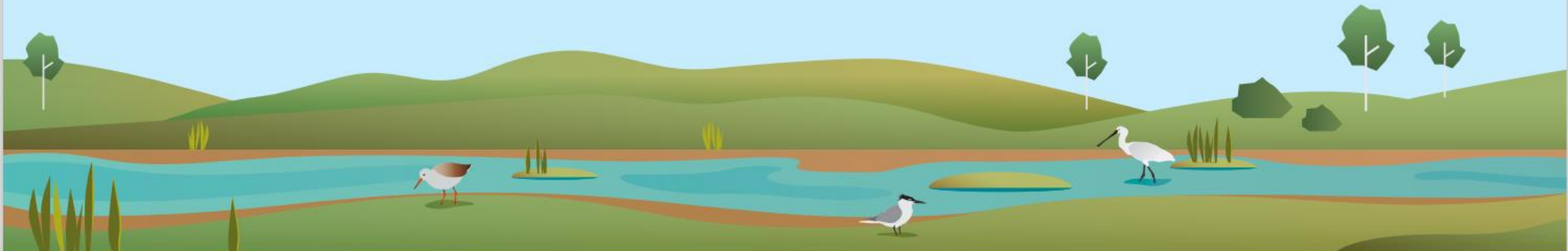




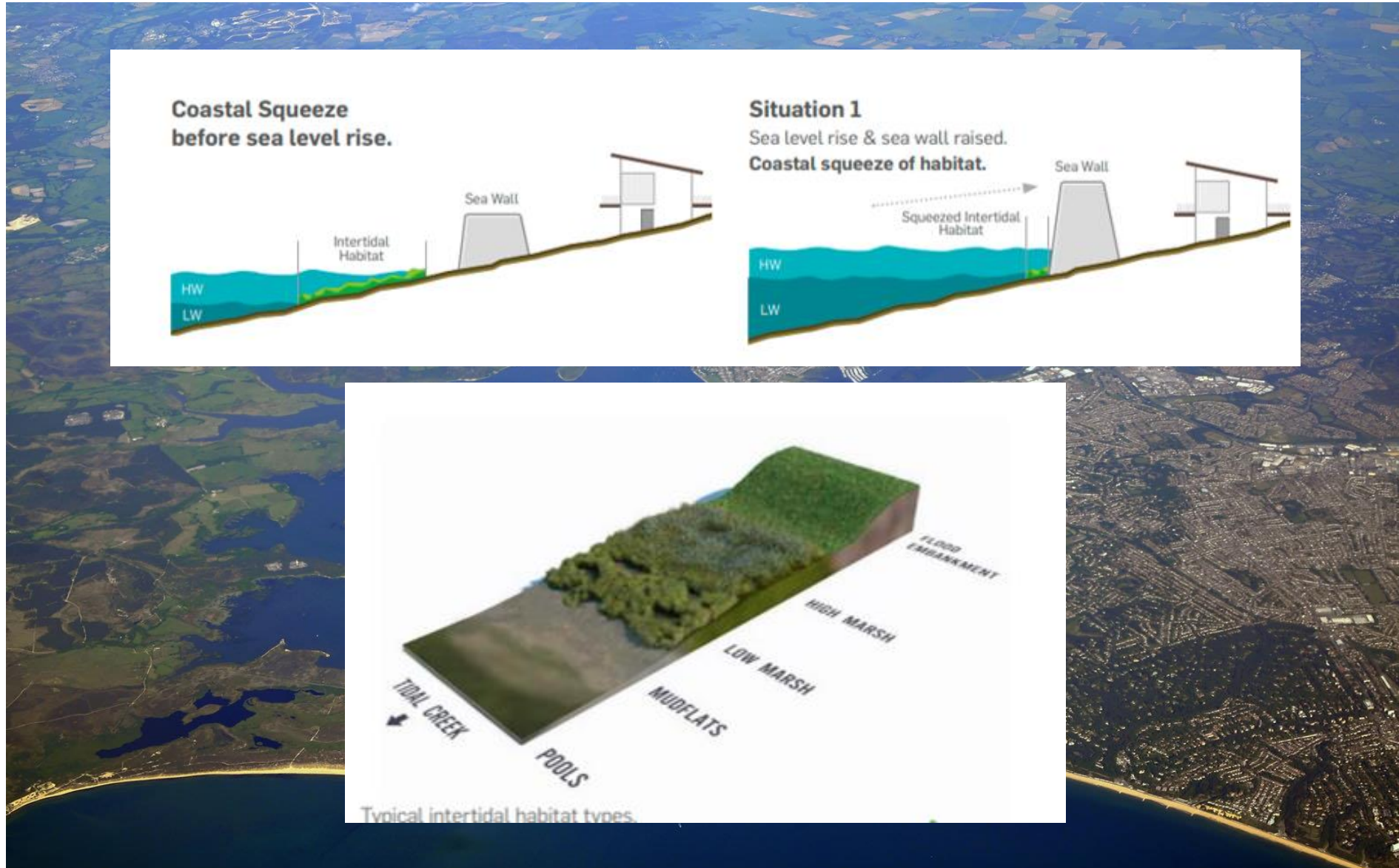
Environment
Agency

Coastal Change The Moors at Arne

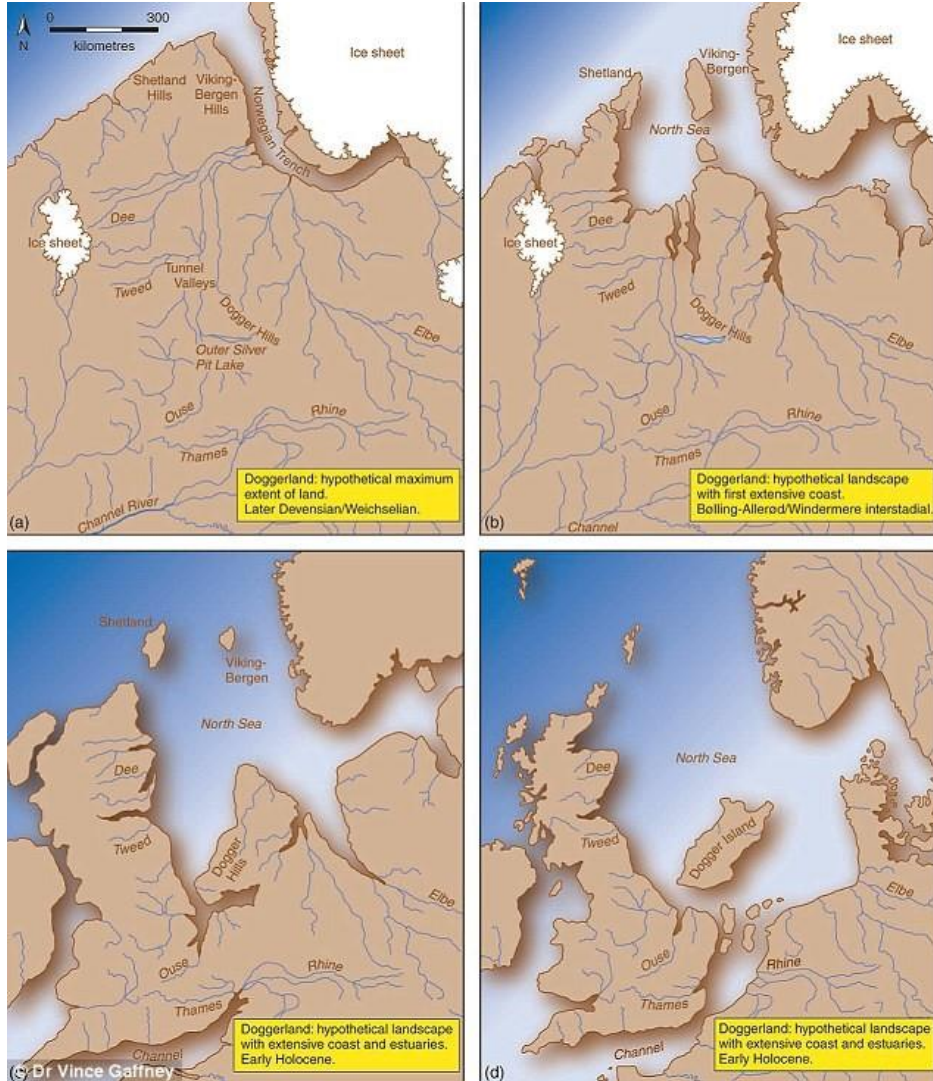
Neil Watson, Environment Agency, Project Executive



Context within Poole Harbour



The Prehistoric Periods - 500k years of climate change



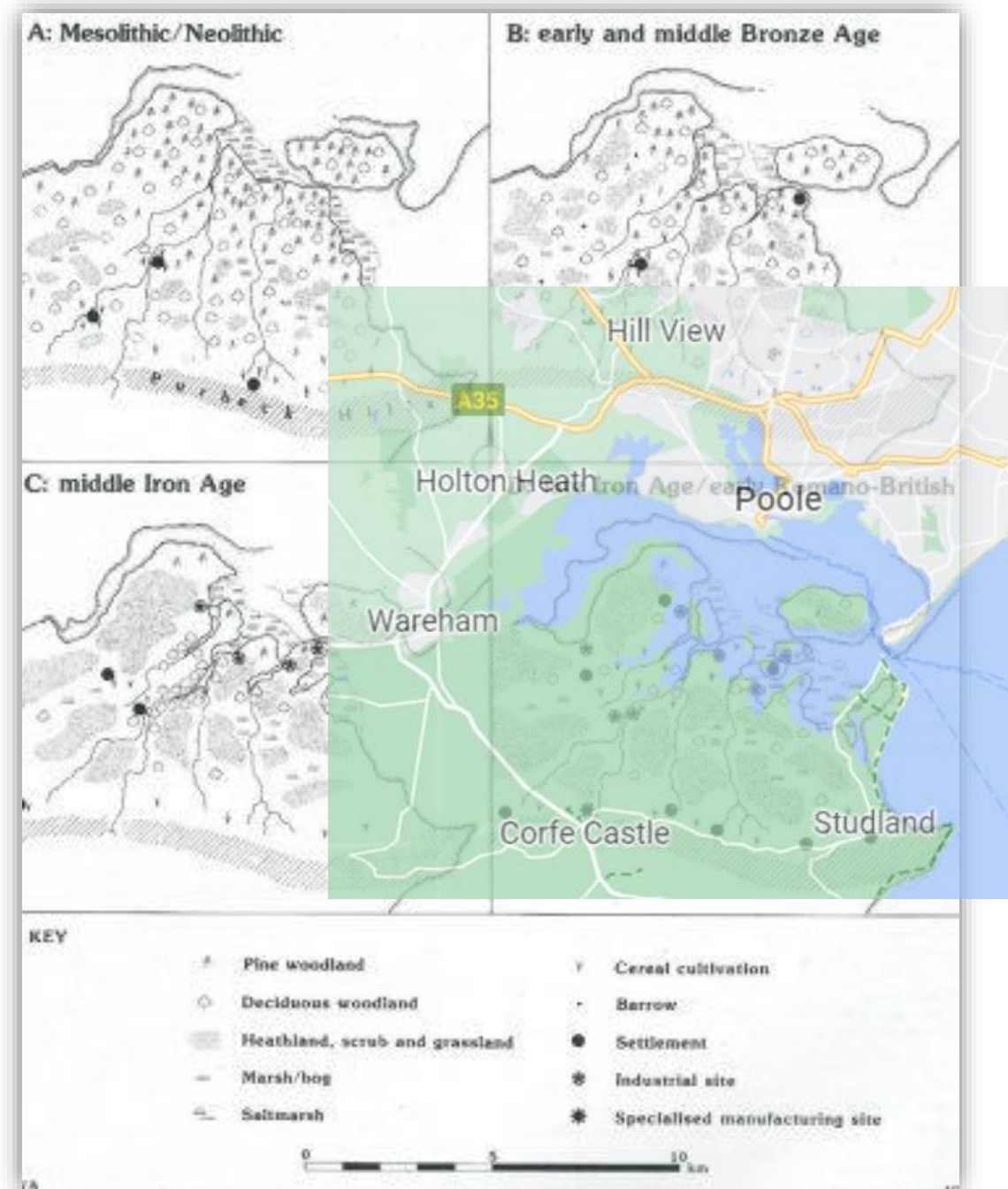
Past Sea Levels

- Late Pleistocene **(129,000 BP)** >-30 m OD
- Early Post Glacial **(120,000 BP)** -22.5 m OD
- Early Mesolithic **(14,000 BP)** -9 m OD
- Late Mesolithic **(12,000 BP)** -5 m OD
- Neolithic **(6,000 BP)** -4 m OD
- Early Bronze Age **(4,300 BP)** -3 m OD
- Early Iron Age **(2,700 BP)** -2 m OD
- Mid Saxon **(1,400 BP)** -1 m OD
- Industrial Revolution **(200 BP)**

Formation of Poole Harbour

Past Sea Levels

- Late Pleistocene (129,000 BP) >-30 m OD
- Early Post Glacial (120,000 BP) -22.5 m OD
- Early Mesolithic (14,000 BP) -9 m OD
- Late Mesolithic (12,000 BP) -5 m OD
- Neolithic (6,000 BP) A -4 m OD
- Early Bronze Age (4,300 BP) -3 m OD
- Early Iron Age (2,800 BP) B -2 m OD
- Middle Iron Age (2,300 BP)
- Late Iron Age (2,100 BP) C/D -1.5 OD
- Mid Saxon (1,400 BP) -1 m OD

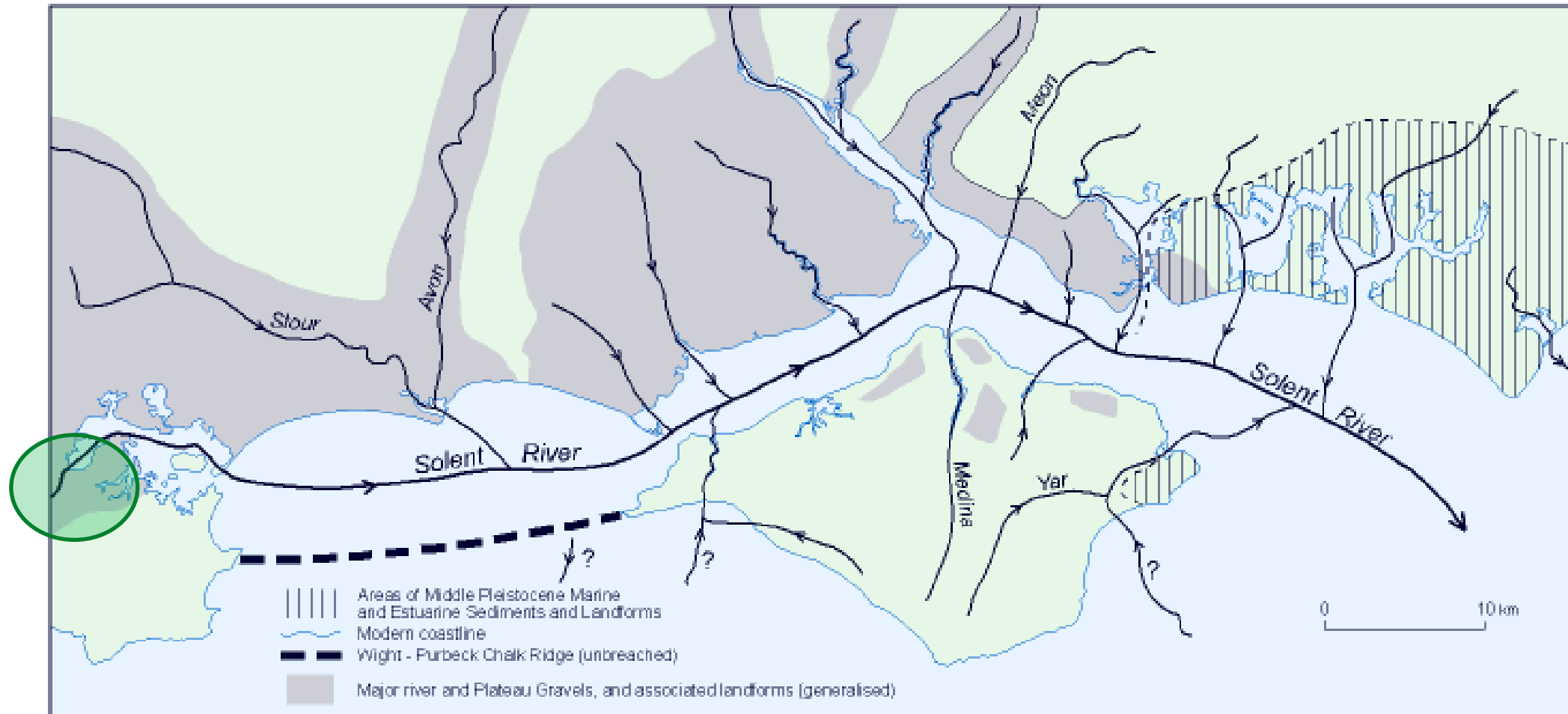


Solent River – Flowing through The Moors at Arne

Figure 1: The Solent River, Early-to Mid-Quaternary

The contemporary coastline would have been some 20-30 kilometres southwards.

Sea-level rise during early interglacial periods would have created estuarine conditions in the eastern and central Solent.

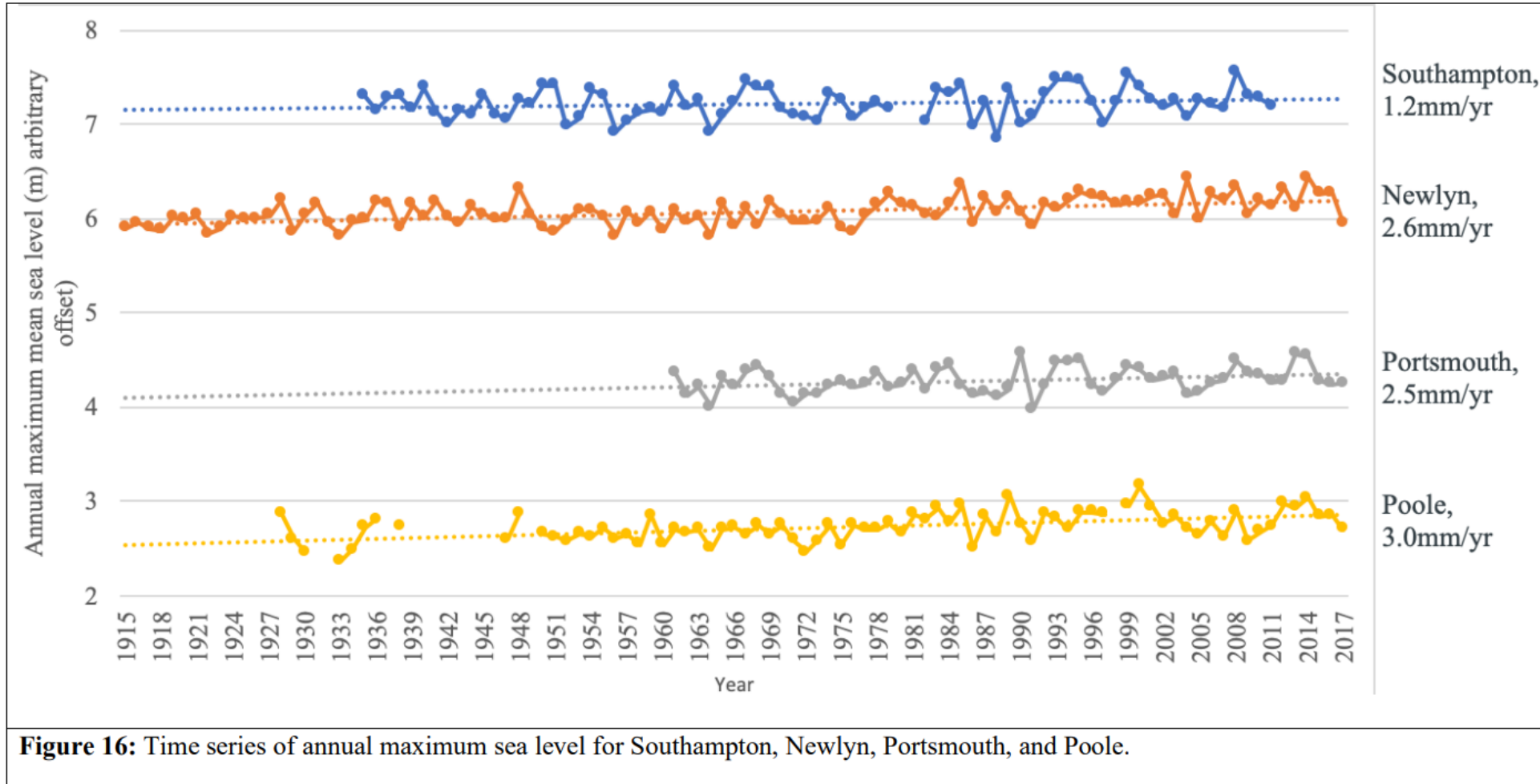


2.6 m yr to 11,000 yr BP

[Quaternary History of the Solent \(scopac.org.uk\)](http://scopac.org.uk)

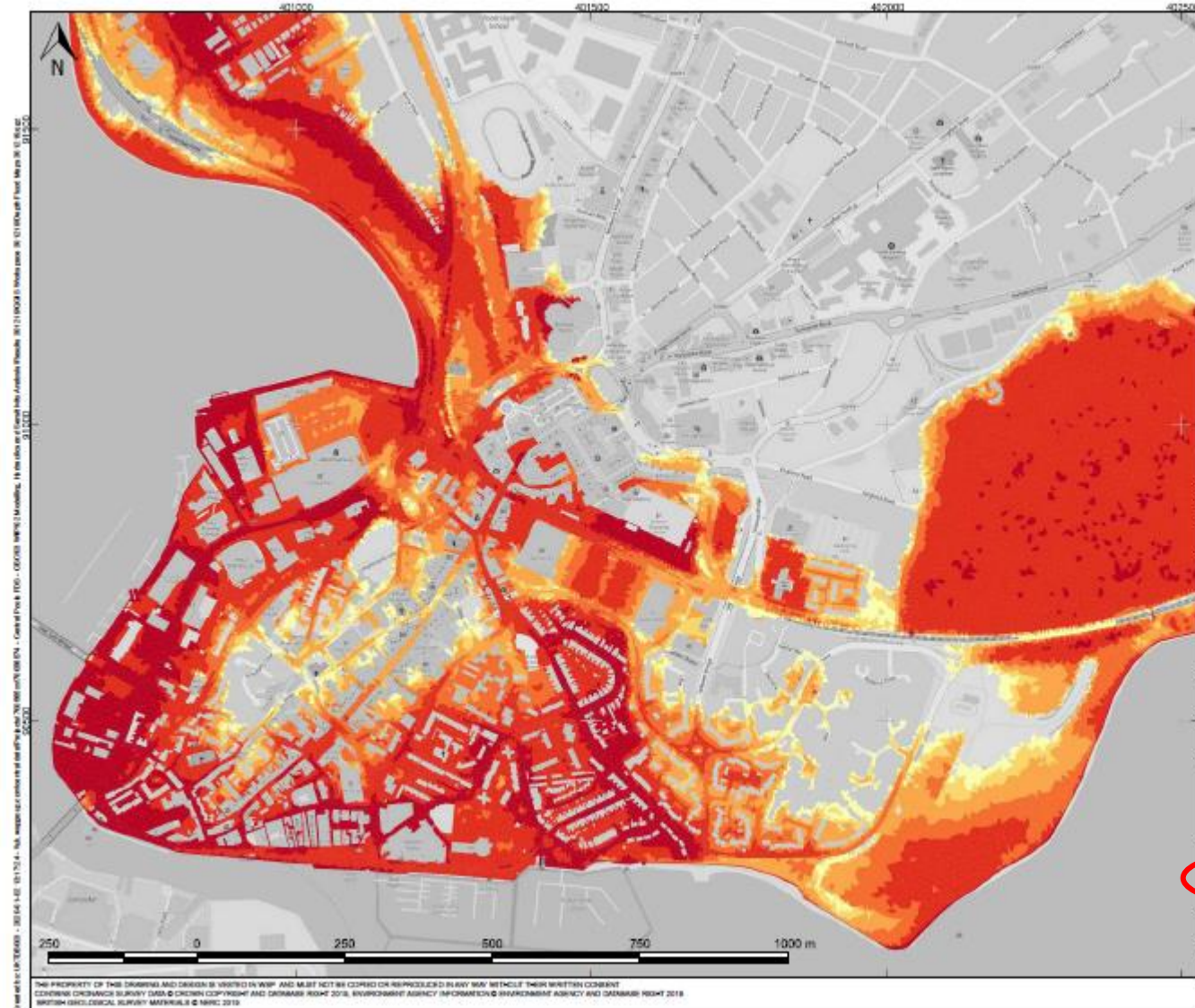
Sea Level Rise – Last 100 years

Annual Mean & Annual Maximum



Between 1927 and 2019 annual mean and extreme sea levels have increased by 2.0 and 3.0 mm/yr, respectively, at Poole.

Future Sea Level Rise



AEP (%)	Extreme still water level (mAOD) based on CFBD chainage point 4864			
	2018	2068 (UKCP09)	2118 (UKCP09)	2118(NPPF)
50	1.50	1.84	2.26	2.59
20	1.59	1.93	2.35	2.68
10	1.66	2.01	2.42	2.75
5	1.72	2.07	2.48	2.81
4	1.77	2.12	2.53	2.86
3.33	1.78	2.13	2.54	2.87
2	1.81	2.16	2.57	2.9
1.33	1.84	2.19	2.6	2.93
1	1.87	2.22	2.63	2.96
0.5	1.93	2.28	2.69	3.02
0.1	2.09	2.44	2.85	3.18

FOR INFORMATION ONLY

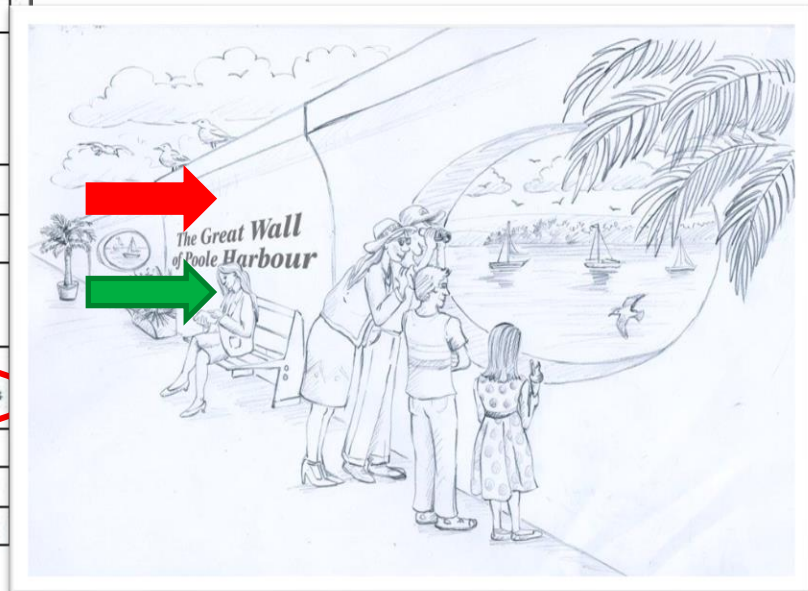
wsp
Keele House, Southamby Gardens,
Exeter, Devon EX1 1NT
Tel: +44 (0) 1392 267 500
www.wsp.com

CLIENT: BCP Council

PROJECT: Central Poole FDS - OBC

TITLE: **Baseline 2120 0.5% Maximum Depths**

DRAWN: TB DT DT
SCALE: 1:6000
DATE: 02/01/20
PROJECT No: 7005-6574
DRAWING No: 7005-6574-FLD-27
REV: A





Visualisation - Flood Simulation 2018/2118
Mean High Water Neap Tide

The Moors at Arne site

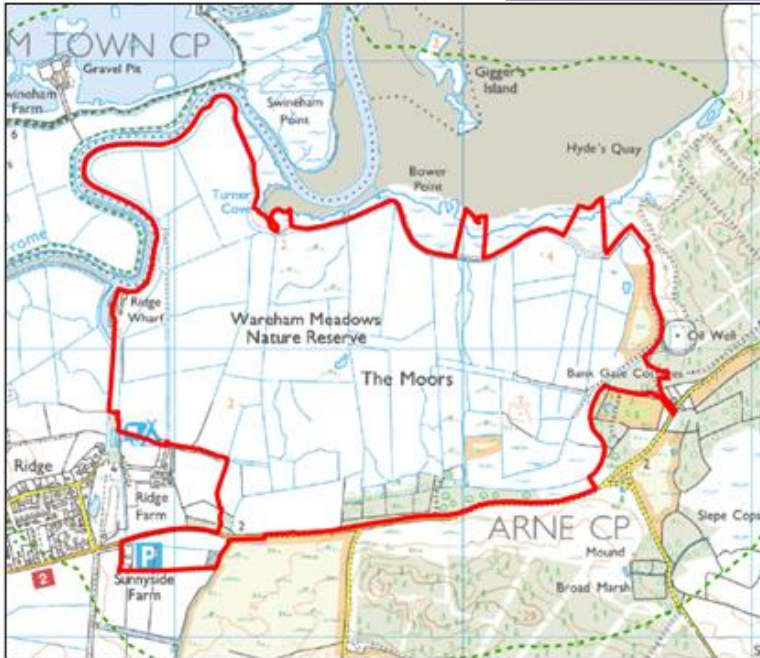
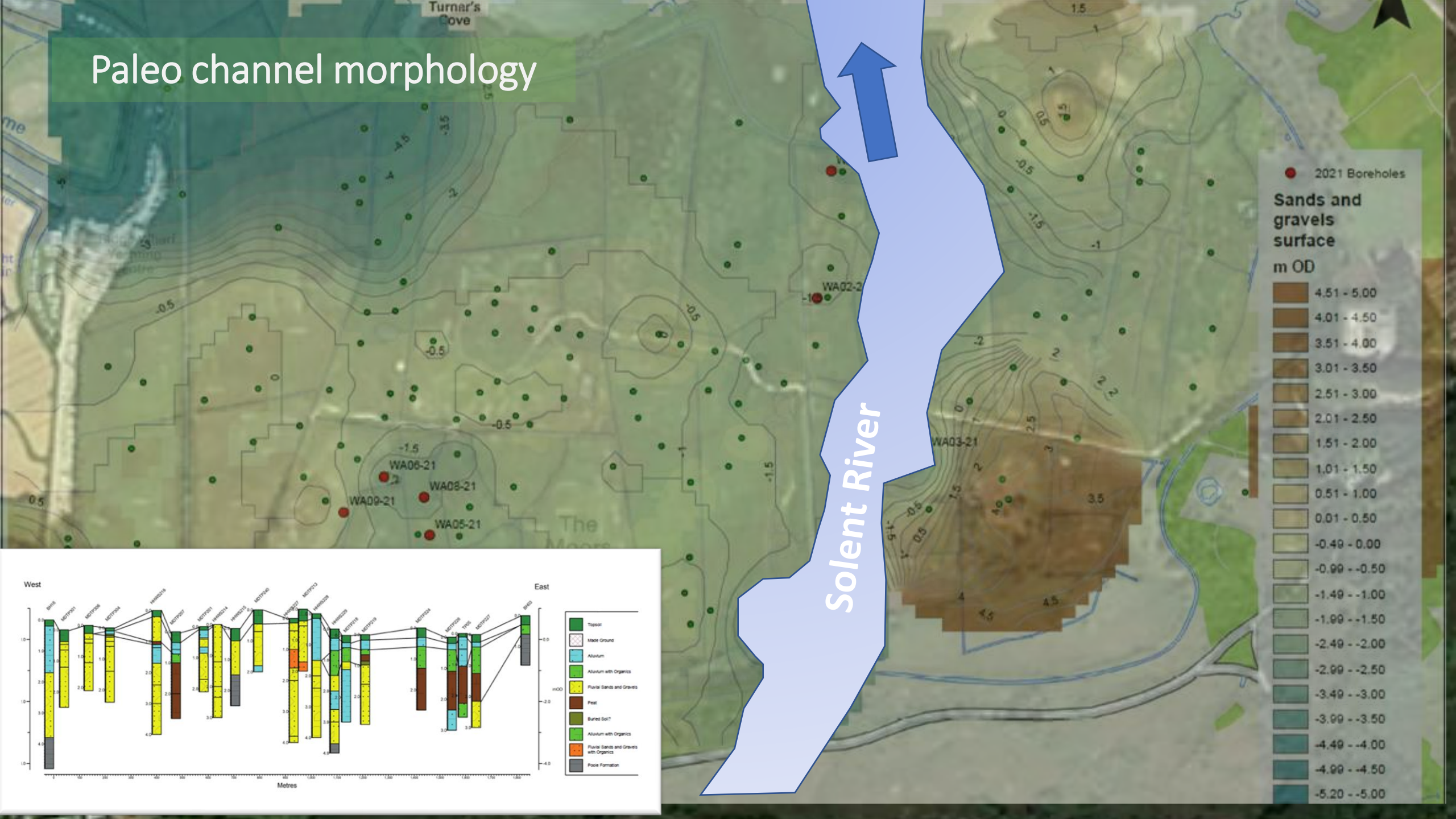


Photo: Graham Hatherley

An aerial photograph of a coastal landscape. In the upper right, a large, calm body of water is visible. A winding river or canal flows from the top left towards the center. The land is divided into a grid of agricultural fields, some green and some brown. A road with a line of trees runs through the middle. In the bottom left, there is a small cluster of buildings and a parking lot. The overall scene is a mix of natural water features and human agricultural activity.

Arne Moors today

Paleo channel morphology



● 2021 Boreholes

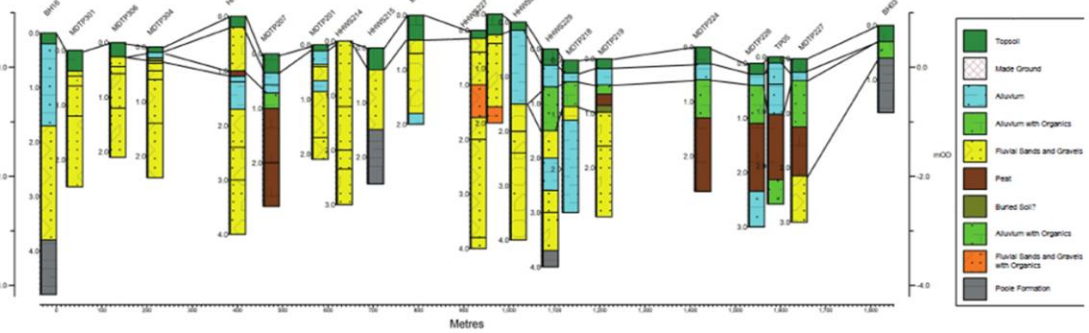
Sands and gravels surface

m OD

- 4.51 - 5.00
- 4.01 - 4.50
- 3.51 - 4.00
- 3.01 - 3.50
- 2.51 - 3.00
- 2.01 - 2.50
- 1.51 - 2.00
- 1.01 - 1.50
- 0.51 - 1.00
- 0.01 - 0.50
- 0.49 - 0.00
- 0.99 - -1.00
- 1.49 - -1.50
- 1.99 - -2.00
- 2.49 - -2.50
- 2.99 - -3.00
- 3.49 - -3.50
- 3.99 - -4.00
- 4.49 - -4.50
- 4.99 - -5.00

West

East



How has the landscape changed over time



Early Mesolithic: 9,700 – 6500 BC



Neolithic and Bronze Age: 3000 – 1000 BC



Late Bronze Age and Iron Age: 1000 BC – 50 AD



Present day

We have used boreholes and geoarchaeological investigations to provide us with a long-term picture of this dynamic coastal landscape in response to global, regional and local changes in climate, environment and sea-levels.

The reconstructions provided by Wessex Archaeology illustrate the effect of past climate change on the landscape over the past 10,000 years.



Late Bronze Age and Iron Age

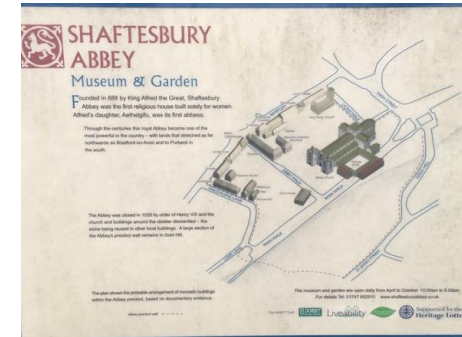
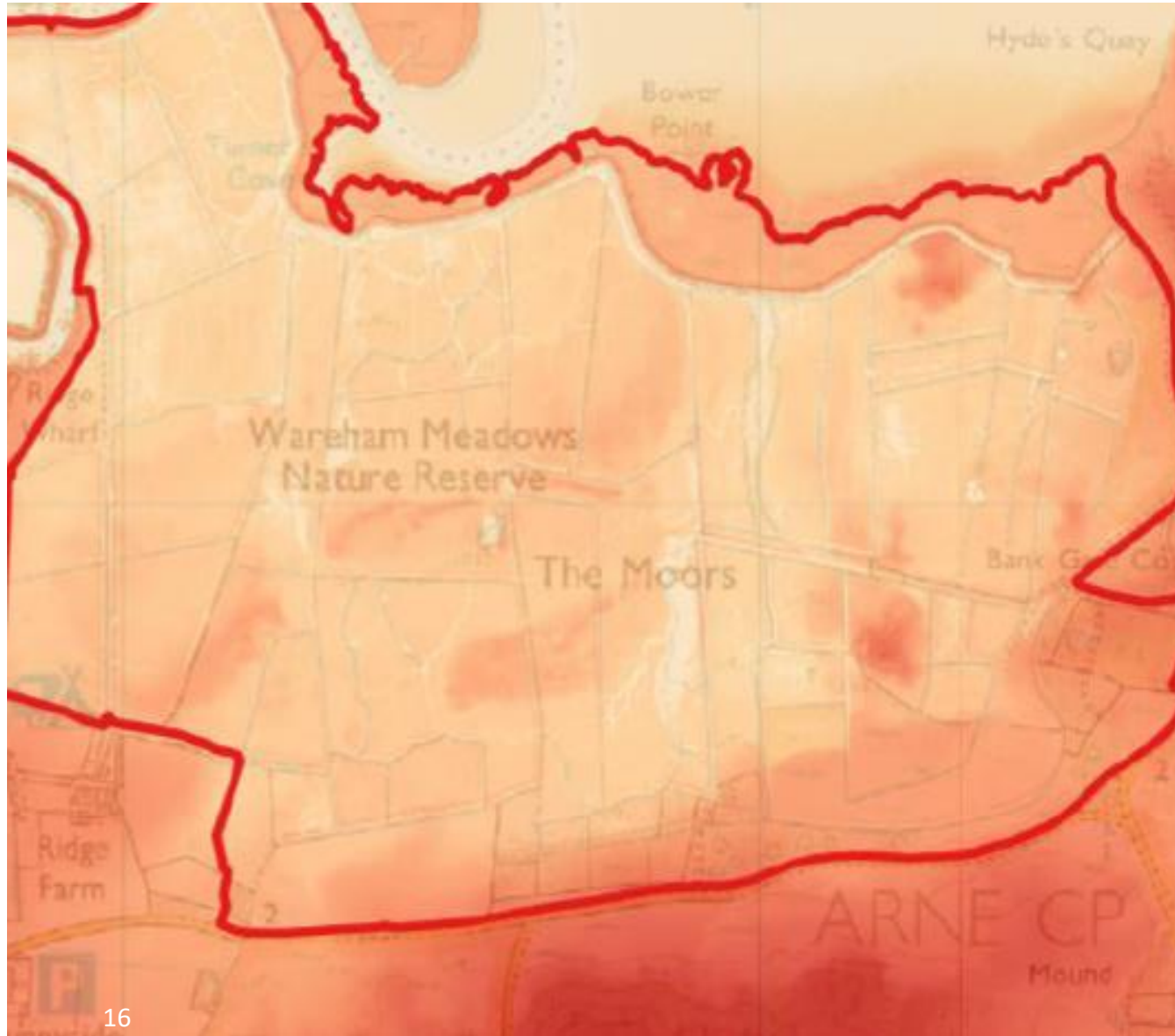
Site Excavations September 2021



Site Excavations September 2023



Medieval and Post-medieval evidence



- Monastic drainage








- Post-medieval water management

Poole Harbour 1700's

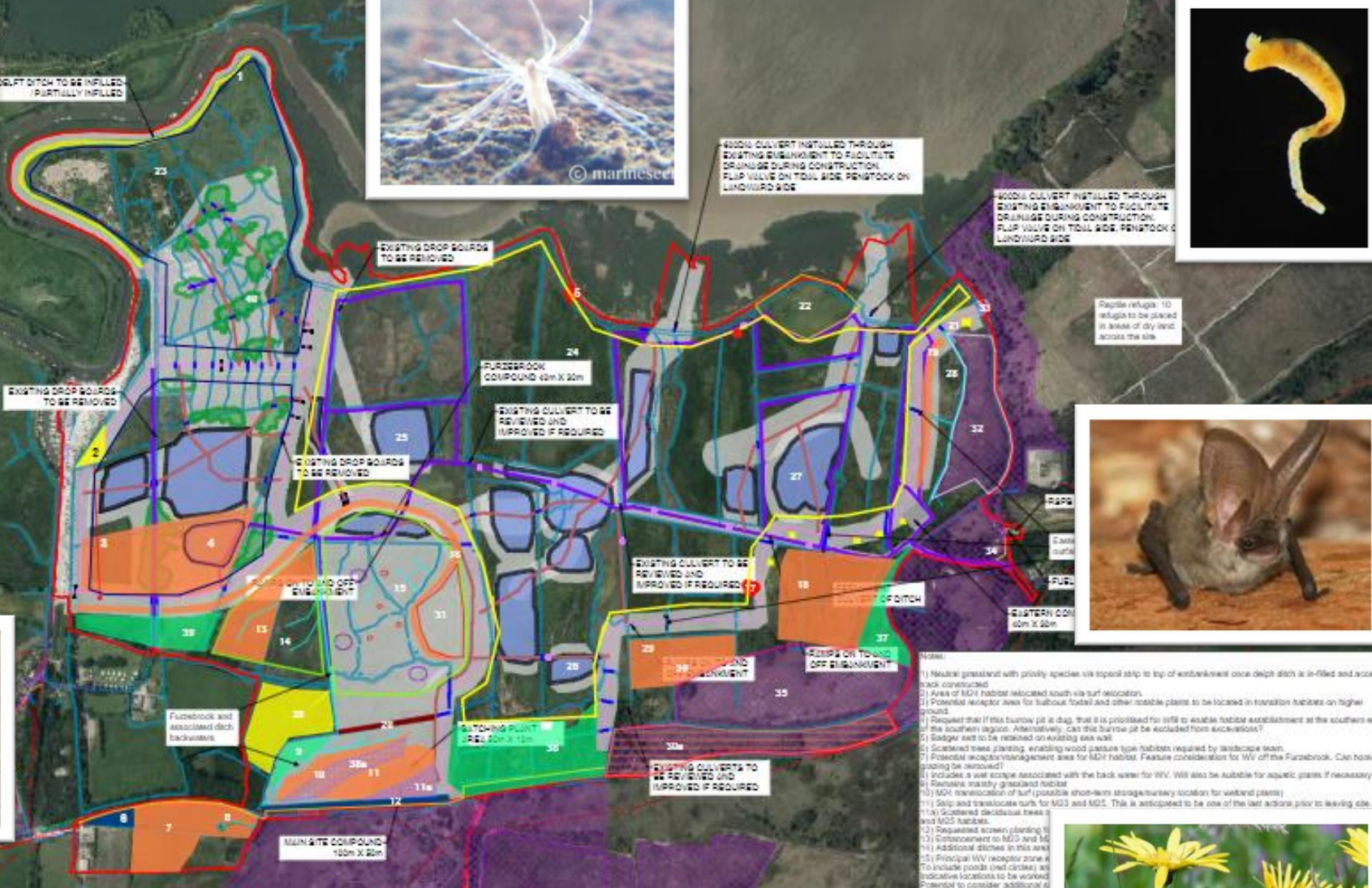


What are the new features?

- A**  Shallow saline lagoons for bird roosting when high tide in harbour.
- B**  Three open breaches to allow tides to flow freely in and out.
- C**  **Eastern Embankment**
To protect Special Area of Conservation (SAC) habitat from extreme tides.
- D**  New Furzebrook Outfall structure.
- E**  **Western Embankment**
to protect property and freshwater area from extreme tides.
- F**  Walking routes link to RSPB ARNE reserve.
- G**  Two disabled parking spaces.
- H**  New public access routes with viewing points.
- I**  Freshwater area to preserve important plants and species.
- J**  New Causeway Outfall structure.
- K**  New Intertidal area.



2 km



DEFT DITCH TO BE FILLED - PARTIALLY FILLED



8000L CULVERT INSTALLED THROUGH EXISTING ENHANCEMENT TO FACILITATE DRAINAGE DURING CONSTRUCTION. FLIP VALVE ON TOLL SIDE. PENSTOCK ON LINDWARD SIDE

8000L CULVERT INSTALLED THROUGH EXISTING ENHANCEMENT TO FACILITATE DRAINAGE DURING CONSTRUCTION. FLIP VALVE ON TOLL SIDE. PENSTOCK ON LINDWARD SIDE



Depth refuge: 10 refuge to be placed in areas of dry land across the site



- NOTES**
- Mutual grazing with priority species via topsoil strip to top of embankment once deep ditch is in-filled and access track constructed.
 - Area of MCH habitat relocated south via turf relocation.
 - Potential receptor area for tubous forest and other notable plants to be located in transition habitats on higher ground.
 - Request that if this burrow pit is dug, that it is protected for 18m to enable habitat establishment at the southern end of the southern lagoon. Alternatively, can this burrow pit be excluded from excavations?
 - Badger sett to be retained on existing oak wall.
 - Scattered new planting, including wood pasture type habitats required by landscape team.
 - Potential receptor/management area for MCH habitat. Feature consideration for WV of the Furzebrook. Can hose pooling be removed?
 - Included a wet scrape associated with the back water for WV. Will also be suitable for aquatic grass if necessary.
 - Remains mainly grassed habitat.
 - MCH translocation of turf (possible short-term storage/runway location for wetland plants).
 - Strip and translocate turfs for M3 and M5. This is anticipated to be one of the last actions prior to leaving site.
 - Scattered deciduous trees and M5 habitats.
 - Requested screen planting to complement M3 and M5.
 - Additional ditches in this area.
 - Principal WV receptor zone to include ponds (and ditches) as indicative locations to be worked. Potential to consider additional western enhancement.
 - Strip between enhancement and M5 habitats.
 - Badger sett to be retained.
 - Works to alter drainage in the furze brook and aquatic species. H4.
 - MCH low shrub planting strip.
 - Ditch to be blocked up, if it is a requirement. New access for M3.
 - Small trees 'bunker' feature.
 - Area for improvement for site.
 - Open water stream (agrove).
 - Invasive mullets and salt marsh.
 - 30/27) Potential enhancement area that are not subsequently in higher reach.
 - Habitat enhancement to site.
 - Ditch creation for water vole.
 - Existing marshy grassland to be included through translocation.
 - Proposed management of structure to support bat colony.
 - Existing acid grassland (in F) as result of archaeology.
 - SAC to be retained and managed.
 - Drainage to be to be kept.
 - Foodweb improved to benefit.
 - SAC to be retained and grassed with appropriate water levels.
 - Woodland retained: any trees impacted by saline influence to be allowed to die naturally. New public footpath to

KEY PLAN
SCALE 1:20000

LEGEND

- CONSTRUCTION COMPOUND
- 4M WIDE CONSTRUCTION HULL ROUTE (2021)
- 4M WIDE CONSTRUCTION HULL ROUTE (2022)
- 4M WIDE CONSTRUCTION HULL ROUTE AT 6L ALONG LONG ENHANCEMENT LIGHTING (2022)
- SAC AREA BOUNDARY (WITHIN WORKING AREA)
- WORKING AREA AROUND EARTHWORKS
- HILL ROAD CROSSING PLACE
- TEMPORARY CULVERT DURING CONSTRUCTION

- NOTES**
- THIS DRAWING SHOWS THE TEMPORARY CONSTRUCTION WORKS IDENTIFIED BY THE EC CONTRACTOR. WORKS TO BE COMPLETED BY THE EC CONTRACTOR. WORKS TO BE COMPLETED BY THE EC CONTRACTOR.
 - ALL DITCHES WILL BE KEPT OPEN DURING CONSTRUCTION TO MAXIMIZE SITE DRAINAGE.
 - REFER TO DRAWING ENV/16/001/00-ULTY-00-DIV/0-D-00000 FOR DETAILS OF PERMANENT DITCH CLOSURE.

Legend - Habitat and protected species

- Habitat mitigation
- Restored habitat with some modifications
- Tree planting
- Priority habitat/plant species
- Areas of habitat enhancement for water vole
- Ditches for water vole

Scale 1:2000

No.	Date	Designer	By	Drawn	Check

WORK IN PROGRESS

Quantity: **50**

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www.atkinsglobal.com
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Project Title
THE MOORS AT ARNE COASTAL CHANGE

Drawing Title
THE MOORS AT ARNE DRAFT ECOLOGICAL MITIGATION PLAN

Status
DRAFT



2025 and Beyond

Community Engagement



An independent strategic coastal partnership

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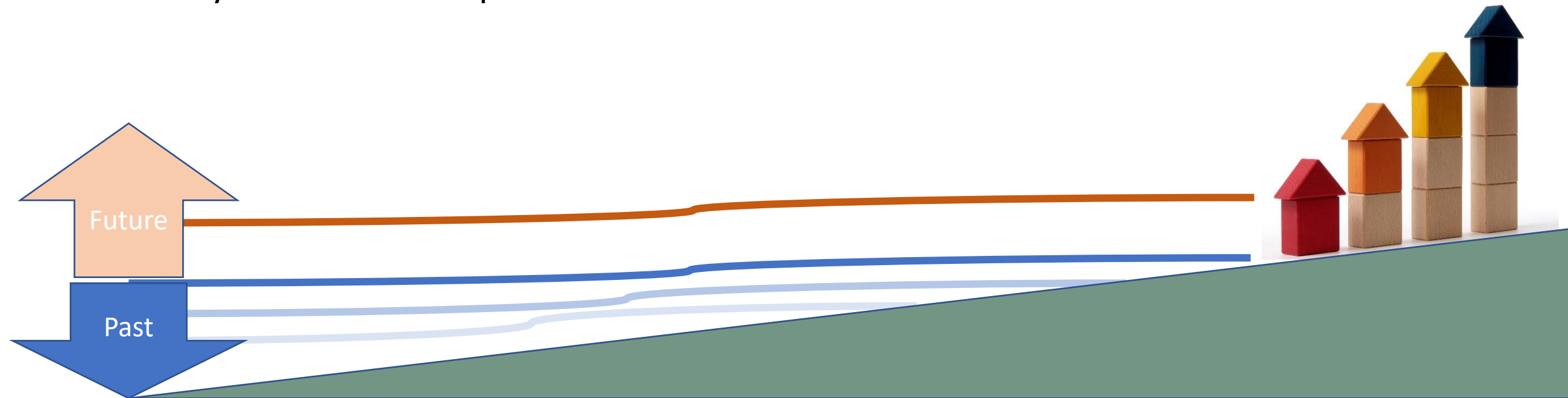


The Moors at Arne

The information on this page has been supplied by the Environment Agency to inform Dorset Coast Forum members and the wider public on the Arne Moors Project. The Dorset Coast Forum is an independent, neutral and non-political Coastal Partnership and will maintain a neutral position, neither for or against the project.

Conclusions

- Coastal Change is inevitable
- Rising sea levels will need to be accommodated
- Coastal Communities will have to adapt
- The story of Arne can help
- We can learn a great deal from the past
- New defences more compensatory habitat
- Not all locations can stay the same
- A model for coastal adaptation



The Moors at Arne Project Team

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