14 NOISE AND VIBRATION

14.1 EXISTING ENVIRONMENT

14.1.1 The noise environment within Poole Harbour is generally characterised by low to medium noise levels depending on location. For example, 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 as such areas are more influenced by human activity. That is, most of the eastern shore of the Harbour is highly populated, with roads running alongside the Harbour in places (e.g. in the Whitley Lake area).

14.1.2 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.

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

14.1.4 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).

14.2 POTENTIAL IMPACTS ASSOCIATED WITH THE APPROACH CHANNEL DEEPENING

Construction phase

Potential for elevated noise levels during construction works

14.2.1 The construction works for this aspect of the proposed scheme comprise the dredging of the approach channel using a single trailing suction hopper dredger, although it may be necessary to utilise a backhoe dredger for part of the works. Dredging operations in general are not considered to be particularly noisy activities, with the exception of bucket dredging which results in greater noise generation than either dredging method to be employed for the proposed approach channel dredging. It is envisaged that the dredging operation would last for up to 7 months and would be a continuous, 24 hour activity. The dredging activity is the only potential noise source associated with this aspect of the construction phase.

14.2.2 There is little published information on noise levels generated by dredging operations. However, measurements have been made by Bureau Veritas-Acoustic Technology of the trailing suction hopper dredger *Sospan* during dredging operations at Harwich, as part of a noise assessment of dredging operations in the Stour Estuary. The *Sospan* dredger is of a similar size (approximately 1,000m^3 hopper) to that which is likely to undertake the proposed dredging works. Based on these measurements, a sound power level of 109 dBA has been assumed for an operating trailing suction hopper dredger (Bureau Veritas-Acoustic Technology, 2003).

14.2.3 For the majority of the construction phase the capital dredging would not take place in close proximity to any heavily populated areas. Most of the dredging within the Harbour would take place approximately 800m away from the shore (see Figure 2.1). During this period noise levels would be around 43 dBL_{Aeq}. It is considered that this would not cause disturbance during either the daytime or nighttime in relation to background noise levels.

14.2.4 However, there are a few locations where dredging would take place closer to the shore. The noise levels at these locations have been calculated and are presented in Table 14.1. It should be noted that these levels represent the noise levels that would be experienced whilst the dredger is closest to these locations and, for most of the time, the dredger will be situated further away and, therefore, noise levels would be lower. Typically the loading time of the dredger during a cycle is about 1 hour and during this time the dredger would moving at about 2 knots along a 2km path.

Table 14.1 Predicted noise levels from dredging operations at selected locations around Poole Harbour

Location	Closest distance from dredge area	Noise level dB L_{Aeq}	Notes
1 – Haven Hotel, Sandbanks	225m	54	Closest dredging would take place in the northern end of the Swash Channel
2 – Sandbanks Road, Liliput	800m	42.9	This represents the closest distance to the dredge area in the Middle Ship Channel to the shore
3 – Poole Quay	25m	73	Limited dredging is required in this location. The majority of the dredging in the Little Channel is around 150m from Poole Quay.

14.2.5 These noise levels are predicted to cause little disturbance to residential areas during the day or at night; it should be noted that there has never been a noise problem associated with dredging in Poole Harbour in the past, except when dredging using a bucket dredger working continuously (the proposed dredging would not involve the use of a bucket dredger at any stage).

14.2.6 Given the above, an impact of **negligible significance** is predicted due to noise generated by capital dredging during the daytime and at night.

Mitigation and residual impact

In mitigation, it is recommended that, if practicable, dredging in the areas closest to land is avoided during the night. However, given significance of the potential impact predicted above, the residual impact is expected to be of **negligible significance** due to dredging during the daytime and at night.

Potential for vibration to be generated during the construction works

14.2.7 There are no activities associated with the approach channel deepening that have the potential to generate any vibration of significance. Therefore, **no impact** on the public or properties is predicted.

Mitigation and residual impact

No mitigation measures are required. There would be **no residual impact**.

Operational phase

Noise generation during maintenance dredging activities

14.2.8 There would not be a requirement to increase the frequency of maintenance dredging as a result of the approach channel deepening. It is proposed to utilise agitation dredging methods to remove silty material from the Turning Basin adjacent to the Port of Poole. Overall, there would be a small increase in the volume of sandy material to be removed by trailing suction hopper dredger from elsewhere in the channels. This would marginally extend the maintenance dredging operations in this area.

14.2.9 However, there are no noise issues associated with maintenance dredging, particularly in the vicinity of the Port of Poole given that dredging does not generate significant noise and is a very short term activity. Dredging in the navigation channels would take place every 2 years (as at present) although agitation dredging in the Turning Basin is likely to be undertaken annually.

14.2.10 As a result of the above, there would be **no impact** as a result of maintenance dredging associated with the proposed scheme.

Mitigation and residual impact

No mitigation measures are required. There would be **no residual impact**.

Potential for vibration to be generated during maintenance dredging activities

14.2.11 No significant vibration is generated by maintenance dredging and, therefore, **no impact** on the public or properties would occur.

Mitigation and residual impact

No mitigation is required. There would be **no residual impact**.

14.3 POTENTIAL IMPACTS ASSOCIATED WITH THE OFFSHORE DISPOSAL OF DREDGED MATERIAL

Construction phase

Noise generated during transport of dredged material to the offshore disposal ground

14.3.1 Dredged material that is unsuitable for beach nourishment would be transported to the offshore disposal ground in the dredger. Noise would be generated by the dredger as it transports material to the offshore disposal ground but the characteristics of this noise would be comparable to that generated by other vessels within the Harbour. Therefore, the movement of the dredger does not create a significant additional source of noise and it is not expected that there would be disturbance to the public due to noise generated by the activities of the dredger during disposal. **No impact** is envisaged as a result.

Mitigation and residual impact

No mitigation measures are required. There would be **no residual impact**.

Potential for vibration to be generated during disposal operations

14.3.2 The disposal operations do not have the potential to generate vibration and, therefore, there would be **no impact** with respect to these activities.

Mitigation and residual impact

No mitigation measures are required. There would be **no residual impact**.

Operational phase

Noise generation due to the disposal of maintenance dredgings

14.3.3 The same issues apply here as described above. In this case, however, disposal of maintenance dredgings is a far shorter duration activity than the disposal associated with the construction phase. There would not be an increase in the frequency of maintenance dredging activity (and, therefore, the disposal of maintenance dredgings) compared with the existing situation as a result of the proposed scheme. Given this, it is expected that there would be no disturbance to the public due to noise generated by the disposal of maintenance dredgings. **No impact** is envisaged.

Mitigation and residual impact

No mitigation measures are required. There would be **no residual impact**.

Potential for vibration to be generated during the disposal of maintenance dredgings

14.3.4 The disposal operations do not have the potential to generate vibration and, therefore, **no impact** would arise with respect to these activities.

Mitigation and residual impact

No mitigation measures are required. There would be **no residual impact**.

14.4 POTENTIAL IMPACTS ASSOCIATED WITH BEACH NOURISHMENT

Construction phase

Noise and vibration disturbance during the beach nourishment works

14.4.1 The potential for noise and vibration to be generated during the beach nourishment works is largely due to the activity of the mechanical plant (bulldozers and excavators) on the beach as the nourishment material is redistributed following pumping ashore.

14.4.2 The potential impact of this noise depends on the location and timing of the works. Bournemouth Borough Council has already received planning permission for their proposed beach nourishment scheme, which places no limits on working hours. If the material is used by the Borough of Poole, they would propose to restrict working hours of onshore plant to between 5am and 9pm. It is currently unknown whether Purbeck District Council would propose to restrict working hours. Based on experience from previous nourishment operations, members of the public are often interested in the works that are being undertaken and therefore the associated noise is not considered a nuisance.

14.4.3 The nourishment works involve a small amount of plant on the foreshore; however, noise generated by such plant would be audible from residential properties given that, depending on location, there are houses overlooking the beaches. Overall, noise and vibration generated by mechanical plant during the beach nourishment works is considered to have the potential to cause an impact of **minor adverse significance** in areas where the nourishment sites are overlooked by houses and of **negligible significance** elsewhere. During previous nourishment schemes, the Borough of Poole have received a small number of complaints relating to noise and vibration but these were from residents who experienced elevated noise and vibration levels during works in the Sandbanks area (Mr S. Terry, BoP, *pers. comm.*), although no nourishment would take place at this location.

Mitigation and residual impact

It is recommended that the proposed beach nourishment schemes are discussed with the Environmental Health Officers of the relevant local authority in order to determine whether the noise generated would be of concern. If noise levels are likely to be of concern the impact could be minimised by restricting working hours to avoid night time disturbance.

In spite of the above, it is inevitable that there would be some noise during the beach nourishment works. Therefore, the residual impact is expected to be of **minor adverse significance** in the case of nourishment in areas adjacent to residential properties and of **negligible significance** elsewhere.

Operational phase

Noise and vibration disturbance during any beach renourishment works

14.4.4 During the operational phase, it is recognised that there is the potential for using appropriate material that arises from the maintenance dredging of the approach channel in a beneficial manner for beach renourishment within Poole Bay. The potential environmental impacts of such renourishment would be dependant on the location where it is considered that nourishment is required, the volume of material that is to be placed on the beach and the nature of the material.

14.4.5 Given that there is no scheme for renourishment at present, this is outside the scope of this EIA which focuses on the potential impacts of the initial nourishment scheme. The potential environmental impacts associated with any renourishment scheme that may be required would need to be taken into account during the application for the Food and Environment Protection Act and Coast Protection Act consents that would be required.