

Project name	One Horton Heath, Phase 3 Link Road		
Design note title	Noise Impact Appraisal		
Document reference	17826-HYD-XX-XX-Y-1003-P01		
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Revision	P01		
Date	2 September 2022	Approved	✓

1. INTRODUCTION

1.1 Overview

Hydrock has been appointed by One Horton Heath, on behalf of Eastleigh Borough Council (EBC), to provide acoustic engineering services in relation to the Phase 3 Link Road aspect of the One Horton Heath development.

Our services are required to support the discharge of planning Condition 11 attached to the decision notice, which reads as follows:

Prior to the commencement of the development a detailed Noise Mitigation and Management Scheme detailing in full the noise reduction specifications for the top surface of the link road and any acoustic wall/fence/bund provisions shall be submitted to and approved in writing by the local planning authority. The agreed measures for noise reduction and improvement in subjective impression of the noise environment through integrated design shall then be fully installed in accordance with the approved detailed prior to first occupation of any adjoining dwelling to the link road and thereafter retained and maintained to the satisfaction of the local planning authority.

This technical note has been prepared to provide a summary of the noise impacts associated with the Phase 3 Link Road and presents the subsequent requirements for noise mitigation.

1.2 Background

Hydrock were appointed by One Horton Heath to prepare a noise and vibration ES Chapter a part of the EIA for the scheme. The EIA was submitted in support of a hybrid planning application, comprising an outline application for the wider site (wider OPA), and a full planning application for the First Residential Parcel (FRP).

An addendum to the ES was prepared by Hydrock, report ref: 17826-HYD-XX-XX-ACO-001, for the One Horton Heath Phase 3 Link Road.

2. PHASE 3 LINK ROAD DESIGN

Details of the Phase 3 Link Road have been provided by the civil engineers Ruby and Stagg. The design parameters for the road are as follows:

- 6.75m wide carriageway;
- Min. 2m wide footpath on both sides of the carriageway;
- Min. 0.5m landscaping verge on both sides of the footpath; and,
- The top surface of the road will be treated with a 45mm thick surface course material (Hot Rolled Asphalt (HRA)) conforming to Clause 943 of CD 236 '*Surface course materials for construction Revision 4*'.

Although not indicated on the drawings it's understood that cycle paths are provided, allowing for 3m minimum on eastern side, increasing to 4.5m alongside residential development, and 3m on the western side, provided only alongside residential parcels.

The Phase 3 Link Road is defined as a 30mph road, with its road surface type defined as impervious (i.e. for roads <75km/h).

3. SUMMARY OF NOISE IMPACTS

The potential for noise impacts associated with the operational phase of Phase 3 Link Road, at both the FRP and wider OPA, was considered first within the noise and vibration ES Chapter and then in more detail within the Phase 3 Link Road addendum. These findings are outlined below, in addition to a summary of impacts on Existing Sensitive Receptors (ESRs).

3.1 Existing Sensitive Receptors

The impact of development generated road traffic from the surrounding road network, including the Phase 3 Link Road, has been considered at ESRs in the noise and vibration ES Chapter.

The assessment showed that the majority of ESRs would be subject to 'negligible' effects with one ESR located closest to Burnetts Lane would be subject to 'minor' effects.

In accordance with Design Manual for Roads and Bridges (DMRB) 'negligible' and 'minor' effects correspond to impacts of 'not significant'. There are therefore no requirements to mitigate the road traffic noise from the Phase 3 Link Road at ESRs.

3.2 First Residential Parcel

A detailed assessment was carried out to support the planning application, including detailed noise break-in calculations in accordance with the more rigorous method outlined in British Standard 8233 (BS8233).

3.2.1 Noise Levels in Outdoor Living Areas

In accordance with BS8233 and The World Health Organisation's Guidelines for Community Noise, 1999 (WHO), the lower guideline noise level for external living areas is 50dB(A), and the upper guideline level is 55dB(A).

The assessment found that noise levels in the majority of outdoor living areas would be below the lower guideline noise level of 50dB(A), with only a small proportion of outdoor living areas located closest to the Phase 3 link road and Burnetts Lane, exceeding 50dB(A) but still being below the upper guideline level of 55dB(A), with the inclusion of mitigation.

The assessment found that 2m high acoustic screening, in the form of close boarded fencing (surface density $\geq 10\text{kgm}^{-2}$), is required between outdoor living areas and Burnetts Lane and the Phase 3 Link Road, at dwellings closest to and with a in direct line of sight to the roads. The remainder of outdoor living areas in the central part of the site would satisfy current guidance with the inclusion of standard 1.8m high close boarded fencing.

3.2.2 Noise Levels in Living rooms and Bedrooms

In accordance with BS8233 and WHO the recommended guideline noise criteria for internal noise sensitive rooms is 35dB $L_{Aeq,16\text{hour}}$ during the daytime in living rooms and bedrooms, together with 30dB $L_{Aeq,8\text{hour}}$ during the night-time in bedrooms. 45dB $L_{AF,Max}$ should also not be typically exceeded i.e. more than 10 times per night, in bedrooms.

The assessment found that the noise level in the majority of noise sensitive rooms would achieve the BS8233 and WHO recommended criteria with windows open, without any specific mitigation. However, noise sensitive rooms located closest to the Phase 3 Link Road and Burnetts Lane would require mitigation, in the form of enhanced acoustic glazing and an alternative means of background

ventilation, to allow windows to remain closed to mitigate the noise whilst still maintaining adequate ventilation rates.

3.3 Wider OPA

An outline assessment was carried out for the wider OPA in the absence of detailed design information for the remaining residential parcels.

3.3.1 *Noise Levels in Outdoor Living Areas*

The assessment found that, noise levels in external livings with direct line of sight to the Phase 3 Link Road, situated at the boundary of each residential parcel, would exceed the upper guideline noise criteria of 55dB(A), without the inclusion of any mitigation.

To reduce the level of noise in external living areas gardens should be located on the screened side of dwellings and not in direct line of sight of the link road. Alternatively, a combination of a stand-off provided between gardens and the link road should be provided, together with close boarded fencing. These methods would ensure that BS8233 and WHO guideline levels will be achieved.

3.3.2 *Noise Levels in Living rooms and Bedrooms*

The assessment found that the noise levels would be exceeded in noise sensitive rooms located closest to and in direct line of sight of the link road.

To reduce the level of noise internally, mitigation would be required in the form of enhanced acoustic glazing and an alternative means of background ventilation, to allow windows to remain closed whilst maintaining adequate ventilation rates.

4. NOISE MITIGATION AND MANAGEMENT SCHEME

4.1 Existing Sensitive Receptors

No significant noise impacts are predicted to occur at ESRs as a result of the development, therefore there are no requirements for a noise mitigation and/or a management scheme associated with the Phase 3 Link Road.

4.2 First Residential Parcel

To reduce noise impacts to an appropriate level in accordance with BS8233 and WHO guidance, a scheme of mitigation has been specified. The scheme includes acoustic screening and façade insulation, comprising enhanced acoustic glazing and alternative ventilation, as detailed in the ES Addendum.

As noise is mitigated and managed within the boundary of the FRP there are therefore no requirements for any noise mitigation and/or management associated with the Phase 3 Link Road itself.

4.3 Wider OPA

An outline noise assessment was carried out which showed there are potential for noise impacts in outdoor living areas and in noise sensitive rooms of dwellings located closest to the Phase 3 Link Road.

The assessment show that noise impacts can be suitable mitigated and managed within the detailed design of each development phase, using relatively standard methods as is demonstrated with the FRP. Therefore its considered that there are no specific requirements for any noise mitigation and/or management scheme associated with the Phase 3 Link Road itself.

5. CONCLUSION

Hydrock has been instructed by One Horton Heath to discharging planning Condition 11 of the Phase 3 Link Road decision notice, requiring a noise mitigation and management scheme to be provided.

This technical note has been prepared in order to appraise the noise impacts associated with the Phase 3 Link Road and discharge the planning condition.

The results of the appraisal show that there a negligible noise impacts at ESRs, and that all noise impacts at proposed sensitive receptors can be suitable mitigated using relatively standard techniques, within the boundary of each residential parcel. The design of the FRP is considered to provide a demonstration of an effective mitigation scheme likely to be implemented at the remaining Phases of the scheme.

It's considered that there are no specific requirements for noise mitigation and/or management measures associated with the Phase 3 Link Road element itself. Therefore, the above information is considered to provide sufficient detail to discharge Condition 11.