

**EXPLANATORY NOTE: THE TEXT BELOW IS EXTRACTED FROM PAGES 34-35 AND 42-43 OF THE THIRD SUPPLEMENTARY ENVIRONMENTAL STATEMENT (SES3) PUBLISHED IN NOVEMBER 2006 WITH CHANGES/NEW TEXT HIGHLIGHTED FOR EASE OF REFERENCE**

**Pages 34-35, SES3**

**Noise and Vibration Impacts**

*Baseline*

3.4.58 Noise and vibration baseline information is as described in the main ES (*Volume 2, Chapter 8, Section 8.7, paragraph 8.7.145 to 8.7.153, Volume 2, Chapter 8, Section 8.10, paragraph 8.10.119 and Volume 2, Chapter 8, Section 8.11, paragraph 8.11.41*).

*Mitigation and Residual Impacts*

3.4.59 The construction works associated with the revised tunnelling strategy will result in a reduction in the number of properties for which a significant impact is predicted. As a result of the revised tunnelling strategy several properties will no longer be subject to noise levels that would render them as likely to qualify for temporary rehousing or noise insulation.

3.4.60 *Noise from Above-ground Construction Activity:* The original assessment presented in the main ES indicated that approximately 32 properties would be likely to qualify for noise insulation, with 20 of those also likely to qualify for temporary rehousing. A further 30 properties would likely experience a significant residual impact. Properties affected were located in Princelet Street, Hanbury Street, Boden House and Vollasky House.

3.4.61 The relevant measures set out in *Appendix B1* of the main ES will be employed to reduce construction noise impacts. A 5 m high hoarding will also be provided around the Hanbury Street worksite. Concrete pumps, concrete lorries and compressors will be housed in enclosures when in operation.

3.4.62 **Despite these measures, 34 residential properties will be affected by significant daytime construction noise impacts, 1 of which will be also affected by significant evening construction noise impacts. Of these properties, 8 will be likely to qualify for both temporary re-housing and noise insulation, and 4 (including the evening-affected property) are likely to qualify for noise insulation only. With this mitigation in place, 22 residential properties will experience significant residual construction noise impacts.**

3.4.63 **In order to address these remaining impacts further mitigation measures have been investigated including the possible total enclosure of the key noisy activities. With such a measure in place, 12 residential properties will be affected by significant daytime and evening construction noise impacts. All of these properties will be likely to qualify for noise insulation only. These 12 properties are shown in *Table 3.3*.**

**Table 3.3 Properties Likely to Qualify for Noise Insulation**

Number of Dwellings	Representative Property Address	Period of day During Which Noise Levels Exceed Noise Insulation Criteria		
		Day	Evening	Night
4	61 Princelet Street	√		
4	63 Princelet Street	√	√	
4	65 Princelet Street	√	√	

3.4.64 With this mitigation in place no residential properties will experience significant residual construction noise impacts.

3.4.65 Should it not prove practicable to fully enclose all the key noise producing activities on site, reductions in noise impacts will be achieved by the adoption of quieter plant and further increasing the height of the hoarding around the site. With these measures in place the same impacts as presented in Section 3.4.63 will be achieved.

3.4.66 Changes in Noise and Vibration Impacts as a result of the Project Alterations:

As a result of the revised scheme, several properties will no longer be likely to qualify for temporary rehousing or noise insulation. *Table 3.4* presents all those dwellings that were affected by the original tunnelling strategy and the results of the new assessment under the revised tunnelling strategy.

## Pages 42-43, SES3

### 3.5 Design Options

#### Woodseer Street Shaft Site

- 3.5.1 The reasons for rejecting various sites including the Woodseer Street site in favour of the Hanbury Street site as the location for an emergency intervention point and ventilation shaft in the Bill were discussed in the SES published in May 2005 (*Chapter 6, Section 6.2*).
- 3.5.2 With the advent of the revised tunnelling strategy a further comparison of the relative merits of the Hanbury Street and Woodseer Street sites has been undertaken. With the revised tunnelling strategy there is no longer a requirement to use them for the launch of TBMs, and consequently the worksite areas for both are considerably reduced from those previously considered. The alternative alignments and worksites considered are shown on map RTS C8(iii) of the SES mapping volume (SES3a).
- 3.5.3 A tunnel alignment was identified which, in combination with the Woodseer Street site, would result in a permanent maintenance requirement on Crossrail similar to the Bill alignment/Hanbury Street site combination. However, to achieve this, the alternative tunnel alignment would have to pass directly beneath the Bishop's Square development which will have deep foundations.
- 3.5.4 The comparison between the Hanbury Street Bill tunnel alignment and the Woodseer Street second alignment option is defined primarily by differences in the shaft costs and the environmental impacts of using each of the sites for construction.
- 3.5.5 The alternative Woodseer Street alignment passes beneath the Bishop's Square development and consequently the tunnels at the point of the intervention shaft will be approximately 2 m lower than for the Bill alignment. This would place the tunnels and shaft in more difficult ground with an associated increase in construction difficulty and therefore safety risk and cost. The tunnels would be approximately 120 m longer than the Bill alignment and it is likely that floating slab track would be needed beneath the Bishop's Square development to mitigate groundborne noise impacts, further increasing the capital cost of this option.
- 3.5.6 The Woodseer Street site compares favourably with the Hanbury Street site in terms of visual impacts during construction and both visual and townscape impacts once the shaft has been constructed. However, as impacts at both Woodseer Street and Hanbury Street would be likely to be mitigated through the provision of replacement buildings (according to the process set out in *Volume 1, Chapter 3, Section 3.8* of the main ES), in the long term there is likely to be little difference between the sites. In addition the size of the Woodseer Street site (larger than the Hanbury Street site even in the latter's reduced state) makes the former more favourable from a construction planning perspective. The site would also have less impact on road traffic as it is large enough to contain all vehicular activity and it would be possible to retain the adjacent footways.

- 3.5.7 Construction noise modelling of each site predicts that 12 residential properties would be likely to qualify for noise insulation at Hanbury Street and no significant residual noise impacts. Near the Woodseer Street site 4 residential properties would be subject to significant residual noise impacts. On balance, therefore, it is concluded that in terms of construction noise the Woodseer Street site results in slightly less impact for the nearest sensitive receptors as compared to the Hanbury Street site. The Woodseer Street site would also occupy land where a full planning permission has recently been granted for a new development (35 Woodseer Street).
- 3.5.8 Given all the above, it is concluded that the Hanbury Street site remains a better site for the location of what is now only an emergency intervention and ventilation shaft, than the Woodseer Street site.

### **Southern Alignments**

- 3.5.9 During the hearings at the House of Commons Select Committee on Crossrail the Promoter undertook to look again at the relative merits of a tunnel alignment (and associated shaft sites) south of the Hanbury Street site / Bill alignment. In particular, an alignment that maximised the potential to run beneath existing major roads such as Houndsditch, Bevis Marks/Dukes Place and Whitechapel High Street was examined.
- 3.5.10 An alignment that closely follows these main streets results in a curvature on the track below the normal minimum radius set out in the Crossrail design standards which would impose a very onerous permanent maintenance liability on Crossrail, assessed as requiring re-railing at about seven month intervals. An alignment was therefore identified which follows the roads to a lesser extent but in so doing complies with the Crossrail minimum radius of curvature. However, in doing so there is an increase in the degree to which it passes beneath relatively modern buildings with deep foundations: this alignment would pass directly beneath 22 significant building structures, 6 of which would be within 10 metres of the proposed Crossrail tunnels.
- 3.5.11 Four potential shaft sites were considered, one of which, in combination with the alternative alignment, was identified as not meeting emergency intervention and safety requirements and was therefore eliminated from further consideration. The remaining three sites were deemed to entail greater capital and operational/maintenance costs than Hanbury Street, and result in significant construction noise impacts on residential properties as well as, variously, on **Canon Barnett Primary School, Whitechapel Art Gallery, CECOS London College, and London Metropolitan University.**
- 3.5.12 Although some of the alternative sites provide some slight improvements in terms of issues such as visual amenity and socio-economic impact, these are outweighed by the overall adverse impacts associated with each, and all compare less than favourably to the Hanbury Street site. Each of the route options is shown on Map RTS C8(iv) of the SES mapping volume (SES3a).