# 4 OVERVIEW OF THE EXISTING ENVIRONMENT

## 4.1 Introduction

4.1.1 This section provides a summary of the existing environment (i.e. baseline conditions) for each of the environmental parameters addressed in the EIA. In Section 6, the main predicted impacts of the proposed scheme on each parameter are discussed with a summary of all predicted impacts, mitigation measures and residual impacts provided in a series of tables.

## 4.2 Sediment quality

4.2.1 Sediment quality was defined based on existing data and specific surveys undertaken for the EIA. Sediment quality has been defined based on physical, chemical and biological characteristics.

4.2.2 The Swash Channel's sediments predominantly comprise silty and gravelly marine sands with occasional shell fragments, shale and cobbles. As a general trend, there appear to be greater proportions of sand in the eastern end of the Middle Ship Channel compared to the western end. The sediments in the northern end of the Little Channel comprise sand and some gravel, although the majority of the Little Channel comprises varying layers of silt and sand, including silty sand and sandy silt. The sediments in the Turning Basin exhibit variable characteristics.

4.2.3 Two sediment quality guidance criteria have been used to establish baseline sediment quality conditions:

- CEFAS's guideline action levels for the disposal of dredged material; and,
- Canadian Sediment Quality Guidelines for the Protection of Aquatic Life.

4.2.4 A comparison of survey data with assessment criteria indicates that the sediments within the Swash Channel, Middle Ship Channel and Turning Basin contain low levels of contaminants. The same comparison also indicates that the sediments within the Little Channel contain low levels of contaminants, however, some samples yielded elevated concentrations of polyaromatic hydrocarbons (PAHs).

4.2.5 Five sediment samples from the Turning Basin, Little Channel and Middle Ship Channel were analysed for phytoplankton cysts and *Alexandrium* cysts in particular. Two *Alexandrium* cysts species were found; *A. tamarense* and *A. minutum*. However, on the basis of the results of the analysis it is concluded that the *Alexandrium* concentrations recorded in the Turning Basin, Little Channel and Middle Ship Channel are very low.

## 4.3 Water quality

4.3.1 The existing water quality conditions of Poole Harbour and Poole Bay have been characterised using information derived from a literature review, water quality survey data and suspended solids data collated to inform the numerical modelling.

*Dangerous substances*

4.3.2 Water quality monitoring data for 2000 to 2003 were provided by the Environment Agency. For Poole Harbour, the results indicate no breaches of the Environmental Quality Standards (EQSs) established under the EC Dangerous Substances Directive. For Poole Bay, similarly, no breaches were found to have occurred except for one result for cadmium and one result for chromium. Both of these results were significantly higher than any other results recorded by the Agency, they were recorded on different days and probably represent anomalous situations compared to normal circumstances.

*Bathing waters*

4.3.3 There are 21 designated Bathing Waters in Poole Harbour and Poole Bay.. All of the bathing waters within Poole, Bournemouth and Purbeck have exhibited either excellent or good water quality since the 1990s.

*Shellfish waters*

4.3.4 There are four designated Shellfish Waters within the study area (Poole Harbour North, South and West and Poole Bay). Water quality within the Harbour is regularly monitored by the Environment Agency at monitoring points representing the shellfish waters. Water quality in the Harbour has, in the past, failed the Shellfish Waters Directive standards. For example, the Salterns Main Channel site failed the Directive in 1996 and 1997 due to elevated levels of nickel and zinc, with copper levels also exceeding Directive standards in 1997.

*Summary of background suspended sediment concentrations*

4.3.5 Data on suspended sediment concentrations collected by the Environment Agency indicate that within the main channels in Poole Harbour general background concentrations are of the order of 10mg/l or less. However, background concentrations for intertidal areas or in creeks within intertidal areas were higher and appeared to be of the order of 50mg/l. This contrasts with the HR Wallingford data which indicates that outside the main channels mean concentrations were 20mg/l or more (30mg/l or more near the bed), with peak concentrations of over 50mg/l regularly experienced on calm spring tides. During times of increased wave activity mean concentrations in the Harbour were 70-130mg/l with peak concentrations mainly of the order of 100-200mg/l, except in the “lower” Middle Ship Channel (east of Brownsea Island).

## 4.4 Marine and coastal ecology

4.4.1 The marine and coastal ecological interest of Poole Harbour and Poole Bay has been described based on a variety of existing data sources and from biological surveys undertaken specifically for the EIA. The intertidal and subtidal areas of Poole Harbour support diverse biological communities, with intertidal mud and sand communities supporting significant invertebrate populations. The populations in turn represent the food resource for waterbird populations for which Poole Harbour is designated a Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and Ramsar site.

4.4.2 A survey of the invertebrate communities of the navigation channels identified four distinct species assemblages, typical of assemblages expected to occur based on the sediment types in the study area and prevailing conditions. Their distribution was found to be related to the sediment composition of the seabed, as summarised below.

- ***Group A***

4.4.3 This faunal group is dominated by the polychaete *Nephtys cirrosa* and a number of species of small burrowing Crustacea (*Bathyporeia spp*.). This type of community is typical of sandy sediments which can be fairly mobile and is found in the outer part of the Middle Ship Channel and the outer part of the Swash Channel.

- ***Group B***

4.4.4 This group is very similar to group A, in that is dominated by *N. cirrosa,* but it has a smaller number of species of burrowing Crustacea (mainly *Urothoe brevicornis*). The group is numerically dominated by a lower number of species compared with group A. Again, this community is typical of sandy deposits sand is found within the Middle Ship Channel and in the Swash Channel.

- ***Group C***

4.4.5 This group was heavily dominated by the slipper limpet *Crepidula fornicata* and the keelworm *Pomatoceros lamarcki*. The latter species lives in a calcareous tube attached to solid substrata and is likely to be present on the gravel that typifies the areas where this faunal group is found (i.e. in the inner section of the Swash Channel).

- ***Group D***

4.4.6 Group D is dominated by the oligochaete worm *Tubificoides pseudogaster* and the polychaete *Nephtys hombergii*. A number of polychaete worms characterise the group, which is to be expected given the higher proportion of fine sediment found in the areas where this faunal group occurs (i.e. mixed sand and silt sediments in the Little Channel and Turning Basin).

4.4.7 In terms of marine mammals, the coastal waters are frequented by the harbour porpoise, bottlenose dolphin, the long-finned pilot whale and common dolphin.

4.4.8 A number of species and habitats of nature conservation significance occur in Poole Bay, namely *Sabellaria spinulosa* reefs (formed by a tube-dwelling worm), maerl beds, eelgrass beds and mats of an amphipod crustacean *(Ampelisca* sp.).

## 4.5 Marine and coastal ornithology

4.5.1 Poole Harbour qualifies as a Special Protection Area (SPA) under Article 4.1 of Council Directive 79/409/EEC on the conservation of wild birds (the 'Birds Directive') by supporting internationally important populations of regularly occurring Annex I species. Poole Harbour further qualifies under Article 4.2 of the Birds Directive in that it supports internationally important populations of regularly occurring migratory species and an internationally important assemblage of waterfowl. The qualifying interest of the site is summarised in Table 4.1.

**Table 4.1 Information on populations of bird species qualifying under the Birds Directive using the Poole Harbour European marine site**

| **Internationally important populations of regularly occurring Annex I species** | |
|---|---|
| **Species** | **Population (5 year peak mean)** |
| Avocet *(Recurvirostra avosetta)* | 459 birds (36.1% Great Britain population (1992/93-1996/97) |
| Mediterranean gull (*Larus melanocephalus*) | 5 pairs (22.7-38.5% Great Britain population) (1993-1997) |
| Common tern (*Sterna hirundo*) | 155 pairs (1.3% Great Britain population) (1993-1997) |
| **Internationally important populations of regularly occurring migratory bird species** | |
| **Species** | **Population (5 year peak mean for 1992/93-1996/97)** |
| Shelduck (*Tadorna tadorna*) | 3,569 birds (1.2% of the wintering North West Europe population) |
| Black-tailed godwit *(Limosa limosa islandica)* | 1,576 birds (2.3% Iceland population) |
| **Internationally important assemblage of waterfowl** | |
| **Importance** | **Population (5 year peak mean for 1992/93-1996/97)** |
| Poole Harbour supports large populations of wintering waterfowl | 23,498 birds (based on no data for wildfowl in 1992/93) |

4.5.2 Within the internationally important assemblage of waterbirds, the following species are considered to be key species, in that they are present in populations of national importance:

- Dunlin (*Calidris alpina*);
- Cormorant (*Phalacrocorax carbo*);
- Dark-bellied Brent goose (*Branta bernicla bernicla*);
- Teal (*Anas crecca*);
- Goldeneye (*Bucephala clangula*);
- Red-breasted merganser (*Mergus serrator*);

- Curlew (*Numenius arquata*);
- Spotted redshank (*Tringa erythropus*);
- Greenshank (*Tringa nebularia*);
- Redshank (*Tringa totanus*);
- Pochard (*Aythya farina*); and,
- Black-headed gull (*Larus ridibundus*).

4.5.3 In 1999, in addition to its SPA designation, Poole Harbour was further recognised as an internationally important wetland by being designated as a Ramsar site. The ornithological reasons for this designation are similar to the SPA citation.

4.5.4 None of the proposed beach nourishment sites within Poole Bay are designated under national or international legislation for their waterbird interests (i.e. SSSI, SPA or Ramsar site).

4.5.5 In order to describe the existing ornithological interest of Poole Harbour, the most recent core count data has been obtained from the British Trust for Ornithology (BTO); this data is collected as part of the UK-wide Wetland Birds Survey (WeBS). When describing the importance of a site for waterbirds, it is standard practice to use the most recent 5 years of data that is available. In this case, the most recent 5 years of data is for the period 1998/99 to 2002/03. In Poole Harbour, core counts are undertaken over the low water period and, therefore, provide a good indication of the overall usage of the intertidal areas by feeding waterbirds and waterbird distribution.

4.5.6 Table 4.2 below summarises the overall waterbird assemblage of the Poole Harbour SPA over the period 1998/99 to 2002/03 and shows the 5 year mean peak for these years, as well as the 5 year mean autumn and winter peak figures.

**Table 4.2 Summary of the overall waterbird assemblage of the Poole Harbour SPA (1998/99 to 2002/03)**

| Year | Peak monthly total | Autumn peak | Winter peak |
|---|---|---|---|
| 1998/99 | 28,354 (Dec) | 24,682 | 33,909 |
| 1999/00 | 32,193 (Dec) | 21,068 | 36,749 |
| 2000/01 | 25,987 (Jan) | 20,790 | 31,759 |
| 2001/02 | 24,931 (Dec) | 12,990 | 32,354 |
| 2002/03 | 22,598 (Nov) | 17,231 | 25,823 |
| **5 year mean** | **26,813** | **19,352** | **32,119** |

4.5.7 Broadly speaking, the intertidal areas in the western and southern areas of the Harbour support the major part of the waterbird populations of the Harbour, although Holes Bay is also an important area for waterbirds, including teal, redshank and black-headed gull.

## 4.6 Coastal and terrestrial ecology

4.6.1 Given the nature of the proposed scheme, no potential exists for a direct impact to arise on coastal and terrestrial ecology. However, the effects of the proposed scheme on the hydrodynamic and sedimentary regime have the potential to indirectly affect sites designated for their coastal and terrestrial ecological interest.

4.6.2 There are a number sites that are designated under international legislation for their terrestrial and coastal nature conservation interest adjacent to Poole Harbour and Poole Bay, namely (these sites comprise a number of SSSIs designated under national legislation):

- Dorset Heathlands Ramsar site;
- Dorset Heathlands SPA;
- Dorset Heaths cSAC;
- Dorset Heaths (Purbeck and Wareham) and Studland Dunes cSAC; and,
- Isle of Portland to Studland Cliffs cSAC.

4.6.3 It is recognised that the boundaries of some of these sites (e.g. the Dorset Heaths and Studland Dunes cSAC) extend below the mean high water mark, but effects on these sites are assessed in this section because the designated features of interest of the site are predominantly ‘coastal’ (e.g. dunes) rather than ‘marine’.

## 4.7 Fish and shellfish resources

4.7.1 Around 35 species of adult finfish, 17 species of bivalve shellfish and 11 species of decapod crustaceans have been recorded in the Harbour. The conditions and productivity of the Harbour are such that shellfish, eels, some demersal fish species (e.g. flounder), bass and grey mullet are found in much greater quantities within the Harbour than on the open coast.

4.7.2 Both natural and farmed stocks of bivalve molluscs are present within the Harbour, with cockles and (native and Manila) clams dominating the intertidal areas and mussels, oysters and American hard shell clams dominant in subtidal areas. Cockles are found all over Harbour.

4.7.3 Together, the Harbour and Bay provide important nursery areas for a wide variety of fish. In terms of commercially important species, they provide nursery areas for plaice, brill, turbot, dab, sole and wrasse. The study area is especially important for sandeel, black sea bream, pollack and pipefish.

4.7.4 The Harbour itself is also important for bass, and is a designated bass nursery area under the Bass (Specified Sea Areas) (Prohibition of Fishing) Order 1990, and is used by migratory species including salmon, sea trout and eels.

## 4.8 Fishing activity

4.8.1 Poole Harbour is characterised by an exceptionally diverse range of fisheries. There are currently 94 boats registered and licensed to the Port of Poole, making it the largest port in the Southern Sea Fisheries District Committee (SSFDC) area in terms of licences. Many other boats that do not hold permits (and, therefore, do not sell their catch) use Poole as their home port, either as charter boats running angling trips or through personal choice.

4.8.2 The SSFDC administers the Poole Fishery Order which combines a regulated and Several Fishery, and has been in force since 1915. The order exerts control over wild mollusc fisheries through licensing and closed seasons and covers most of Poole Harbour, but does not extend out into Poole Bay. Oysters, clams and mussels are all managed under the regulated fishery, while shellfish aquaculture is controlled through leased beds under the Several Fishery Order. There are 31 licensed clam fishing vessels this year (2003-2004 season).

4.8.3 The majority of shellfish caught within the study area are loaded directly from the boats on to lorries, most of which come from some distance away. Up to 40 lorries exporting shellfish leave Poole each week, although the majority of these shellfish are not harvested from within the study area; lorries transport shellfish harvested from (mainly) Ireland and Scotland to the continent (Poole is the UK's largest live shellfish exporting port). The shellfish fetch better prices elsewhere, whereas the finfish tend to supply more local markets. The commercial fish catch is dominated by shellfish in terms of tonnage and value.

4.8.4 There is also important charter fishing and recreational angling activity centred around Poole Harbour, with local and national angling clubs using the Harbour throughout the year and the presence of one of the largest charter fleets in the country.

## 4.9 Commercial and recreational navigation

*Commercial activity*

4.9.1 Brittany Ferries operate a regular cross-Channel service between Poole and Cherbourg; the *Barfleur* is a passenger and freight ferry and the *Coutances* is a freight ferry. During the summer, Brittany Ferries typically make four sailings a day from Poole to Cherbourg and during the winter three sailings a day.

4.9.2 From April to October, Condor Ferries also operate a fast ferry service which connects Poole with the Channel Islands of Guernsey and Jersey, and from May to September this service runs to St. Malo. Condor Ferries also operate a seasonal service to Cherbourg in conjunction with Brittany Ferries.

4.9.3 As a major destination for bulk cargo imports, the port receives imports of steel, timber, bricks, fertiliser, grain, aggregates and palletised traffic. Export cargoes include clay,

sand, fragmented steel and grain. Aggregate dredgers are also regular visitors and discharge their cargoes of sand and gravel. In 2003/2004, the conventional cargo quays handled a total of 439,498 tonnes.

4.9.4 Poole Harbour is also used by a number of other commercial craft, including sightseeing and fishing vessels. During the tourist season a number of sightseeing craft operate from Poole Quay to Brownsea Island and around the Harbour. The Furzey Island supply vessel operates from the BP base at Hamworthy.

4.9.5 At the Harbour entrance, the chain ferry operates a regular, all-year car ferry service to connect Sandbanks with the Studland peninsula. This service is operated by the Bournemouth-Swanage Motor Road and Ferry Company.

4.9.6 Vessel movements within the Harbour are controlled by a Vessel Traffic Services (VTS) operated by PHC.

*Recreational navigation*

4.9.7 Poole Harbour is very popular for recreational boating, both for motor boats and sailing vessels. Around eight yacht clubs and ten boat yards are present. However, in order to minimise navigation conflict, small vessels are encouraged to avoid sailing in the main navigation channels, where possible, especially in poor visibility.

4.9.8 The majority of resident yachts are based in one of the many marinas or on moorings. There are approximately 4,500 wet berths in the Harbour comprising, approximately, 2,500 swinging moorings and around 2,000 pontoon berths in marinas, havens and yacht clubs. In addition, around 13,300 visitor boat nights are spent in the Harbour.

4.9.9 The Harbour is used both for regular sailing races and for regattas, including world and national championships and open meetings. The majority of these sailing events take place in the summer months. Formal risk assessments for these events have to be provided to the Commissioners by the organisers.

4.9.10 Further details of the water-based recreational use of the Harbour are provided below (Section 4.11).

## 4.10 Archaeology and the historic environment

*Introduction*

4.10.1 An archaeological assessment was commissioned as part of the EIA and was undertaken by Wessex Archaeology (a major archaeological contractor with particular expertise in the maritime field). The assessment comprised four phases:

- Desk-based study;
- Interpretation of selected vibrocores;
- Archaeological interpretation of geophysical data; and,
- Diving investigation.

4.10.2 Topographical, geological, sea level, and archaeological data from the interpretation of vibrocores and interpretation of geophysical data have been combined to assess archaeological potential in three broad temporal zones, defined as follows:

- Lower Palaeolithic, Middle Palaeolithic and Early Upper Palaeolithic remains, either as derived artefacts, or possibly as *in situ* remains;
- Late Upper Palaeolithic to Roman artefacts and/or sites; and,
- Wrecks and maritime related sites from prehistoric to modern times.

The following sub-sections give an overview of the known and potential archaeological resource for each of these temporal zones.

*Lower, middle and early Upper Palaeolithic*

4.10.3 There are 32 sites from which artefacts of Lower Palaeolithic, or Palaeolithic date have been recovered in the study area. Of these 32 sites, none have been recovered from within the proposed dredging or the proposed disposal area. Poole and Bournemouth beaches have 17 sites of Lower Palaeolithic date producing over 150 individual Lower Palaeolithic artefacts, and a further eight sites dated generally to the Palaeolithic which may also be of Lower Palaeolithic date.

4.10.4 Outcrops of gravel terraces within Poole Harbour suggests some potential for artefacts of this date in secondary contexts within the proposed dredged channel. It is unlikely that *in situ* material of this date will survive within the proposed dredged channel.

*Late Upper Palaeolithic and Mesolithic*

4.10.5 There is one site of late Upper Palaeolithic date and one site of Mesolithic date both of which lie within the protected area of the Hengistbury Head Scheduled Ancient Monument. In addition there are three findspots of artefacts of Mesolithic date. No archaeological sites of this date are known from within the proposed dredging or proposed disposal areas. The nationally important sites at Hengistbury Head, and additional findspots at Southbourne and Canford, demonstrate the high potential for archaeological remains of this date within beach and cliff deposits at Poole and Bournemouth.

4.10.6 Peat deposits recorded by Wessex Archaeology from within the proposed dredging area have been tentatively identified as of later Mesolithic date and have the potential to contain features of archaeological potential.

*Late prehistoric and Roman terrestrial sites*

4.10.7 The study area contains a wealth of evidence for the exploitation of the area around Poole Harbour by later prehistoric and Roman communities, including settlements, ritual and industrial sites.

4.10.8 Terrestrial sites have been found around the fringes of the proposed dredging area. Along the beaches identified for nourishment, the main focus of later Prehistoric activity

was around Hengistbury Head, where a Late Neolithic settlement, Bronze Age barrow cemetery, Iron Age earthworks and Iron Age port have been identified. All these sites lie within the Hengistbury Head SAM. The recording of an ancient forest on the foreshore at Bournemouth pier suggests that in addition to archaeological monuments, evidence for past landscapes is also preserved within the beach deposits.

4.10.9 There are no sites or finds of this date from within the proposed disposal area.

4.10.10 Sea level was lower during the later prehistoric and Roman periods than at present. As such, there is some potential for submerged terrestrial or foreshore archaeological sites or finds dating to this period. However, due to the depth of water in those areas it is unlikely that later prehistoric foreshores fall within the proposed dredging areas, hence the most likely sites or finds from this date are likely to be of maritime origin.

*Maritime*

4.10.11 The known post-Roman maritime archaeological resource is summarised in Table 4.3.

**Table 4.3 Summary of the known post-Roman maritime archaeological resource in the study area**

| Site type | Total in study area |
|---|---|
| Wreck (maritime vessel) | 25 |
| Wreck (Valentine tank) | 6 |
| Possible wrecks | 5 |
| Obstructions | 27 |
| Finds of material on the seabed | 26 |
| Reported loss sites (maritime vessels) | 172 |
| Reported loss sites (aircraft) | 34 |
| Wreck sites where wreck has been lifted | 3 |
| Other maritime features | 6 |
| Coastal sites | 28 |
| **Total** | **332** |

4.10.12 In addition to the above, the earliest archaeological evidence for maritime activity within the Harbour occurs in the form of an Iron Age logboat and two Iron Age jetty structures.

4.10.13 The loss of over 100 ships is recorded off the beaches identified for nourishment; however, only a small proportion of these have been located on the seabed. Finds distributed across the study area suggest that there are further, as yet unlocated wrecks offshore.

4.10.14 One unknown shipwreck lies within the proposed disposal area, and one obstruction now considered to be 'dead' lies at the northern extent of the Swash Channel but was not identified in the geophysical survey.

4.10.15 The geophysical survey identified the following:

- Four sites that comprise a shipwreck and associated features;
- An obstruction reported by the Admiralty that is believed to be a wreck that sank in 1973;
- A further 28 sites of medium archaeological potential, six of which are located within the proposed channel; and,
- A further 202 sites of low and very low archaeological potential.

4.10.16 Although the geophysical survey undertaken as part of the archaeological assessment has considerably minimised the chance of unknown wrecks being present within the dredge footprint, it is possible that some of the anomalies identified are of archaeological importance.

## 4.11 Recreation and leisure

*Water-based recreation*

4.11.1 Poole Harbour and Bay are popular areas for a wide variety of recreational pursuits, including sailing, windsurfing, surfing, angling and waterskiing. Recreation within Poole Harbour is managed by PHC in accordance with the Poole Harbour Aquatic Management Plan, which is produced by the Poole Harbour Steering Group. The aim of the plan is "to promote the sustainable use of Poole Harbour, balancing the demands on its natural resources and resolving conflicts of interest". As part of the plan, a separate Zoning Plan has been developed which operates over the open water of the Harbour and has designated the following areas (amongst others):

- Waterskiing Zone;
- Windsurfing Zone;
- Personal Watercraft Zone;
- Quiet Areas; and
- Commercial and Small Boat Channels.

4.11.2 The Harbour is one of the most popular locations on the south coast for windsurfing, most of which takes place around the northern/eastern shores of the Harbour, especially at Whitley Lake. Some windsurfing also takes place at Hamworthy, on the seaward beach at Sandbanks and Swanage and Studland Bay in light conditions. The Harbour and Bay are similarly used for kitesurfing.

4.11.3 Waterskiing and personal watercraft are also popular. Part of the Wareham Channel is designated for waterskiing. Outside the Harbour, waterskiing may take place anywhere seaward of the 5 knots yellow buoy markers off the beaches.

4.11.4 The designated personal watercraft zone, lies to the north of Brownsea Island between the Wych Channel and the Middle Ship/Small Boat Channels. Personal watercraft are also taken out into Poole Bay. Permits are required for the operation of personal watercraft and for waterskiing within the Harbour, which can be obtained from PHC.

4.11.5 The Harbour and Bay are also popular for recreational angling and recreational diving.

*Shore-based recreation*

4.11.6 Visitors to Poole are attracted by the area's natural coastal scenery, beaches and the Quay, as well as by the opportunities for water sports. The beaches within Poole Harbour and Poole Bay (particularly those at Bournemouth, Poole and Swanage) are particularly popular and form a major attraction for both residents and visitors. Sandbanks beach is 3 miles long and has been a consistent winner of the European Blue Flag award for cleanliness.

4.11.7 Studland beach is owned by the National Trust and is an important area for tourism and recreation. Fine beaches stretch continuously for 3 miles from South Haven Point to the chalk cliffs of Handfast Point and Old Harry Rocks, and include Shell Bay and a designated naturist area.

## 4.12 Noise and vibration

4.12.1 The noise environment within Poole Harbour is generally characterised by low to medium noise levels, depending on location. Certain areas of the Harbour, particularly in the south and west, are remote from human influence and have low levels of background noise. Background noise levels are higher in the northern and eastern areas of the Harbour, which are more influenced by human activity.

4.12.2 Poole Quay could be described as “bustling” and is dominated by marine-related activity such as charter boat hire, passenger vessel operations, commercial fishing activity and marina facilities. The Port of Poole is on the opposite bank of the Little Channel to the Quay and there are a number of noise sources at the various quays and wharves, including noise generated from shipping activity.

4.12.3 A main road runs around the perimeter of Holes Bay and traffic noise dominates the background noise environment in this area.

4.12.4 There are no significant sources of vibration in and around Poole Harbour, although localised vibration is likely to occur around railway lines, road links and during the loading and unloading of certain cargoes within the Port (e.g. aggregates).

## 4.13 Air quality

4.13.1 The present Government policy for addressing pollutant emission sources is the Air Quality Strategy, which introduced the framework for Local Air Quality Management. None of the Local Authorities relevant to this EIA (Borough Councils of Poole and Bournemouth, and Purbeck District Council) declared a statutory Air Quality Management Area (AQMA) during the first round of review and assessment under the Management regime. This indicates that no locally elevated pollution levels were predicted and compliance with the objectives set out in the Air Quality (England) Regulations 2000, as amended by the Air Quality (England) (Amendment) Regulations 2002, is likely.

4.13.2 It should be noted, however, that all Local Authorities are currently carrying out a second round review involving an updating and screening stage and a subsequent detailed assessment for submission to DEFRA. Nevertheless, existing air quality around Poole

Harbour can be described as good, which is consistent with a south coast town and the national context.

## 4.14 Geology, landscape and visual resources

*Geology*

4.14.1 The western part of Poole Bay lies within the Dorset and East Devon World Heritage Site. This site is designated for the outstanding range of geological and geomorphological interests along this coast. The eastern boundary of the World Heritage Site is Old Harry Rocks.

4.14.2 Several geological SSSIs are situated within the study area. The Poole Bay Cliffs SSSI was designated in 1989. Other geological SSSIs include the Studland and Godlingston Heaths SSSI, the Arne SSSI and the Ham Common SSSI.

*Landscape*

4.14.3 The landscape of Poole Harbour is essentially maritime in character. The northern shore is mostly developed, with the majority of the shoreline being built-up between Hamworthy and Sandbanks. Much of the shore is backed by residential properties but, between Poole Quay and the Port, the uses are more industrial and commercial. Views of the Harbour from the northern shore are dominated by Brownsea Island, which is low-lying and largely wooded.

4.14.4 In contrast to the north and east, the southern and western shores of the Harbour are relatively undeveloped. They are also relatively inaccessible, meaning that fewer people visit these areas of the Harbour.

4.14.5 The southern half of Poole Harbour lies within the Dorset Area of Outstanding Natural Beauty (AONB). This site covers 44% of Dorset and is designated for the exceptional landscape that is present.

4.14.6 Two Countryside Character areas have been described by the Countryside Agency in the vicinity of Poole Harbour. The Dorset Heaths Countryside Character area lies to the south of the Dorset Downs and extends south-west of Poole Harbour to the prominent chalk ridge of the Isle of Purbeck. The South Purbeck Countryside Character area is bounded in the north by the Dorset Heaths and is separated from them by the narrow chalk ridge.

## 4.15 Infrastructure, land drainage, coast protection and flood defence

*Land drainage*

4.15.1 The main freshwater inputs to Poole Harbour are from the catchments of the River Frome, River Piddle, the Corfe River and the Sherford River. There are sewage inputs to Poole Harbour from Lytchett Minster, Poole and Wareham sewage treatment works.

*Coastal defences*

4.15.2 Coastal defences within Poole Harbour and Poole Bay constitute natural habitats (such as beaches, mudflats and saltmarsh), as well as man-made structures (such as seawalls and groynes).

4.15.3 Within Poole Harbour, there are extensive coastal defences along the Whitley Lake shoreline and around northern parts of the Harbour. There are also seawalls/engineered shoreline around parts of Brownsea Island, notably the eastern shore of the Island in the vicinity of Brownsea Castle.

4.15.4 Within Poole Bay, the shoreline is mainly a sandy beach with shingle and low dunes in places. Timber and rock groynes are present at various locations along this shoreline.

*Infrastructure*

4.15.5 There is no infrastructure in the vicinity of the proposed dredged area. The nearest underwater electricity cables are in the Little Ship Channel immediately to the south of Poole Bridge across Brownsea Road between North Haven Point and Brownsea Castle; this lies approximately 450m to the south of the proposed dredge area in the Middle Ship Channel. A water main also runs from the mainland to Brownsea Island, although this is drilled 11m below the Harbour bed.

4.15.6 A fuel barge is moored off the north-east corner of Brownsea Island. In addition, away from the channels, a variety of infrastructure is present on the shoreline of Poole Harbour, including groynes, jetties, landing stages and pontoons.

4.15.7 In Poole Bay, man-made infrastructure includes Bournemouth Pier, Boscombe Pier, the training bank and the numerous groynes on the foreshore. In Swanage Bay, groynes, slipways and a pier are also present.

## 4.16 Traffic and transportation

4.16.1 Poole is relatively well connected to the main road network and is served by the national rail network, with a principal route connecting the town with London and Southampton to the east and Weymouth to the west. The Port is served by a branch line that connects to the main rail network.

4.16.2 Poole Bridge is used by, on average, 18,000 vehicles a day and up to 22,000 vehicles a day in the summer. The existing lifting bridge can open for anything up to twenty-five minutes an hour to allow boats through. This can cause severe congestion to the local road traffic network, making journey times unreliable and affecting public transport timetables. At the time of writing, the Borough of Poole is putting forward proposals to construct a second opening bridge across the backwater channel. The aim of this scheme is to alleviate the traffic congestion that the opening of the current bridge generates and to facilitate the regeneration of the area. If constructed, the second bridge would provide a more reliable journey time for users of the Port of Poole.

4.16.3 Given that in summer there are typically four sailings of Brittany Ferries per day (two for the *M/V Barfleur* (typically carrying a maximum of about 250 cars and 50 HGVs) and two for the *M/V Coutances* (typically carrying a maximum of about 40 HGVs)) and three

Condor ferries sailings (185 cars each) take place, it is estimated that the port generates up to 2590 traffic movements per day at peak periods.

4.16.4 In the 12 months for 2003/2004, a total of 439,498 tonnes of conventional cargo was handled at the port. Assuming that all of this cargo was moved by road, and that the average capacity of a HGV is 20 tonnes, this movement of cargo would generate 21,975 HGV return journeys per year (43,950 movements).

4.16.5 In total, ferry and conventional cargo traffic generated by the Port represents around 10% of traffic using Poole Bridge.

4.16.6 Although the background traffic levels local to the Port (i.e. along New Quay Road) are likely to be dominated by Port-generated traffic, particularly during the peak holiday season, this traffic is rapidly diluted within Poole by traffic from other sources.

### 4.17 Socio-economics

4.17.1 In the financial year of 2003/2004, the Port generated a turnover of £10.5 million, thus making an important contribution to the local and regional economy, both directly and indirectly, by generating revenue for the local area and stimulating related business in the region. It also provides an important source of employment in the local area. The port directly employs approximately 180 individuals and there are a further 450 people employed on the Port estate. Indirectly, the Port is responsible for many thousands of additional jobs within Poole, Dorset and the south-west.

4.17.2 The coastal resorts of Poole, Bournemouth and Swanage are significant tourist destinations for both day and weekend visits and longer holidays. The beaches in these resorts are the main contributors to their popularity as tourist destinations and their presence is crucial to maintaining this popularity and the significant contribution that it makes to the local and regional economy.

4.17.3 The Bournemouth, Dorset and Poole Structure Plan estimates that 4 million visitors made a trip to the county in 1997, spending an estimated £640 million. Around 30,000 people are directly employed in the tourism industry during the summer peak and, indirectly, visitor spending supports a further 10,000 jobs.