

9 Fisheries

9.1 *Introduction and Methodology*

Information on fishing activities within the study area was obtained from reference to various publications including MAFF (1995) and CEFAS and Defra (2001), and from consultation with the Environment Agency, CEFAS, Defra fisheries, Southern Commercial fishermen, Southern Sea Fisheries, oystermen and fishermen's associations and the National Federation of Sea Anglers.

9.2 *Baseline Conditions*

The Solent is a mixed sea fishery, of importance for both commercial and non-commercial fish species. Commercial fisheries include pelagic and demersal species and shellfish cultivation. The inshore waters have an important role as a nursery area for bass (in addition to other fin-fish), with specific areas identified for protection. These bass nursery protection areas lie to the east of the proposed pipeline route (section 9.2.2).

9.2.1 *Shellfisheries*

Oysters

The Solent and its surrounding harbours is one of few regions in the UK supporting a native European flat oyster (*Ostrea edulis*) fishery, which represents the largest self-sustaining stock in Europe and is of international conservation importance. The beds extend from Hurst Spit to Bembridge Ledge and include Langstone Harbour, Portsmouth Harbour, parts of Southampton Water and the Hamble entrance. The majority of these fishing grounds are covered by the Solent Oyster Fishery Order, a Regulated Order (see Figure 9.1) under the Sea Fisheries (Shellfish) Act, 1967 (regulated orders are granted by Defra to a responsible body such as a Local Authority, Harbour Board or the Southern Sea Fisheries Committee to enable it to regulate the fishery of a natural stock).

There are two oyster Several Orders (a right of Several fishery granted by Defra for a fixed period to allow a cultivator to have additional protection for stock kept in public waters) within the Solent at Calshot and at Stanswood Bay on the Hampshire side of the Solent.

In addition, the majority of the Solent is designated as a Class B Bivalve Mollusc Production Area (shellfish harvesting area for the native oyster) under the Food

Safety (Fishery Products and Live Shellfish) EC Hygiene Regulations 1988 (No 207). Areas classified as bivalve mollusc production areas under these regulations are shown on Figure 9.1.

The bivalve mollusc production area is also covered by the EC Shellfish Waters Directive (79/923/EEC) which seeks to protect or improve shellfish waters in order to support shellfish life and growth. The directive includes water quality standards for various parameters including suspended solids. The directive should not be breached as a result of the activities associated with the proposal. The impacts of the proposal on water quality are assessed in section 7 'Water'.

All oyster fisheries have a closed season from April to August.

A maximum of 90 Solent Oyster licences are issued by the Southern Sea Fisheries Committee, to those entitled, each year. In the 2003 – 2004 season, approximately 1,000 tonnes of oysters were landed and during 2004 – 2005, approximately 600 tonnes were landed within the Southern Sea Fisheries area (Southern Sea Fisheries Committee personal correspondence 2005).

Whelks

Of the 16 species of whelk, the most important one from a fisheries point of view is *Buccinum undatum*, or Common whelk. These large gastropods, up to 110mm long are occasionally found at the low water mark of spring tides, where it might be collected, but usually sublittoral on hard and soft substrata. It is fished commercially in this part of Britain using baited pots and it would appear that there are significant commercial populations of this species in the Solent area.

Fisheries data found for this area show that the total landings at Portsmouth in 2003, amounted to 365mt (Fisheries Statistics Unit, Defra 2005).

Given the wide range in their distribution and fisheries grounds, and the small scale and temporary nature of the proposed development, it is unlikely that the whelk populations and associated fisheries will be impacted by the development.

Clams

There is also a non-native fishery for American hard-shelled clams (*Mercenaria mercenaria*) in Southampton Water, the northern part of the Solent, particularly around Lee and Hillhead and in Portsmouth and Langstone Harbours, which is greatly reduced from previous levels.

The welfare of the shellfish stocks such as lobster and oyster is the major concern for the future of the industry. Crab and lobster provide half of the value of all landings in the region, with other shellfish and finfish making up a further 25% each (CEFAS and Defra 2001).

Scallop dredging takes place mainly to the west of St Albans Head in Dorset. It is a stable directed fishery which is prosecuted by larger vessels and there has been a significant increase in effort due to quota restrictions. Mussel cultivation has become important in Poole Harbour, and clams, cockles and oysters are also farmed on a smaller scale.

9.2.2

Cuttlefish

Most of the major known spawning areas lie to the east of the Isle of Wight; however cuttlefish also spawn in the Baie de Seine, Baie de St Brieuc, the Baie de Somme and the Solent. As cuttlefish lay their eggs in areas shallower than 30-40m, it is most unlikely that the central Eastern Channel is a major spawning area.

In fact cuttlefish are concentrated mostly in the central western Channel during winter and in coastal areas during spring and summer. Typically, they lay their eggs on marine algae, sessile animals, man made obstructions and the seabed from early February to the end of May. Juveniles tend to stay in coastal waters with adults migrating to offshore waters in October and November.

Cuttlefish are typically taken in otter trawls and provide a much welcomed addition to earnings, especially when quota restrictions apply to prime fish such as sole.

Fisheries data found for this area show that the total landings at Portsmouth in 2003, amounted to 103 mt (Fisheries Statistics Unit, Defra 2005).

Impacts to cuttlefish, including their spawning grounds and associated fisheries are likely to be minor in magnitude. However, as a result of the greater extent of their populations (spawning and juvenile populations being mostly confined to coastal waters and adults largely living in offshore waters), the magnitude of the impact may in fact be somewhat more extensive from a geographical perspective i.e. involve a greater area than the actual project footprint..

9.2.3

Commercial pelagic/demersal fishing

Various nets are set for a wide variety of fish species within the Solent, of which the most important commercially are plaice *Pleuronectes platessa*, Dover sole *Solea solea* (which spawns within the study area between March and May), sprat *Sprattus sprattus* (which spawns in the study area between May and August), mullet *Liza sp*, skate and bass *Dicentrarchus labrax*.

There are currently 458 registered fishing vessels allowed to fish within the Southern Sea Fisheries District, which covers an area from Hayling Island to the Devon Border, out to six miles.

In addition, there is a large charter angling fleet, which fishes the Solent during inclement weather. There are approximately 100 full time vessels fishing from Benbridge, Gosport Hamble, Langstone, Portsmouth and Cowes. In 1995, there were 21 registered fishing vessels at Cowes (www.solentforum.hants.org.uk).

The area is also used by migratory species including sea trout, *Salmo trutta trutta* (and occasionally Atlantic salmon, *Salmo salar*), which make use of the Solent on their way to and from their breeding/spawning grounds in the New Forest streams. The main runs are on the Dark Water and Beaulieu River (which has an early run of large fish). The fish on these rivers migrate into and from the freshwater areas most of the year with the adult run upriver between April and December, downstream migration of kelts between November and January and the downstream migration of smolts between March and May. The mouth of the Beaulieu River, where sea trout enter and leave and feed in the marine environment, lies approximately 1.5km from the proposed pipelines. Local fishermen have informed the Environment Agency that adult fish are present around the foreshore for much of the year (Environment Agency correspondence 2005). However, little is known about the populations of sea trout although there is anecdotal evidence of a decline in this species (www.solentforum.hants.org.uk). Sea trout populations are protected under the Salmon and Fresh Water Fisheries Act 1975.

Many of the harbours within the Solent (Portsmouth, Chichester and Langstone Harbours) and Southampton Water have been designated a sea bass nursery area by Defra and fishing for bass from a boat within these areas is prohibited between 1 May and 31 October. The study area does not encroach upon any of these bass nursery areas. The bass fishery attracts a high level of effort throughout the region, and in most localities this fishery provides income for many part-timers and

casual anglers between May and October. Bass are taken in gill and trammel nets, on hand and longlines, and sometimes in trawls (CEFAS and Defra 2001).

Tangle and trammel nets are used for sole and plaice while larger meshed tangle nets are set for turbot and brill during the warmer months and several species of ray are landed within the Solent. Gill nets are used for cod and whiting during cold periods, when fish appear close inshore, though this coast is not well known for its cod fishery. Gill nets are set around wrecks for cod, ling and pollack and longlines are used to catch cod, pollack, rays, dogfish and tope, often when strong water currents make conditions unsuitable for netting, which can be severely restricted by high densities of weed in the water. Larger boats use otter and beam trawls for flatfish during the warmer months and, in winter, some trawlers switch to oyster and scallop dredging, whilst others continue to trawl for demersal fish, cod, whiting, flatfish and rays. Red mullet and black bream are caught in otter and pair trawls in spring and summer (CEFAS and Defra 2001). These areas lie within the study area.

9.2.4

Cetaceans and other important species

There is considerable uncertainty about the impacts on cetaceans, basking sharks, turtles and other large marine animals associated with similar projects as there is limited available data, and this has generally only been collected over short time periods. The issue should therefore be borne in mind should cetaceans or other large marine animals (including mammals, basking sharks and turtles) be recorded or observed in the vicinity of the project site.

9.3

Impact Assessment and Mitigation

9.3.1

Construction Impacts: Marine

Shellfisheries

- I.1. Any direct physical disturbance caused to shellfish such as clams, oysters and whelks by the jetting activities is likely to have a **moderate adverse impact** on these shellfish. This is likely to result in the removal (i.e. loss) or damage (such as abrasion of shells) to any shellfish along the route of the pipeline. It should be noted however that given the small scale and temporary nature of the development itself, this will only affect a very small proportion of the overall population within the Solent.
- I.2. Noise operations associated with the proposed scheme are unlikely to adversely impact upon shellfish such as oysters during the construction works as these species have a limited ability for noise detection. In

addition, the time scale of the increased noise levels is short making the magnitude of the potential impact very small.

- I.3. Potential changes in turbidity have been modelled and are considered in section 7 'Water'. These changes are minimal and it is considered unlikely that changes in turbidity will adversely impact upon shellfisheries. In particular, the native oyster has no dependence on light availability so changes in turbidity would have no effect (www.marlin.ac.uk accessed June 2005). Also, as the scheme will not significantly increase turbidity (section 7 'Water'), a decrease in primary production by phytoplankton and a reduction in food availability will not be experienced. Similarly, the exposed nature of the existing high-energy environment means that most organisms are already adapted to unstable conditions i.e. high baseline turbidity, are also likely to be opportunistic in nature and adapted to rapid recolonisation of areas affected by any additional sediment disturbances. In addition, the minor increases in turbidity are not expected to impact spawning potential of most species of shellfish or their juvenile stages. As indicated above, evidence suggests that most species of shellfish are well adapted to turbid waters.

The impacts of the localised changes in suspended sediment on water quality (section 7 'Water') are considered to be minor adverse in nature and will therefore have a temporary **minor adverse impact** on the EC Shellfish Waters.

There is the possibility that jetted sediment may result in the smothering of some shellfish and other marine organisms. Smothering of an oyster by 5cm of sediment would prevent the flow of water through the oyster that permits respiration, feeding and removal of waste and can ultimately lead to death. Temporary smothering can also lead to permanent stock and site damage. However, the amount of smothering envisaged as a result of the scheme is expected to be minimal. The modelling results (section 7 'Water') indicate that cumulative depths of both drilling lubricant (after one week) and released sand sediment (a few days after jetting has ceased) will not exceed 0.1mm.

An additional issue is the potential impact on all stages of shellfish species (from spawning phase to juvenile to adult) resulting from the potential re-

suspension of chemicals (e.g. heavy metals) contained in nearby sediments stirred up during the construction phase of the project.

At present, the impacts of turbidity on shellfish are therefore considered to be **negligible** although some **minor adverse impacts** on shellfish may be experienced as a result of smothering. The proposed jetting works will also be undertaken between October and December and will therefore avoid the national closed oyster season (14 May to 4 August), a season to protect native oysters during their spawning season.

- I.4. The release of drilling lubricants such as bentonite is discussed in section 7 'Water'. The results of modelling suggest that the deposition depths of drilling lubricant will not exceed 0.1mm after one week and therefore are unlikely to result in reduced feeding rates of bivalves. The impact is envisaged to be **negligible** to **minor adverse**.
- M.4. The proposed main will be correctly positioned with at least 10m of impervious geology above it and the exit angle will be defined based on the known ground conditions in order to reduce the risk of breakthrough of drilling lubricant. The risk of release of drilling lubricant will also be mitigated by selecting a contractor who has shown competence in this type of work.

Fish

- I.5. There will be some disturbance to fish during construction. The placement of devices and pipeline laying operations may disrupt the behaviour of spawning fish. However, it is known that both sole and sprat spawn within the study area and therefore the jetting works will be undertaken outside of their spawning seasons (March to May, and May to August consecutively). The placement of the pipeline may also disrupt the sediments associated with spawning and over wintering grounds, nursery grounds for juvenile fish and migration routes for diadromous (species which spawn in rivers) fish (especially inshore sites near estuaries) and other migratory species.

The proposed twin pipeline construction works will coincide with the timing of the adult sea trout *Salmo trutta trutta* run upstream and downstream migration of kelts. However, any direct adverse impacts upon sea trout present at the mouth of the Dark Water and Beaulieu River

are likely to be avoided as the pipeline will be drilled beneath the foreshore areas of the Solent, where the adult species are present throughout much of the year.

The proposed pipeline does have the potential to have an **adverse minor impact** on other aspects of marine ecology and may result in the temporary displacement of some fish and invertebrates during the marine construction of the pipeline. Most fish however are typically highly mobile and can be expected to move away from localised areas of elevated turbidity and higher than normal levels of noise and vibration whilst the pipeline is being installed by jetting. This effect would only be temporary, though fishers may have to move further afield to find their target prey species. Juvenile flatfish may be somewhat more vulnerable to increased mortality as a result of smothering by recharge sediment, however this would not be significant in comparison to the high levels of natural mortality that are experienced. There are considered to be **no significant impacts** therefore on fish as a result of localised minor changes in suspended sediment.

- I.6. The jetting operations may result in the direct removal of pelagic species and of benthos on which fish feed. Similarly, changes in sediment substrate (and in particular parameters such as particle size, contour, gradients etc) associated with the jetting may result in changes to the benthic community. Firstly, and arguably more importantly, changes to sediment substrate are known to potentially affect the ability of some marine organisms (including some species of fish) to spawn. Some fish and shellfish species for example have certain requirements with regard to the type of substrate as well as its contours in order for them to spawn successfully and to their full potential. Similarly, alterations to sediment can also affect the nursery ability of some species. This may have a **minor adverse impact**. Secondly, movements by the sediment itself may lead to direct impacts such as smothering of adult and juvenile shellfish and other marine organisms. This may have a **minor adverse impact**.

Cetaceans and other important species

- I.7. During the construction works, there may be temporary disturbance to cetaceans, basking sharks, turtles and other large marine animals due to increased levels of noise, vibration and the presence of physical barriers. However, given the large available area of sea around the proposed

pipeline route, the relatively short time period required for construction and the fact that most marine animals (including cetaceans) display avoidance behaviour when levels of noise and vibration increase well above baseline values, it is envisaged that this will only constitute a **minor adverse impact**.

Access to Fishing Grounds by Trawlers and Potters

I.8. There could be some temporary interruption to fishing activities, as a result of the presence of vessels associated with the installation of the pipeline. These operations could potentially affect shrimp habitat, static fishing gear for lobsters and crabs and restrict access to fishing grounds within the Solent.

It is difficult to quantify the actual effects on fishing activities of construction works, since the proposed works are temporary in nature and it could be argued that trawlers are free to move elsewhere during the construction period. However, it is expected that this would have **no significant/minor adverse impact** on fishing activities.

M.8. The contractor will maintain liaison with local fishermen through a fisheries liaison officer. Prior to implementation of the works, a consultation meeting will be held with fishermen, to which all the fishermen's associations will be invited. This will establish lines of communication between the contractor, fisheries liaison officer and the fishermen, to enable their concerns to be addressed in the detailed implementation of the works and to agree approach channels for supply vessels or pipe delivery systems. All activities that may restrict access to fishing grounds, are to be notified in advance, and where possible account is to be taken of fishermen's requirements. An appropriate local notice to mariners will be provided. Following mitigation, there will be **no significant residual impact** experienced by mariners.

9.3.2

Operational Impacts

I.9 The proposed works once completed and operational will not have any effect on fishing.