

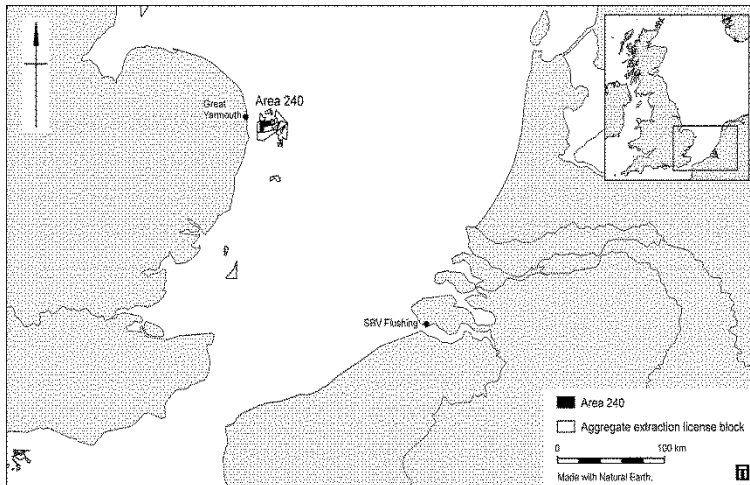


making sense of heritage





# Presentation

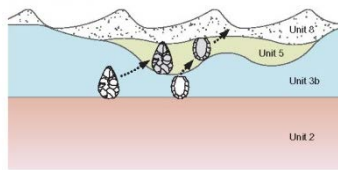


1. Introduction: The State, The Owner and the Industry and Us
2. Timeline: 2007 –Present
3. Area 240 artefacts and stratigraphy
4. Palaeo-Yare assessment
5. Palaeo-Yare hypotheses, the pWSI & ongoing monitoring
6. Conclusions

# Timeline: 2007 -Present



2007:  
Discovery,  
BMAPA  
Protocol



2008-10:  
Investigation,  
ALSF/EH

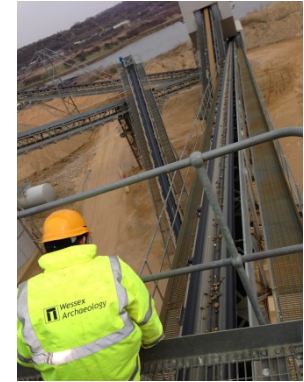


2011: Vessel  
Trial, HAML

Short term  
Licensing



2012-13:  
Catchment Study  
and pWSI,  
BMAPA

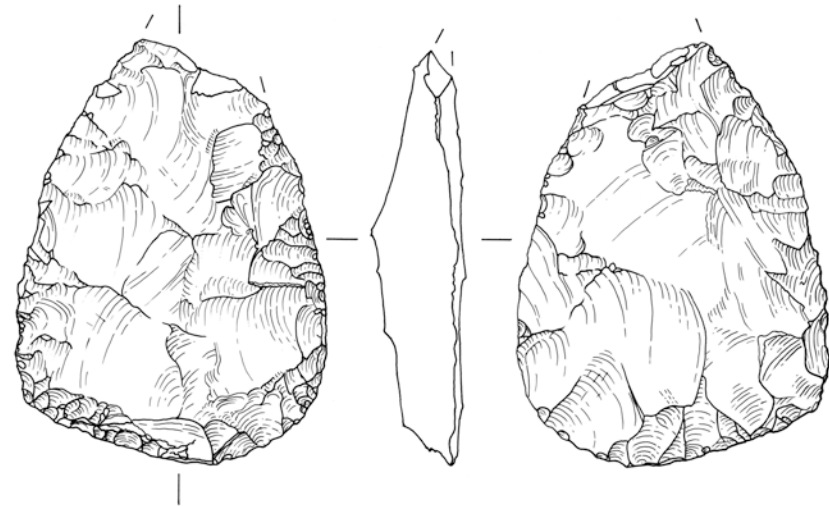


2013-14:  
Interim Report  
and Ongoing  
Investigations,  
Industry and EH



# Area 240 Artefacts: 2007

- 124 flint artefacts recovered
  - 36 hand axes
  - 79 flakes and flake tools
  - 9 cores
- Mixed assemblage
  - Pristine condition (primary context)
  - Fresh condition (eroding surface)
  - Weathered condition (secondary context)
- Hand axes – homogenous group (cordate and sub-cordate types)
- Flakes and cores – evidence of Levellois technique
- In excess of 100 faunal remains – variable condition



# Area 240 Stratigraphy



Development of early-Holocene Channel B and partial infill (Unit 7)



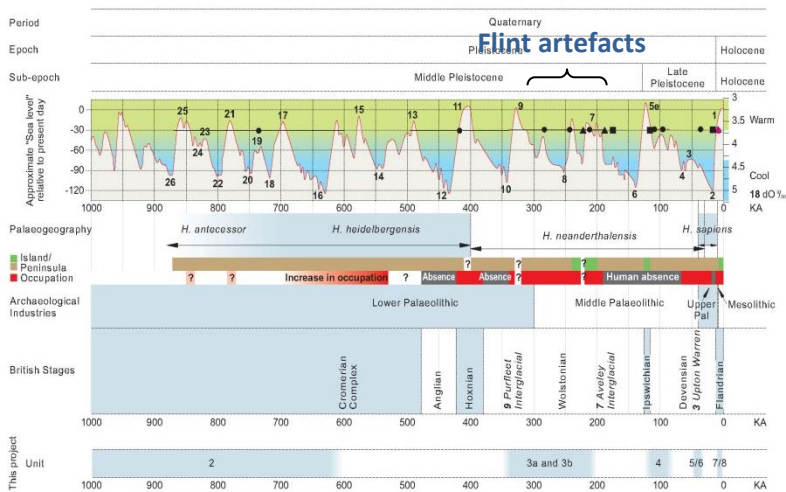
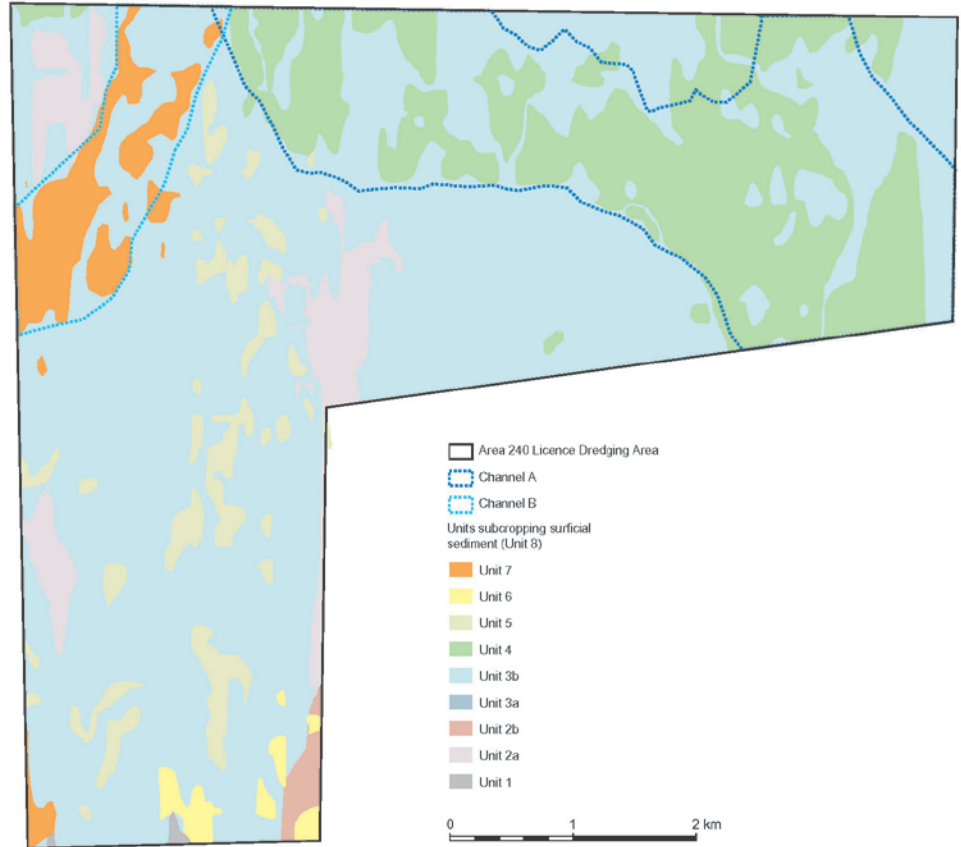
Estuarine sediment (Units 5 and 6) deposited during the mid-Devensian



Infill of Channel A (Unit 4) during the early-Devensian

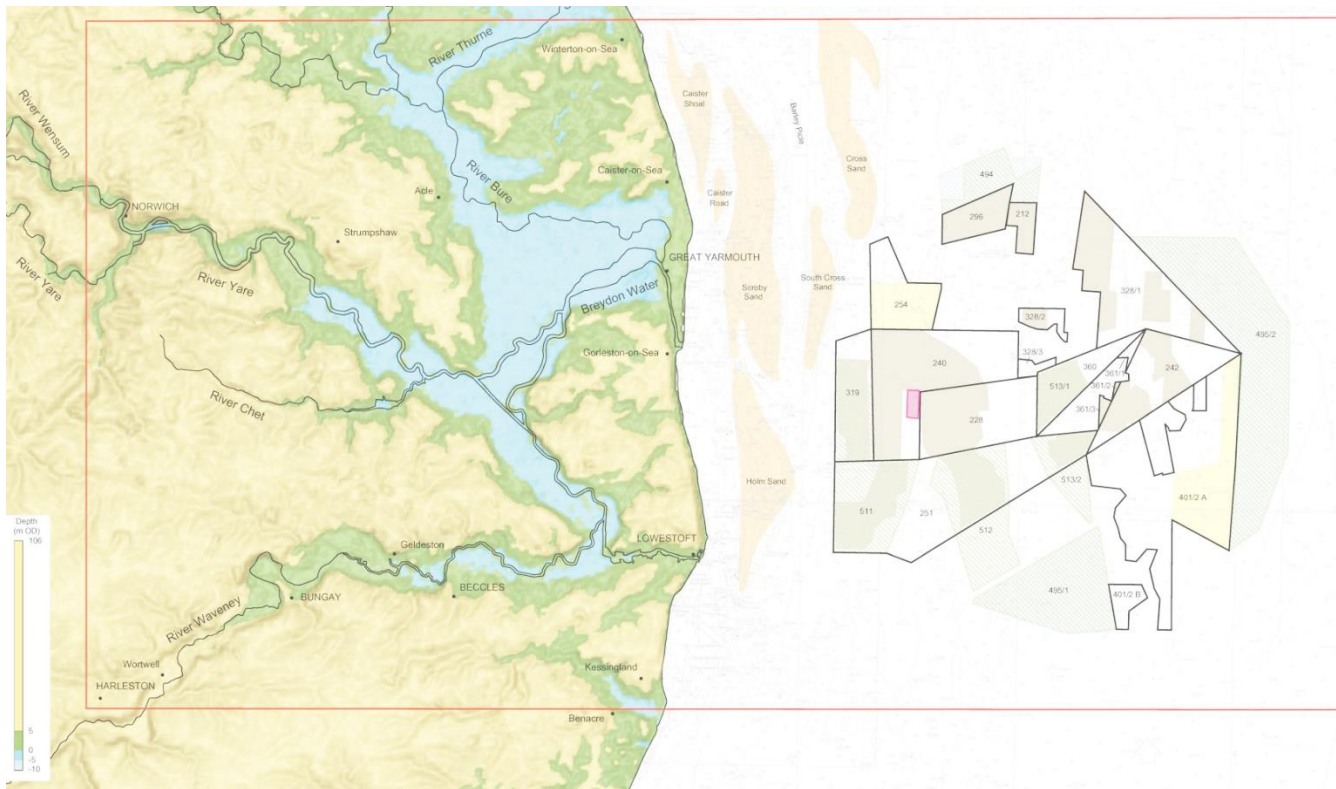


Re-activation of Channel A during the early-Devensian

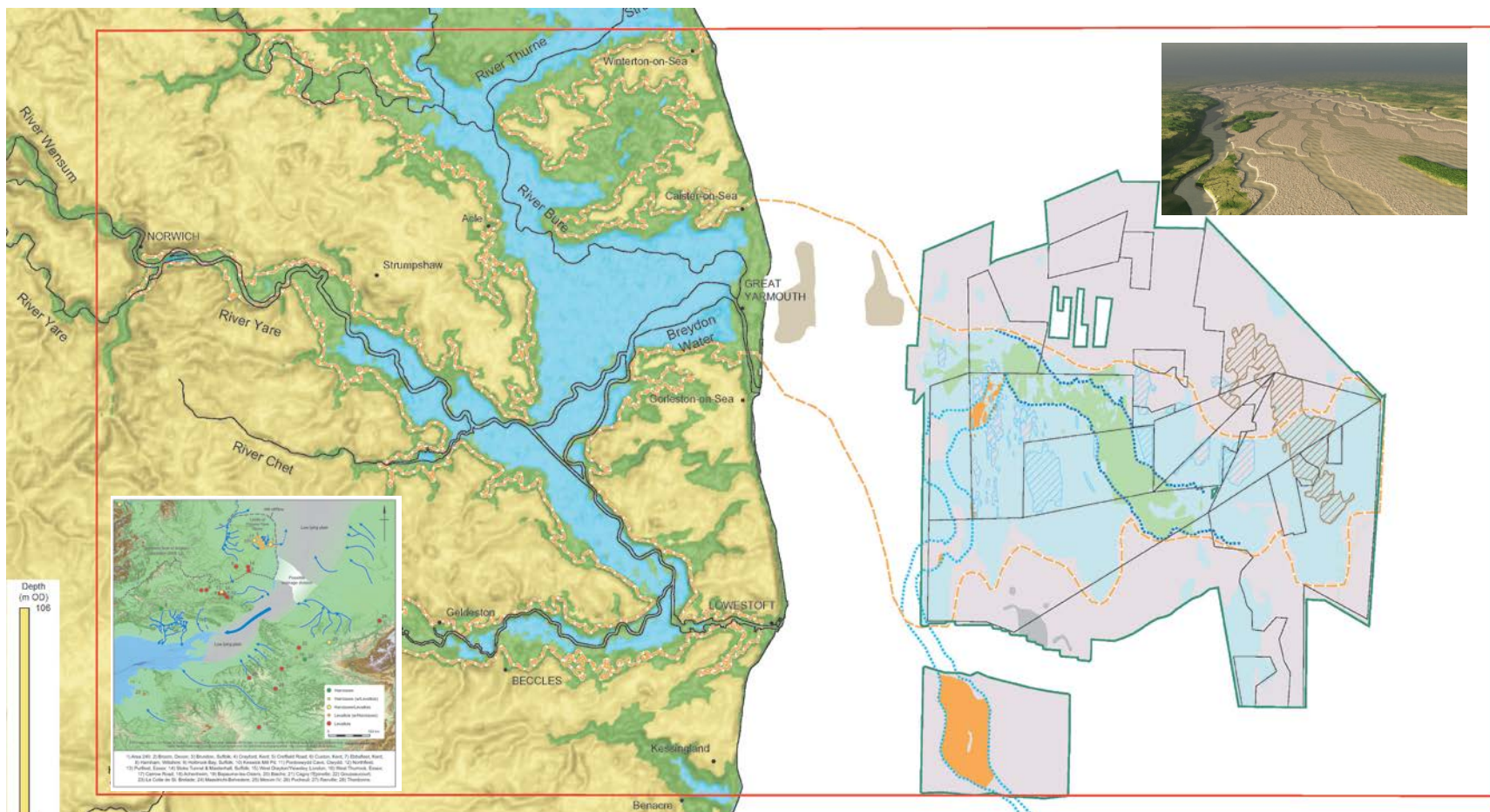


# Palaeo-Yare Catchment Assessment

Aim: Map the extents of Unit 3b and to develop hypotheses about the archaeological potential of the region in order to support management decisions



# Palaeo-Yare Devensian and Holocene Development



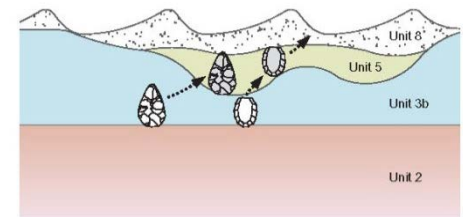
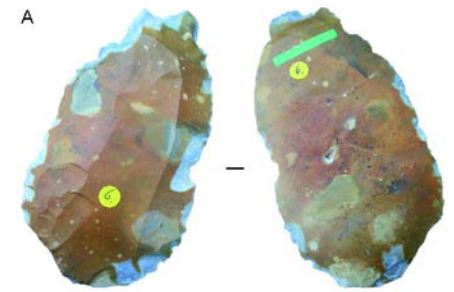
- Study Area (SA)
- Licence Dredging Areas
- Survey Area
- Bank feature (unknown age)
- Unit 4
- Unit 3b removed/heavily effected due to dredging
- Unit 3b
- Unit 2
- Unit 1
- Extents of Late Anglian channel (Channel A)
- Limits of Palaeo-Yare valley
- River terraces:**
  - Floodplain Terrace
  - Broome Terrace
  - Homersfield Terrace
- Onshore boreholes:**
  - ▲ River terrace sand and gravel
  - ▲ Sub-alluvial sand and gravel (possible Yare Valley Formation)
  - ▲ Yare Valley Formation

Drawing projection: UTM WGS84 z31N.



# Palaeo-Yare Key conclusions

- The Middle Palaeolithic Assemblage is mixed, *i.e.* contains artefacts of *in situ* and secondary context.
- The Middle Palaeolithic Assemblage is primarily associated with Unit 3b within Area 240.
- There is potential for palaeolithic material in secondary context associated with Units 2, 3b, 4, 7, 8 and the bank structures (of unknown age).
- Natural processes throughout transgressions and regressions subsequent to deposition have not completely removed sediment units. With regards to the *in situ* elements of the Middle Palaeolithic assemblage, remnants of *in situ* Unit 3b sediments are present within the region.
- Extensive dredging of the region has not necessarily completely removed Unit 3b sediments within the area.
- There is potential for *in situ* archaeological material to be present elsewhere within the region where remnants of Unit 3b are located.
- Faunal remains and palaeoenvironmental material are likely to be sourced from Units 2, 3b, 4 and 7. These could be *in situ* or secondary context and may be located throughout the region.
- Uncertainties remain.





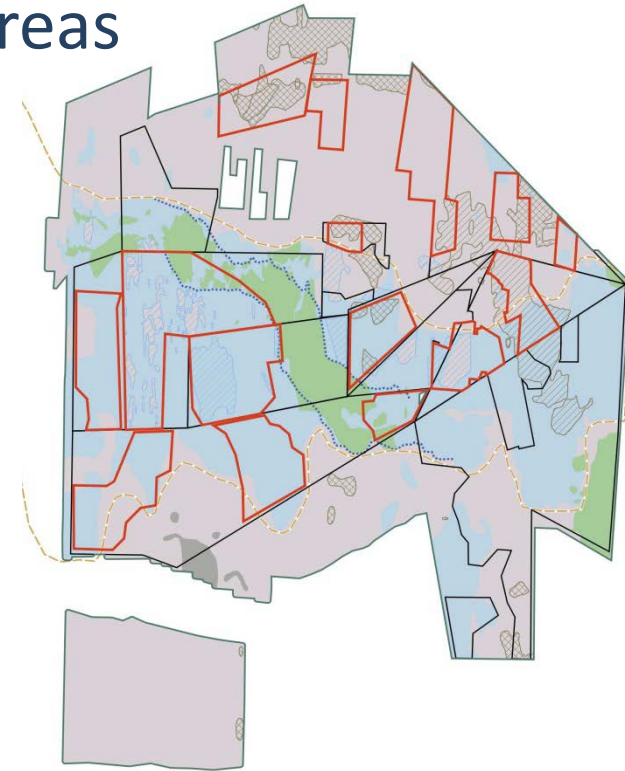
# Palaeo-Yare Hypotheses

<b>Inhabitation</b>	<b>H1a:</b> Palaeolithic material is recovered only from Unit 3b, which dates to the Wolstonian.	All areas.
	<b>H1b:</b> Palaeolithic material recovered from Unit 3b is predominantly <i>in situ</i> .	Only areas containing Unit 3b sediments.
<b>Choice and use of location</b>	<b>H2a:</b> Palaeolithic material is recovered only from Unit 3b deposits on the margin of Channel A, not within the Channel itself.	Only areas with Channel A deposits.
	<b>H2b:</b> Palaeolithic material is recovered only from Unit 3b deposits within the limits of the Palaeo-Yare floodplain, and not within the Unit 3b outliers to the north and south of the floodplain	Only Unit 3b outlier deposits.
	<b>H2c:</b> The recovery of Palaeolithic material is clustered in relatively large quantities in discrete locations; material is not recovered from otherwise similar locations.	All areas.
<b>Natural processes</b>	<b>H3a:</b> The distribution of recovered Palaeolithic material does not vary according to variations in the sediment structure of Unit 3b.	Only areas containing Unit 3b sediments.
	<b>H3b:</b> Palaeolithic material is not recovered where Unit 3b appears to have been reworked by natural processes in the past.	Only areas which contain reworked bank features or have been reworked by the development of subsequent channels
	<b>H3c:</b> Palaeolithic material is not recovered where Unit 3b appears to be covered by major bank structures.	Only areas where major bank structure is observed (Area 361/242 and 328).
<b>Dredging History</b>	<b>H4a:</b> Palaeolithic material is not present where the dredging history indicates that a high level of dredging has taken place since the introduction of EMS.	Only areas where cumulative intensity is classified as high.
	<b>H4b:</b> Palaeolithic material is not present where geophysical data indicates that a high level of dredging has taken place.	Only areas where the geophysics data indicates that Unit 3b has been heavily affected or removed through dredging processes.
<b>Operation Sampling methods</b>	<b>H5a:</b> Palaeolithic material is found at all wharves where Operational Sampling takes place	All areas.



# Palaeo-Yare Hypotheses: Application to Short-term Licence Areas

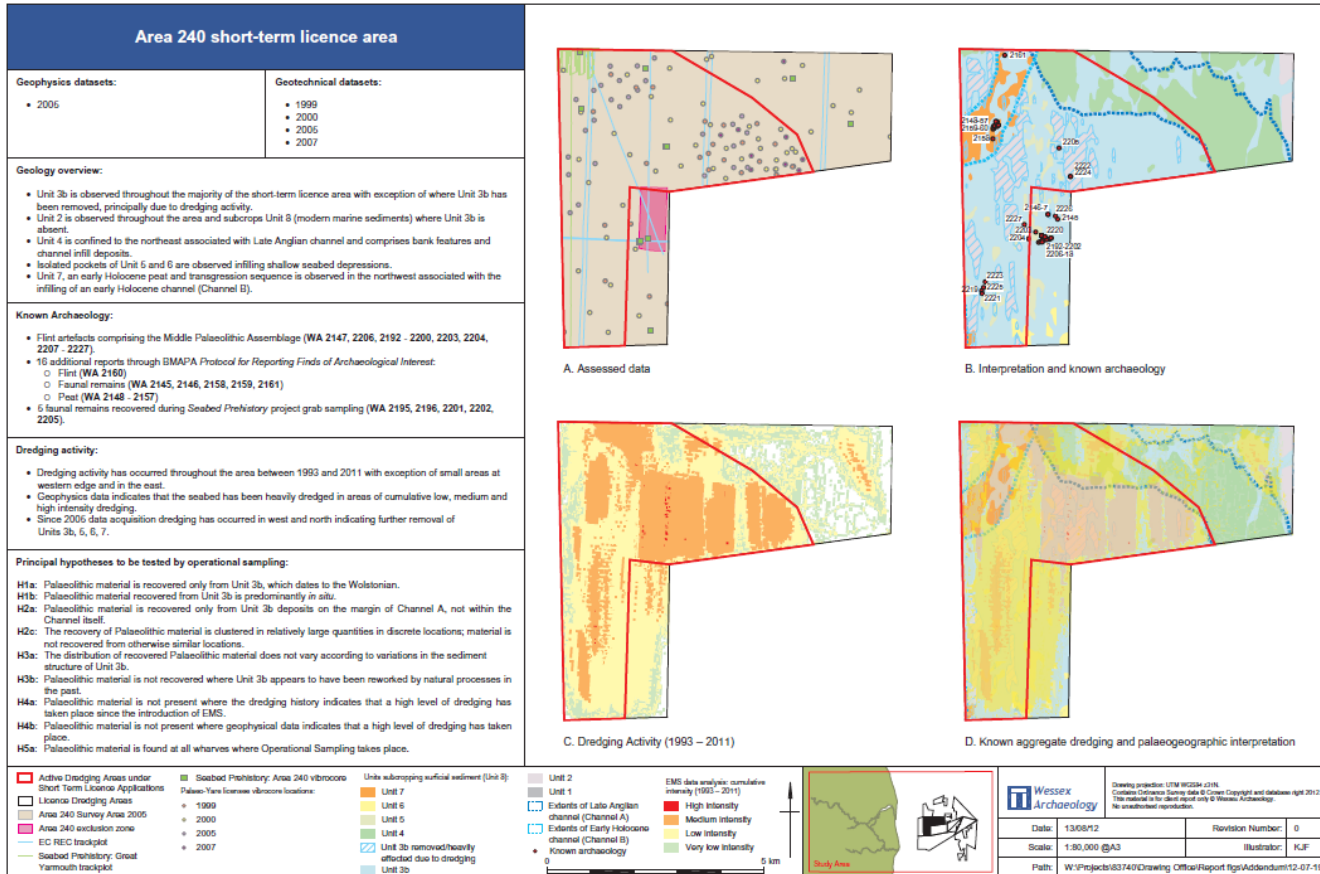
Short-term aggregate licence area	Sub-licences	H1 a	H1 b	H2 a	H2 b	H2 c	H3 a	H3 b	H3 c	H4 a	H4b	H5a
240		✓	✓	✓		✓	✓	✓		✓	✓	✓
228		✓	✓	✓		✓	✓	✓			✓	✓
319		✓	✓			✓	✓	✓		✓		✓
251	West	✓	✓			✓	✓	✓				✓
	Central	✓	✓			✓	✓					✓
	East	✓	✓	✓		✓	✓	✓				✓
360		✓	✓	✓		✓	✓	✓		✓		✓
361/ 242	West	✓	✓			✓	✓				✓	✓
	East	✓	✓			✓	✓		✓			✓
328	West	✓				✓		✓			✓	✓
	West-Central	✓				✓		✓	✓			✓
	East-Central	✓	✓		✓	✓	✓	✓	✓	✓		✓
	East	✓	✓		✓	✓	✓					✓
296		✓				✓		✓		✓		✓
212		✓				✓		✓				✓



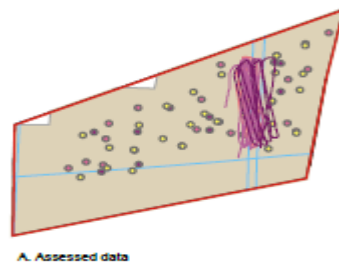
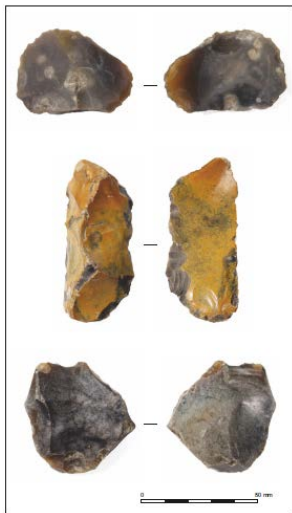
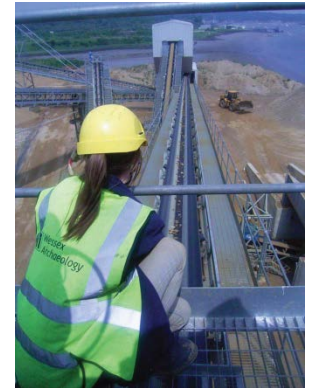
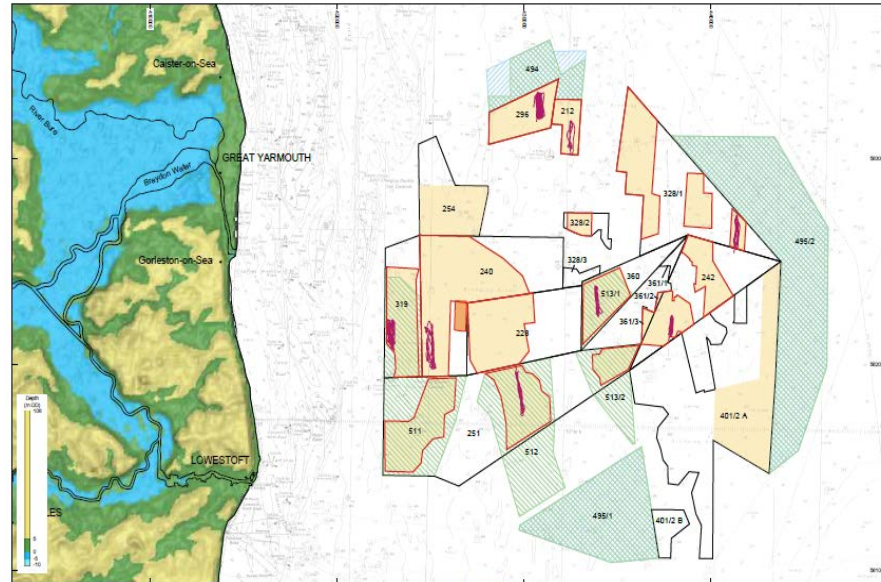
- Licence Dredging Areas
- Active Dredging Areas under Short Term Licence Applications
- Survey Area
- Reworked bank
- Bank feature (unknown age)
- Unit 4
- Unit 3b removed/heavily effected due to dredging
- Unit 3b
- Unit 2
- Unit 1
- Extents of Late Anglian channel (Channel A)
- Limits of Palaeo-Yare valley



# Paleo-Yare pWSI Datasheet



# Ongoing Monitoring



14 Sampling events  
8 licence areas;

40,000 tonnes reviewed;

11 lithic artefacts, &  
numerous faunal remains  
recovered

# PalaeoYare – Operational Sampling Summary

## For Cemex (at Northfleet)

No.	Sampling Date	Area
1	06/02/13	319
2	13/03/13	251
3	23/04/13	360
4	11/07/13	319
5	19/12/13	251
6	07/04/14	251
7	08/10/14	513/1 (360)
8	14/11/14	511 (319)



## For HAML (at Frindsbury)

No.	Sampling Date	Area
1	00/05/12	240
2	08/04/13	240
3	09/07/13	240
4	25/07/13	242-361
5	10/09/13	212
6	03/10/13	328/1
7	07/11/13	212
8	09/01/14	240
9	05/06/14	240
10	01/08/14	401/2
11	27/11/14	401/2
12	12/01/15	328



## For VDL (at Cliffe)

No.	Sampling Date	Area
1	10/04/14	228
2	28/10/14	228
3	04/12/14	228



## For Lafarge Tarmac (at Ridham)

No.	Sampling Date	Area
1	08/01/13	296
2	11/04/13	296
3	29/08/13	296
4	07/10/13	296



# Conclusions

1. The East Coast licence Area contains important early Middle Palaeolithic Archaeology reported via the BMAPA/EH/TCE protocol and disseminated widely.
2. ALSF/EH research and funding contributed greatly to our understanding of Area 240 and has informed other research in the region.
3. There were important implications for marine licensing across the region requiring a regional, iterative, co-operative approach, aiding streamlined licensing and facilitating responsible development.
4. HAML further work on Area 240 designed in conjunction with WA and EH contributed greatly to development of a catchment wide monitoring strategy, and a published monograph.
5. The BMAPA funded catchment wide approach for the Palaeo-Yare study and regional mitigation (provisional WSI – Dr. Antony Firth, Fjodr Ltd.) designed in conjunction with EH has delivered useful results – and is ongoing.
6. An industry led response for a regional issue has worked, through a collaborative approach and involvement of the regulator and technical specialists.





Thank-you.

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