

Smart Motorways Programme

M4 J3 - J12

Acoustic Barrier Changes
Technical Note

Document Number: HA514451-CHHJ-HFE-S1_ZZZZZZZZ_Z-TN-KK-0001

Date: April 2022

Contents

	Page
1. Introduction	4
2. Background	5
3. EM8 (Eastbound)	6
4. EM6 (Eastbound)	8
5. Conclusion	10

1. Introduction

Following the granting of consent of the DCO for the M4 J3-J12 Scheme, National Highways has undertaken updated surveys of existing acoustic barriers along the route of the Scheme and a review of the value for money of the proposed barriers; and following this, reviewed the performance benefits of the proposed barriers included within the environmental masterplan submitted with the application.

As a result of this review, it has been identified that two of the proposed barriers can be changed, in light of existing barriers in place.

As Requirement 22 of the DCO for the Scheme requires the details of acoustic barriers for the Scheme to be brought forward in accordance with the environmental masterplan; it is not possible for these changes to be brought forward under a discharge of that Requirement and so these acoustic barrier changes must be brought forward as part of the Application.

This Technical Note explains the proposed changes and confirms that the changes will not cause a material change to the noise assessment in the Environmental Statement.

2. Background

The M4 is a strategic part of both the English and Welsh road network, connecting London to South Wales. The scheme is located on 32 miles of the M4, between junction 3 and junction 12. It comprises of 28 miles of three-lane motorway and four miles of four-lane motorway between junction 4 and 4b. The scheme includes the M4 to M25 interchange; the junction for Heathrow Airport and passes by several key regional centres including Slough, Windsor, Maidenhead, Wokingham and Reading.

3. EM8 (Eastbound)

The noise model has been revised to examine the effects of reducing the length of the western section of barrier EM8 (approximate Ch.51820 – Ch.52720 and on sheets 12 and 13 of the Environmental Masterplan), the reduction in length being at the western end of the barrier.

There is a substantial residential area to the north of the motorway in this location, at a closest distance of approximately 190 metres. Between this residential area and Lower Earley Way West (which runs close to, and parallel with, the motorway) lies Pearman’s Copse Local Nature Reserve.

This location was remodelled and noise level contours at first floor height were calculated (utilising the traffic data explained in the Application Statement Appendix D) for the following with-scheme scenarios;

- 1) With originally proposed noise barrier
- 2) With 150 metres removed from western end of proposed noise barrier

Figure 1 shows the change in noise levels due to the removal of 150 metres from the western end - scenario 2) minus scenario 1).



Figure 1 Change in noise levels due to removal of 150 metres from barrier (west end)

Figure 1 shows that the noise level increases to residential properties are negligible (< 1 dB) as a result of removing 150 metres from the western end of the proposed barrier. It is noted that these residential properties would still experience minor noise reductions (1 < 3 dB) when comparing the with-scheme scenario to the without-scheme scenario.

Figure 1 shows that the noise level increases to Pearman's Copse Local Nature Reserve are between 0.5 and 1.5 dB, which are negligible/minor. However, Pearman's Copse Local Nature Reserve would still experience minor noise reductions ($1 < 3$ dB) when comparing the with-scheme scenario to the without-scheme scenario.

In relation to the visual situation, there are no existing and future visual links between the M4 and Pearman's Copse Local Nature Reserve due to an existing vegetated earth mound along the M4 which has a function as a visual buffer.

Therefore, potential sensitive receptors using the Local Nature Reserve are not affected by the changes of EM8.

It is concluded that barrier EM8 can be shortened by 150 metres at the western end without changing the conclusions of the assessment presented in the Environmental Statement.

4. EM6 (Eastbound)

There is an existing 3 metres high barrier outside the motorway boundary and behind the proposed noise barrier location for EM6 (approximate Ch. 53902 to 53650 and on sheet 11 of the Environmental Masterplan) which was not included in the original noise model.

Additionally, it has been noted that the existing barrier in the eastbound verge of the M4 east of J11 (approximate Ch.53902 – Ch.54130) was defined in the DCO submission as a 1.8-metre-high solid noise

barrier. Subsequent further survey work has shown that, moving east from where the existing acoustic

barrier changes offset to be closer to the B3270, there is 14 metres of existing 2-metre-high acoustic barrier

in good condition, after which the fence is a 1.5-metre-high open wooden slat fence between Ch.53963 –

Ch.53902 which is not expected to provide any acoustic attenuation.

This location has been remodelled and noise level contours at ground floor height and at first floor height calculated for the following with-scheme scenarios:

- 1) With existing 3 metres high noise barrier and existing barrier in the eastbound verge
- 2) With existing 3 metres high noise barrier, existing barrier in the eastbound verge and proposed 2 metres high noise barrier to motorway (Ch. 53650 – Ch. 53902)

Figure 2 below shows the increase in noise levels at ground floor height without the proposed 2 metres high noise barrier - scenario 1) minus scenario 2).

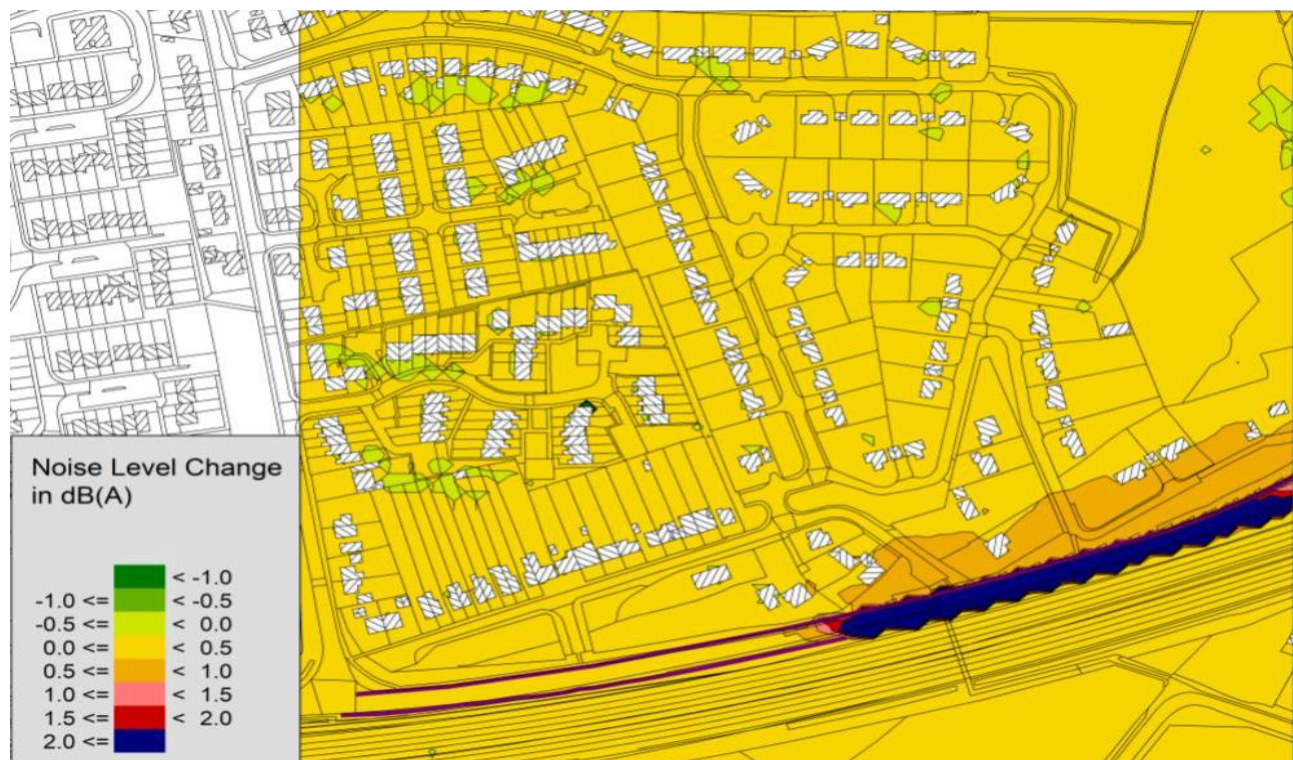


Figure 2 Increase in ground floor noise levels without proposed 2-metre-high barrier

Figure 2 show that the noise increases at ground floor level across the study area due to the removal of the 2 metres high noise barrier are negligible (< 1 dB).

Figure 3 below shows the increase in noise levels at first floor height without the proposed 2 metres high noise barrier - scenario 1) minus scenario 2).

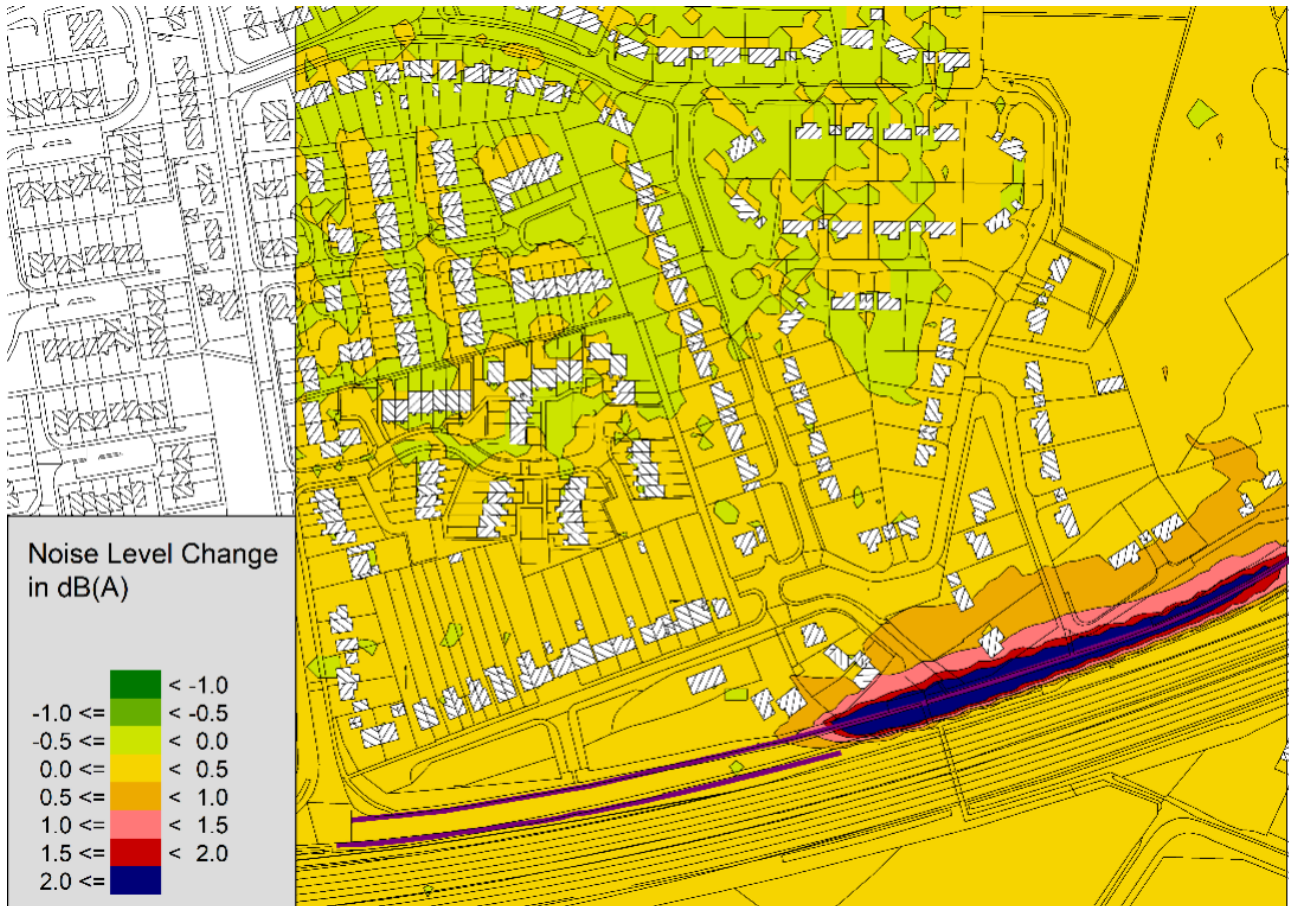


Figure 3 Increase in first floor noise levels without proposed 2-metre-high barrier

Figure 3 shows that the noise increases at first floor level across the study area due to the removal of the 2 metres high noise barrier are negligible (< 1 dB), apart from 2 receptors where the increases are 1.1 dB(A) and 1.3 dB(A), which are at the bottom end of the Minor impact range. However, these 2 receptors would still experience negligible noise reductions at first floor level when comparing the with-scheme scenario to the without-scheme scenario.

In relation to the visual situation, when removing the 2 meter high noise barrier in this section, the existing environment between the B3270 and the M4 will not change, the people using the footpath will continue to see the M4 and the residents behind the existing screen fence will not have a different visual link to the M4.

It is concluded that the proposed 2 metres high noise barrier to the motorway would not provide any significant noise reductions and would not be value for money. Consequently, EM6 can be removed from the new noise barrier provision for the Scheme without changing the conclusions of the assessment presented in the Environmental Statement.

5. Conclusion

As described in the sections above, National Highways wishes to alter the barrier provision within the Scheme based on the analysis undertaken. This Technical Note has demonstrated that the proposed changes are possible without causing any impact to the conclusions of the Environmental Statement.