

21 POTENTIAL FOR CUMULATIVE IMPACTS

21.1 INTRODUCTION

21.1.1 As part of the EIA process, it is important to consider the potential for the significant impacts that are predicted to arise as a result of the proposed development to interact with each other and with those of other past, current or reasonably foreseeable future plans or proposed projects. It is possible that the proposed channel dredging could have an effect on environmental receptors that are being affected by the operational implications of existing projects or which could be impacted by proposed future projects. Cumulative effects imply interaction between potential impacts, possibly resulting in an impact of greater (or lesser) significance than the effects in isolation. The scope of plans or projects to be included in a cumulative impact assessment can be defined as those projects whose effects may overlap with the proposed scheme in space or time.

21.1.2 The consideration of potential cumulative impacts is different to the consideration of the 'in-combination' effects of plans or projects, as required under the Conservation (Natural Habitats &c.) Regulations 1994, which may affect the same receptor but which may or may not interact with each other. The potential for in-combination effects to arise on the habitats and species of European sites is discussed in Section 22.

21.1.3 The assessment of cumulative impacts is limited to plans or projects for which sufficient information exists to allow consideration of the potential for a cumulative effect to arise. In the absence of publicly available information (usually in the form of a planning application), it is not possible to undertake a proper consideration of cumulative effects (i.e. if proposals are speculative or where assumptions regarding potential impacts may be contentious).

21.2 POTENTIAL CUMULATIVE IMPACTS ASSOCIATED WITH THE PROPOSED APPROACH CHANNEL DEEPENING

21.2.1 It is considered that there is one proposed project which has the potential to result in cumulative impacts with the proposed channel deepening; the proposed second opening bridge at Poole.

21.2.2 Any impacts arising from already implemented projects (e.g. previous capital dredging of the approach channel and the development of Poole Quay Boat Haven) are manifest in the baseline conditions described in this ES. HR Wallingford, for example, have included the influence of previous dredging operations in their numerical modelling (see Section 3). Therefore, these effects have been taken into account in the impact assessment.

21.2.3 No other proposed projects are sufficiently developed for consideration here (i.e. there is no publicly available information on which to base an assessment of the potential for cumulative impact).

Second Opening Bridge, Poole

- 21.2.4 The Borough of Poole are proposing to construct a second opening bridge across the Backwater Channel between Poole Town Centre and Hamworthy. The proposal has been put forward because the existing lifting bridge can cause severe traffic congestion in the area. The objective of the new bridge is to open up significant brownfield land to allow the regeneration of the town centre as well as to alleviate congestion and provide a more reliable journey time across the Backwater Channel.
- 21.2.5 The new bridge would cross the upper reaches of the Poole Channel between the middle section of West Quay Road and the north-east corner of the old power station site. It is planned to take the form of an opening bridge with overlapping leaves, which would cross the 140m wide Backwater Channel in 5 spans. The bridge would provide a two lane roadway with cycleways along the edges of the carriageway. Two 2.5m wide pedestrian footpaths would run alongside the carriageway. The bridge includes a single central opening span to provide a 19m wide navigation channel with no height restriction when the bridge is open. To support the bridge, two large main piers are to be provided on each side of the navigation channel with smaller piers supporting the remaining sections.
- 21.2.6 The element of bridge construction that has the most potential to give rise to impacts on the natural environment that could generate a cumulative impact in conjunction with the approach channel deepening is the capital dredging component. Dredging would be required for the second bridge in the Backwater Channel to create a new navigation channel, for a holding area and for the construction of the piers. It is proposed that the dredging would remove between 2 and 3m of material. The total volume of dredged material has been estimated to be 6,000m³.
- 21.2.7 At the time of writing (October 2004) a draft Environmental Statement for the proposed second opening bridge has been prepared (Gifford Consulting, 2004). The bridge construction is currently planned to commence in 2006 and the earliest completion date is expected to be late 2007.
- 21.2.8 The following sections provide an overview of the potential for cumulative impacts to arise as a result of the proposed second opening bridge and the proposed channel deepening for environmental parameters considered in this ES that have the potential to be significantly affected by both projects. The scope for cumulative impacts to arise is judged to be limited to the potential impacts of the projects on the hydrodynamic and sedimentary regime of the Harbour (and hence on marine ecology, including the shellfish resource) and traffic and transportation. The potential for cumulative impacts to arise on other parameters is considered to be minimal for one or more of the following reasons:
- Based on the presently proposed programmes for the works, the construction phases of the two schemes are not predicted to overlap in space or time;
 - A significant impact is not predicted on a particular parameter as a result of one or other (or both) of the proposed schemes during the operational phase (e.g. neither scheme would have a significant impact on geology); and,
 - Impacts that are predicted to occur during the operational phases of the two proposed projects do not affect the same receptors.

Potential for cumulative environmental impacts arising from hydrodynamic and sedimentary effects

Changes in current velocities and patterns of erosion and accretion

- 21.2.9 Gifford Consulting (2004) conclude that the cofferdams required to maintain a dry area to construct bridge piers could have an impact on current velocities, bed shear stresses and the tidal prism within the Holes Bay system.
- 21.2.10 During the construction phase, it was concluded that some increases in current speeds would occur on the edges of the intertidal areas but most of the change in current speeds would be confined to the Backwater Channel, with minimal potential for ecological effect. There would also be some localised changes to the pattern of erosion and deposition in the Backwater Channel, although all potential effects were considered to be of low magnitude in comparison with the presence of the cofferdams.
- 21.2.11 During the operational phase, localised changes to flows are predicted within the Backwater Channel as well as changes to sedimentation patterns, with areas of deposition in the lee of the structures and erosion in between the structures where flows would be increased.
- 21.2.12 The effect of the construction and operational phases on the tidal prism would be minimal.
- 21.2.13 The proposed approach channel deepening is not predicted to have any significant effect on current velocities or the pattern or erosion and deposition in Holes Bay or the Backwater Channel. As a result, no significant cumulative impacts on current flows and patterns of erosion and accretion are predicted.

Sediment deposition arising from capital dredging

- 21.2.14 Gifford Consulting (2004) conclude that the dredging would result in the temporary deposition of sediment within Holes Bay during dredging operations, but that this would be resuspended and transported from the system shortly after completion of the dredging.
- 21.2.15 A similar effect in Holes Bay is predicted for the proposed channel deepening, with between 1mm and 5mm of sediment expected to deposit temporarily in the southern parts of Holes Bay. This material would be resuspended and dispersed as tidal currents increase after slack water. However, these effects should not occur simultaneously, with construction of second opening bridge scheduled to commence in summer 2006 (the proposed channel dredging should be completed by this date).
- 21.2.16 Gifford Consulting (2004) conclude that it would be unlikely that a detrimental effect on ecology would arise due to the deposition of a very small volume of sediment. Consequently, there is unlikely to be the potential for a significant cumulative effect on intertidal or subtidal ecology due to sediment deposition resulting from the dredging associated with the two projects, particularly given that the construction phases of the two schemes would not overlap. However, in the event that the schemes did overlap due to changes to either construction programme, no significant cumulative effect is predicted

21.2.17 **No cumulative impact** is predicted for this effect.

Increased suspended sediment concentrations and release of contaminated sediments

21.2.18 The sediment plume arising from the dredging associated with the second opening bridge would be short-lived given the limited duration of the dredge. It would also be unlikely to impact on the benthic fauna within Holes Bay given that the species are likely to be tolerant of the level of suspended sediment concentration that is predicted (Gifford Consulting, 2004).

21.2.19 The dredging for the bridge would result in the release of some contaminated sediments into the water column. However, it was concluded that the limited duration of the dredging and lack of leachate potential means that there is limited potential for contaminants to enter the water column. Furthermore, it was predicted that there would not be any dispersion or deposition of sediment over shellfish beds and, therefore, no potential for an adverse impact on shellfish to arise (Gifford Consulting, 2004).

21.2.20 Given that the dredging required for the second opening bridge and the capital dredging of the approach channel would not overlap in time, there is no potential for a cumulative impact on suspended sediment concentrations (contaminated or otherwise) to arise. However, in the event that the dredging for the two projects was to overlap for any reason, any cumulative impact would be insignificant in view of the small volume of dredging required for the former project. Furthermore, the sediment that would be resuspended during the proposed channel deepening has been found to contain low concentrations of contaminants that are not of concern with respect to standards of various European Directives. Therefore, any cumulative impact would be insignificant.

21.2.21 There is no potential for a cumulative impact on shellfish beds within Poole Harbour to occur as a result of the two projects, given that sediment plumes arising from the second opening bridge would not affect shellfish beds.

21.2.22 It is concluded that, due to the fact that the two projects would not overlap in time, there is **no potential for cumulative impact** on suspended sediment concentrations. However, in the event that the projects were to overlap (e.g. due to effects on the construction programme for either project) any cumulative impact would be **insignificant**.

Potential for cumulative environmental impacts on traffic and transportation

21.2.23 The second opening bridge is predicted to reduce congestion in Poole town centre by maintaining traffic movement and improving access to the Port. The traffic queues that currently form when the existing Poole Bridge is raised should disappear or be significantly reduced following the construction of the second opening bridge. Movements to and from the Port would be improved for both cars and HGVs. HGVs would be able to approach the Port via either the existing Poole Bridge or the proposed second opening bridge.

21.2.24 The proposed channel deepening is predicted to give rise to a minor adverse impact on traffic flows local to the Port during the operational phase. This would arise due to the

increased number of vehicles that could be transported by the ferry which would replace the *M/V Coutances*, given the *M/V Coutances* is a freight only ferry and the replacement ferry would be likely to carry both freight and passengers. The effect would be minor congestion at times of embarkation and disembarkation, with the amount of congestion similar to the experienced when the *M/V Barfleur* embarks or disembarks. However, with the significant improvements to traffic flows that would arise from the construction of the second opening bridge, it is predicted that the overall situation would be improved when compared to existing conditions, should both the channel deepening and second opening bridge projects proceed.

21.2.25 Given the above, the cumulative impact would be of **moderate beneficial significance**.

