

8 NATURAL FISHERIES AND MARINE MAMMALS

This section describes the fisheries and mammal interest within the study area and considers the potential effects of the proposed placement operation.

8.1 Existing Environment

The Thames Estuary is recognised for its importance for both shellfish and other fish species. The shallow waters provide nursery grounds for species such as bass, herring and sole while the banks host cockles and oysters. The Estuary is an important area for spawning sole and there is a localised herring spawning ground. Other commercial species such as cod, sprat and whiting are also found.

8.1.1 Fish

As part of the marine biological survey, a beam trawl was used to provide an idea of fish species present in the area at the time (early October, 2003). The beam trawl identified 20 fish species within the study area, nine of which may be considered commercially important fin fish. These are herring, sprat, whiting, dab, Dover sole, sand eels, thornback ray, bass and brill (EMU, 2004).

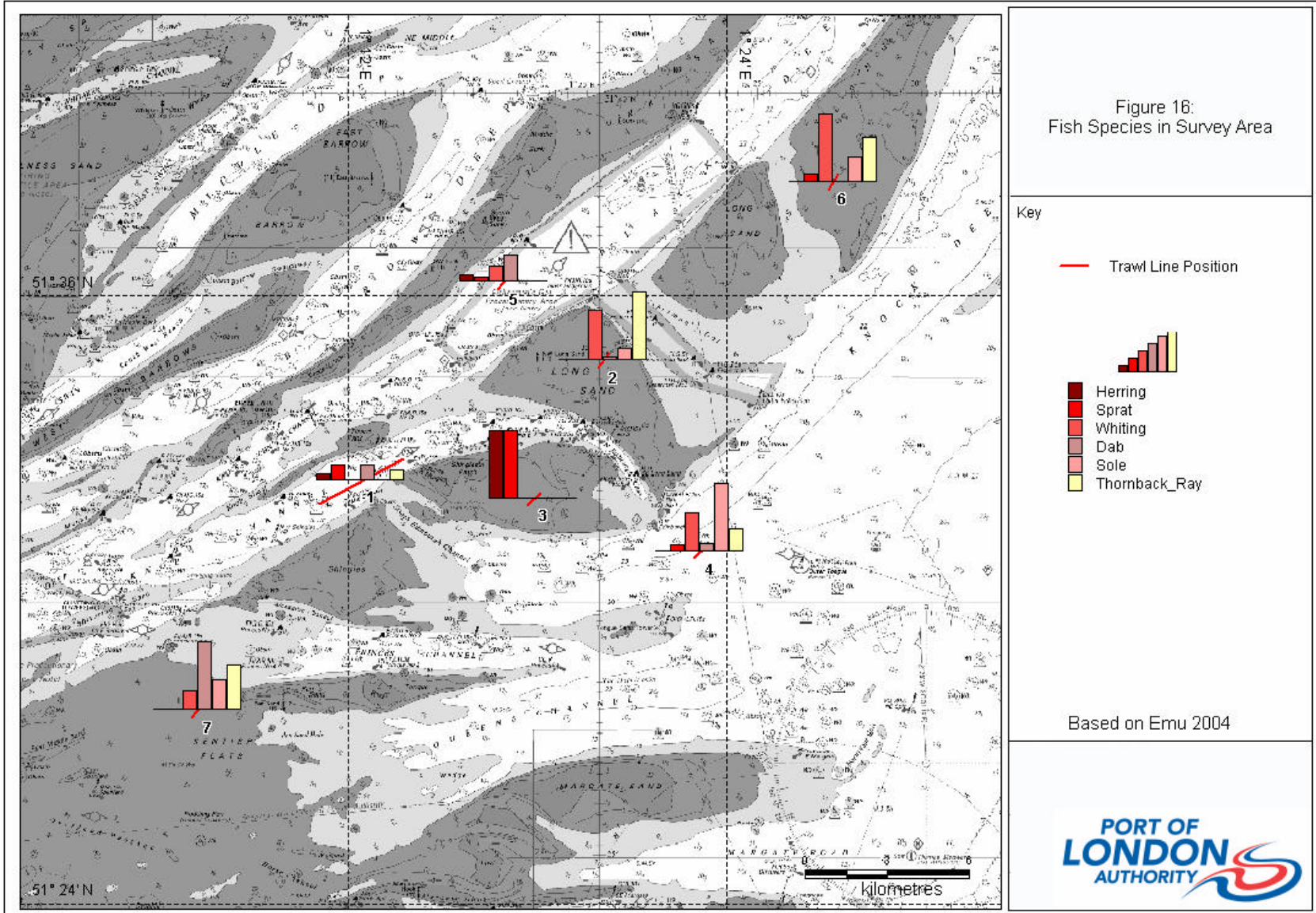
Herring and sprat were the most abundant commercially exploitable fish within the study area. Notably, all individuals of herring caught were likely juveniles owing to the size range measured, indicating that the survey area and, in particular, the top of the sand bank features may serve as nursery areas for this species, although both these species have a widespread distribution (EMU, 2004).

The flat fish dab and Dover sole were among the most abundant commercially exploitable fish within the study area. This observation most likely reflects the importance of the wider Thames to flatfish. These species demonstrated a wide distribution throughout the survey area where they were noted in five out of the seven Otter trawls undertaken. Few (<10) individuals of sole caught were considered juveniles (<5cm). No juvenile dab were caught (EMU, 2004).

Other fish species commonly trawled from the survey area included Poor Cod, Pogge, Horse Mackerel, Bull Huss and Red Mullet. The current list of fish species is not exhaustive since many fish would appear in the outer Thames Estuary on a seasonal basis (EMU, 2004). Figure 16 shows the fish species found during the trawl survey.

A review of young fish data for 2003 found juvenile sole, plaice, dab, bass, flounder, five bearded rockling, thornback ray, solnette, goby, whiting, pogge, Nelson's pipefish and sprat. The majority of the sole were 2+ year group with relatively low number 0-Group fish. The juvenile sole were distributed throughout the estuary but with apparent concentration in the outer estuary and coastal waters, although accumulations were also

found in the inner estuary (CEFAS, 2004). The overall catches of juvenile fish decreased since 2002.



8.1.2 Shellfish

The Thames estuary cockle fishery is the largest in the UK. Shellfish beds are located on the intertidal flats and drying banks throughout the estuary. The location of the shellfish beds was a key factor in determining an appropriate sand placement site. The nearest shellfish beds to the North Edinburgh Channel are on the Sunk Sand approximately 8km to the north of the proposed placement site (these are described as frequently fished cockle grounds by KESFC); and on the West Shingles Bank, approximately 6km to the southwest of the proposed placement site (these beds are described as occasionally fished cockle grounds).

8.2 Smothering of Shellfish Beds

The North Edinburgh Channel was chosen due to its relative distance from any commercial shellfish beds. As discussed in Sections 4 (Coastal Processes) and 6 (Water Quality) the dredged material will enter the water column at between 6-10m depth. There will be no deposition in water depths of less than 12m. The deposited material will be entrained by the tidal currents in the same way as the present mobile seabed. Given this and the distance of the site for the shellfish beds, it is considered that there is no mechanism for large quantities of sand to smother the shellfish beds noted in Section 8.1.2. The potential impact on the shellfish beds is considered to be of **negligible significance**. Using the same basis of assessment, there is considered to be a negligible impact on cockle spat.

8.2.1 Mitigation

Mitigation has been built into the choice of the proposed placement site by avoiding areas adjacent to shellfish beds.

8.2.2 Residual Impacts

The residual impact on the shellfish beds is **negligible significance**.

8.3 Spawning Fish

The Thames Estuary is recognised as a spawning area for a number of fish species, of which sole is considered to be the most important. The PLA has made a commitment to manage the dredging of Princes Channel to avoid the sole spawning period of March to May, where possible. It therefore follows that placement operations are not likely to take place during this period. However, sole spawning is thought to be concentrated in the shallow coastal areas and it is considered unlikely that the placement operation, being in the deeper offshore part of the estuary, would have an adverse effect on spawning sole.

8.4 Nursery Area

Many species of fish use the outer Thames Estuary as a nursery area and the North Edinburgh Channel may form part of that area, although few juvenile fish were identified during the survey in early October. Juvenile fish would usually be found in the shallower waters over the banks and surface waters of the channel, therefore, direct effects from the placement operation would be unlikely. The site was chosen in consultation with KESFC who have not advised of any special importance for spawning fish or as a nursery area. Any juvenile fish in the vicinity of the Channel during a placement operation would be disturbed and displaced or caught within the falling sand and smothered. The placement operation will last 10 minutes (with release of material taking only one minute) so the risk is short-lived. The potential impact of the placement operation on juvenile fish is considered to be of **minor adverse significance**.

8.4.1 Mitigation

No mitigation is considered necessary.

8.4.2 Residual Impact

The residual impact on the fish nursery area is **minor adverse significance**.

8.5 Interference to Adult Fish Behaviour

Adult fish use the Thames Estuary as a feeding area, for example, as they pass through on migration. The low diversity and low abundance of the seabed suggests that the North Edinburgh Channel does not provide an important feeding area in its own right but forms part of the wider North Sea habitats. The placement operation is predicted to temporarily smother seabed habitats but recolonisation is expected to be rapid as placement will occur in localised mounds. An impact of minor adverse significance is predicted on the feeding ground.

There will be no discernable lateral plume from the placement operation but there will be a localised barrier through the water column for a short duration. It is anticipated that adult fish will simply move away from the falling sand. At no point will the sand affect more than a small proportion of the channel width. An impact of **negligible significance** is predicted on adult fish movement.

8.5.1 Mitigation

No mitigation is considered necessary.

8.5.2 Residual Impact

The residual impact on loss of feeding habitat is **minor adverse significance** and the residual impact on adult fish movement is **negligible significance**.

8.6 Interference to Marine Mammals

Marine mammals including porpoise and seals are occasionally recorded in the outer Thames Estuary. The sandbanks adjacent to the proposed placement site are not known for providing haul out environments for seals. Due to their limited presence in the Estuary and the intelligence and swimming ability of these species **no impacts** are predicted upon these species which will avoid the periodic sand placement operation.

8.7 South Falls Disposal Site

The South Falls disposal site is also located within spawning and nursery areas for various fish species. There is no available information on the value of the actual placement site as a spawning or nursery area. It is, therefore, assumed that any impacts would be comparable with those predicted at the North Edinburgh site.

8.8 Summary of Potential Impacts

Table 12 summarises the predicted potential impacts, any mitigation measures and the residual impact.

Table 12 Summary of Potential Impacts on Natural Fisheries and Marine Mammals

IMPACT TITLE	SIGNIFICANCE LEVEL	MITIGATION	RESIDUAL IMPACT	COMMENTS
Smothering of shellfish beds	Negligible	None	Negligible	-
Spawning Fish	None	None	None	-
Nursery Area	Minor Adverse	None	Minor Adverse	
Interference with adult fish behaviour	Feeding: Minor Adverse Movement: Negligible	None None	Minor Adverse None	-
Interference to marine mammals	None	None	None	-

Given that the residual impacts of all impacts are considered to be negligible or minor adverse significance, no significant cumulative effects from the individual impacts are predicted.