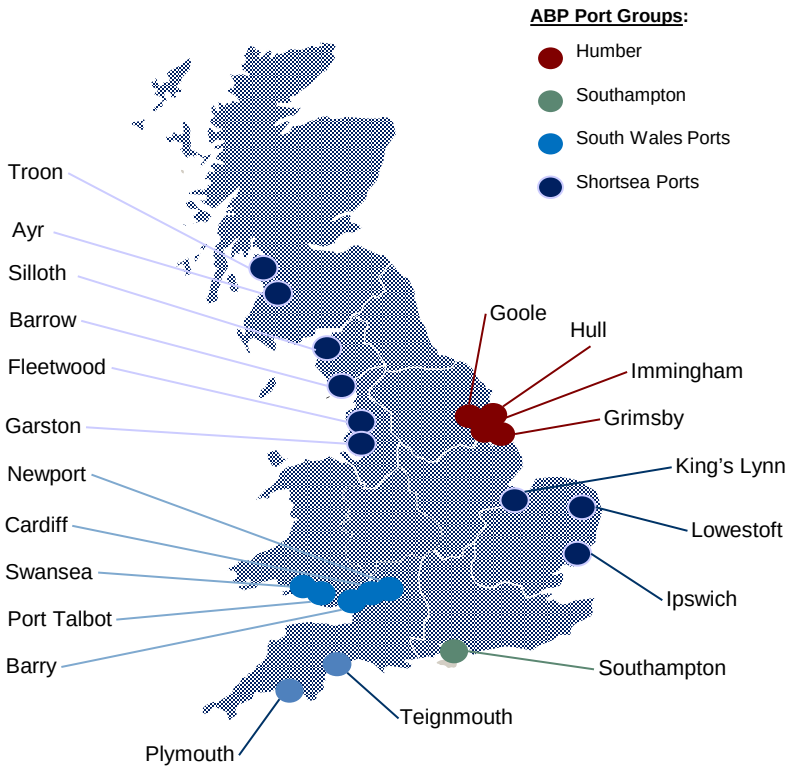
ASSOCIATED BRITISH PORTS

Green Port Hull

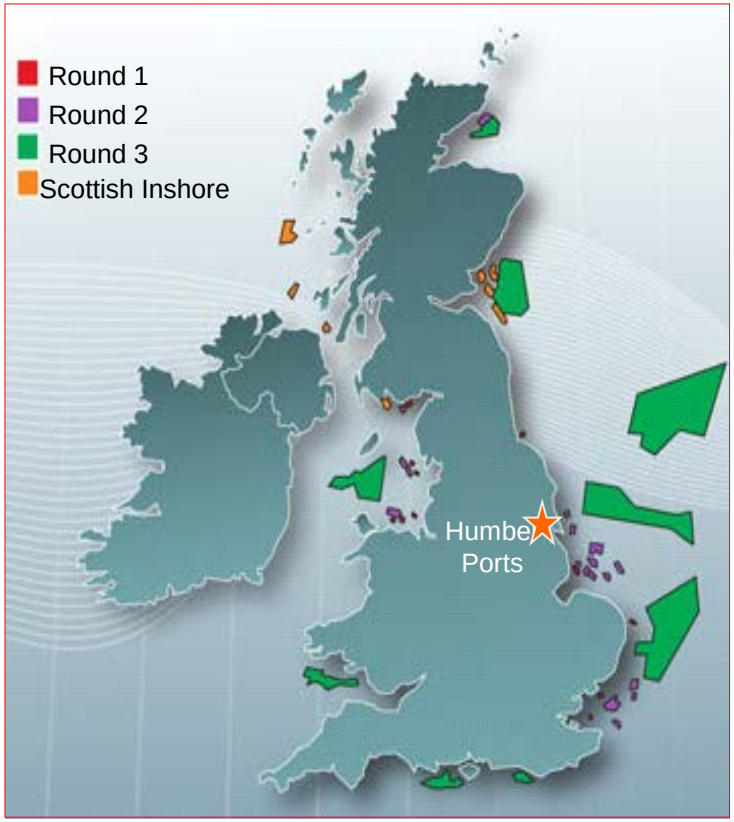
Laura Morrish – Projects Manager, Humber
Tom Jeynes – Sustainable Development Manager, Humber

ABP Overview

- Largest Port company in the UK- 92 million tonnes of cargo handled in 2015
- 21 ports handling every conceivable type of cargo and generating 25% of UK's rail freight
- In 2015 ABP's statutory harbour authority (SHA) areas handled around a quarter of UK major ports' seaborne trade
- Full range of facilities accommodating needs of major sectors - energy, cruise, containers, agri-bulks, automotive, forest products and steel
- Supports 84,000 jobs
- Dedicated, committed industry experts providing world-leading solutions and managing operations



Offshore Wind



The Humber is strategically positioned to be the the centre of UK offshore wind revolution.

What is Green Port Hull?

- Facility for the manufacture, assembly, testing shipment and on-going maintenance of wind turbines for the offshore wind power industry
- A factory for manufacture of blades together with office space and welfare facilities;
- 54ha site (comparable to 130 football pitches)
- 7.5 ha reclaim of land from estuary
- Partial infill of Alexandra Dock
- Dredging
- Initial £310m investment by ABP and Siemens

Alexandra Dock 2014

Alexandra Dock Today

Drone footage

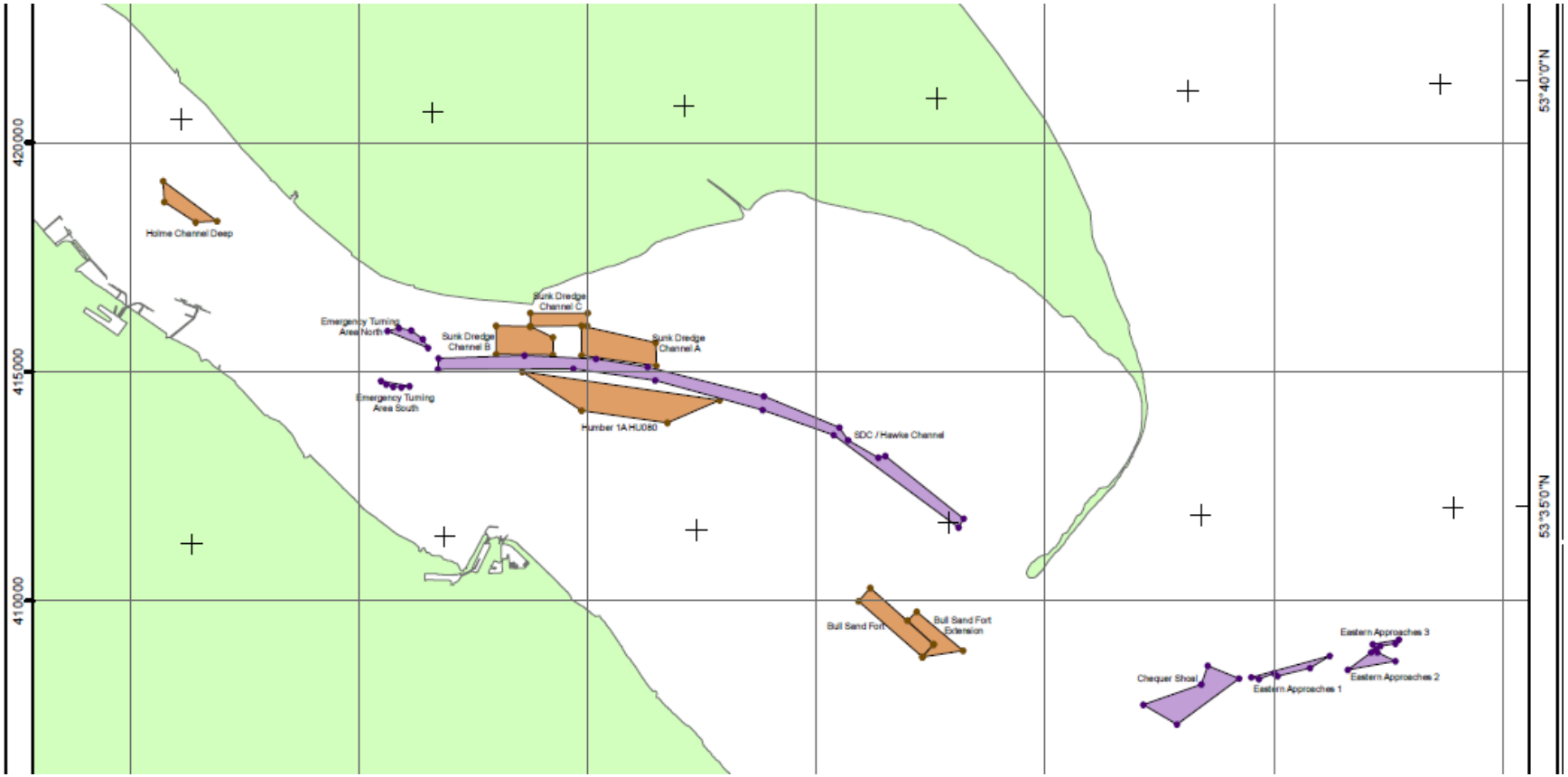
Alexandra Dock Early 2017

TSHD ‘Eke Möbius’ – Alexandra Dock

Beneficial Use Material at GPH

- 845,000 m^3 from Chequer Shoal
- 296 round trips to Chequer
- 140,000 m^3 from Eastern Approaches
- 31 trip round trips to Eastern Approaches
- Average 4,615 m3 of sand collected on each trip
- 3 – 4 round trips per day
- Direct pumping into Alex Dock and stock pilled for use behind main quay wall

Win Material Sites



Dredge Quantities

Dredging				Disposal						
Dredge area	Dredge material	Specific gravity	Dredge quantity	Holme Channel Deep	Middle Shoal	Hull Middle	Window A	Window B	Bull Sand Fort	GPH
Stallingborough north	Silt & sand	1.8	55250	18685	36565					
Stallingborough south	Silt & sand	1.8	9750	3315	6435					
SDC north	Silt	1.7	970,000	311000	659000					
SDC south	Sand	1.8	895000		895000					
SDC all areas	Glacial clay	2.26	120000				60000	60000		
Hawke	Silt	1.7	565000						565000	
Chequer Shoal	Sand	1.8	865,000							865,000
Eastern 1	Sand	1.8	170000						57340	112660
Eastern 2	Glacial clay	2.26	200000				50000	50000	100000	
Eastern 3	Glacial clay	2.26	55000				13750	13750	27500	

Potential for Further Beneficial Use

Material type	Description (from SI work)	Beneficial use options
Sand	The sand to be dredged from outside Spurn will have a median particle size of 200 microns up to 2 mm. The majority of the remaining sand from the Sunk Dredged Channel area will be less than 100 microns with possibly 10% silt material	Suitable for infill in construction (as evidenced by GPH.) Load bearing capabilities are good. Equally the coarser dredged sand is of a type that has been used by east coast beaches for sand re-charge.
Silt	The median particle size of the silt identified in the table above will be between 10 – 50 microns depending on the specific location and ins some cases comprise 20% clay size material	Difficult to de-water so has limited use in construction as infill. If used its load bearing capabilities are low as it would create 'soft-spots.'
Glacial clay	The individual particle size of the glacial clay is similar to the silt material but is more consolidated in situ hence, most likely needing a backhoe or cutter section dredger to remove.	Can be used in construction but if dredged by backhoe it would be presented in the form of large lumps. If used in construction infill, therefore, this has the possibility of creating voids underground. As the lumps gradually erode over time due to groundwater penetration the material would settle again creating undulations in the infilled area's surface. If a CSD is used then the resulting material will have a character at the point of use similar to the silts above.

Dredging of Berth Pockets

- Disposal of 275,000 m^3 of clay and silt across four different licenced disposal sites in the Humber Estuary
- Marine Licence Variation
- Extensive Environmental Monitoring
- Restrictions due to location of residential properties

Dredging of Berth Pockets

- Magnor
  - The largest and most efficient backhoe dredger in the world.
  - With the spuds of 40 m length, she will be able to dredge to depths of 32 m.
  - Biggest bucket will have a capacity of 45 m³, nearly 1½ times the volume of a 20’ ISO container.
  - The total installed power on the excavator is 4,100 kW.
  - Use of water cooling for the engines and hydraulics. It delivers huge improvements in terms of fuel consumption and, above all, noise reduction.

Any Questions?

lmorrish@abports.co.uk

tjeynes@abports.co.uk