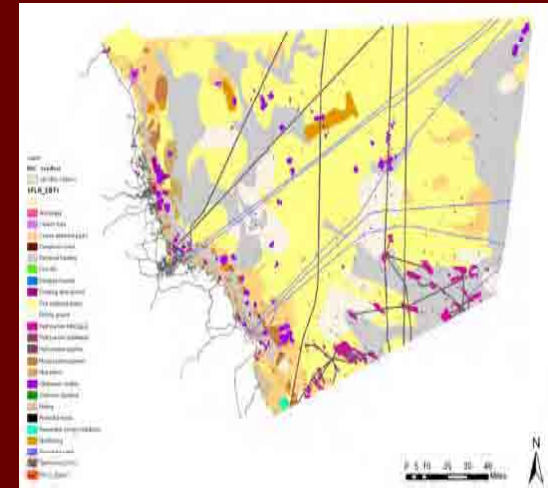
Historic Landuse Assessment: RCAHMS

Common principles but differing expressions:

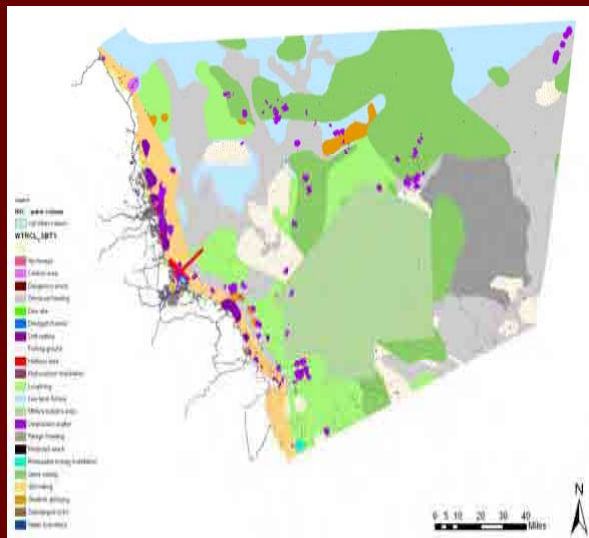
more complex, tiered three-dimensionality in marine zone than on land



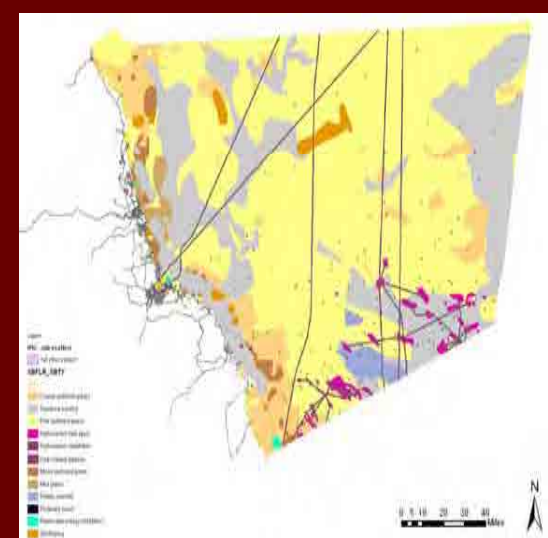
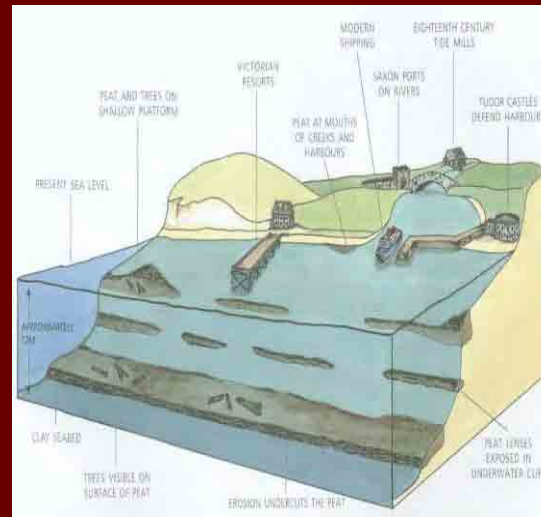
Sea Surface
HSC



Sea-floor
HSC



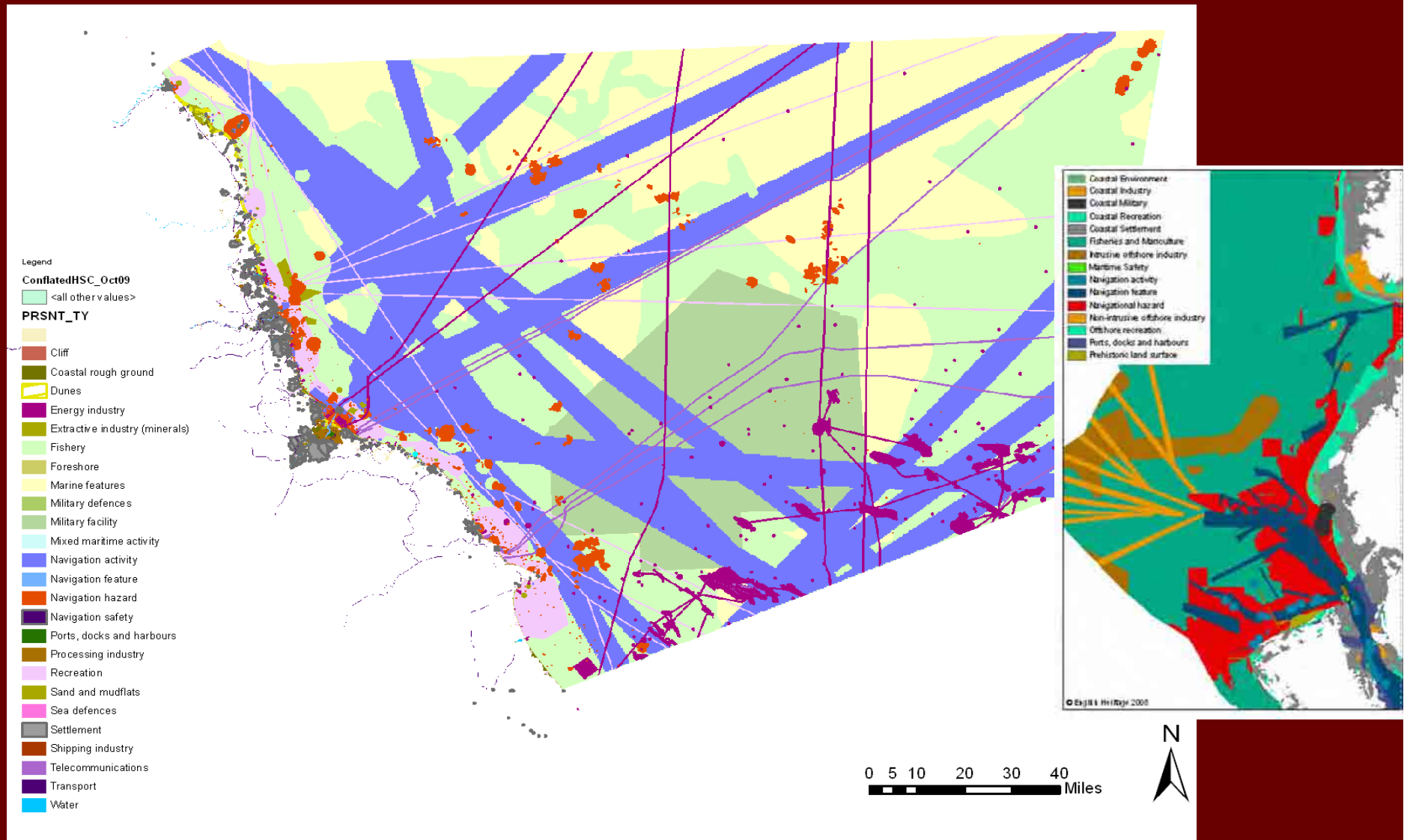
Water Column
HSC



Sub-seafloor
HSC

English Historic Seascape Characterisation :
tiered characterisation and mapping responsive to users' needs and applications

Conflated and multiple 'Previous' HSC mapping can also be generated



Analogous to 2D portrayals of land HLC
and will serve as an entry point to HSC tiered mapping

English Heritage HSC: Core Data Sources (plus supplementary sources)

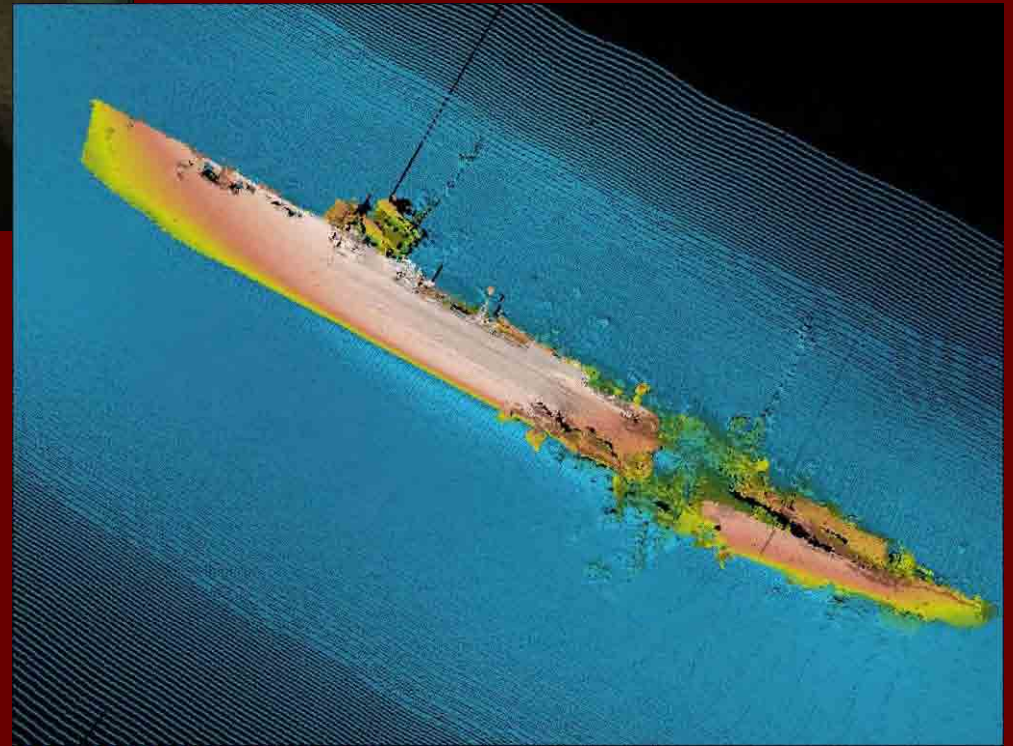
Source	Format	Location	Grain of HSC	
			Scale of data capture	Spatial resolution (metres)
Modern Charts	Digital/Hard copy	UKHO/Seazone		
Historic charts	Digital and hard copy	UKHO/NMM/Museums, Libraries and Record Offices		
Modern OS maps	Digital	English Heritage/OS		
Historic OS maps (1 st & 2 nd OS Edns)	Digital	English Heritage/OS	1:10,000	5
SeaZone Hydrospatial* Bathymetry & elevation (BE), Natural & physical features (NP) Structures & obstructions (SO) Socio-economic & marine use (SM) Conservation & environment (CE) Climate & oceanography (CO) Wrecks (W))	Digital	SeaZone Solutions Ltd	1:25,000	13
			1:50,000	25
			1:100,000	50
			1:250,000	125
			1:625,000	312
Adjacent County Terrestrial HLC data	Digital	Local Authority		
Modern Aerial Photos	Digital	Local Authority		
Fisheries data (offshore and inshore fishing effort and pressures, spawning grounds, shellfish)	Digital	CEFAS, Sea Fisheries Committees (within 6nm), JNCC, Kingfisher charts, NMR, Misc. fishing charts		
Environmental designations and land classification, (marine habitat and seabed facies/biotope mapping)	Digital	Natural England/JNCC/MAGIC database, CEFAS, BGS		

ScapaMAP



Divers conducting conventional survey on SMS Brummer

SMS Köln





*Integrated approaches to
cultural and natural aspects
of environment*

<http://www.uhi.ac.uk/home>

<http://www.orca.uhi.ac.uk/>

<http://www.orkney.uhi.ac.uk/>

[http://www.english-heritage.org.uk/professional/research/
landscapes-and-areas/characterisation/historic-seascape-character/](http://www.english-heritage.org.uk/professional/research/landscapes-and-areas/characterisation/historic-seascape-character/)

<http://www.rcahms.gov.uk/historic-land-use-assessment.html>