

M3 Consulting

Osnaburgh Street

Comparison of Pre and
Post Construction
Surveys

ISSUE

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Surveys

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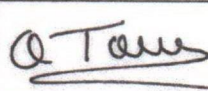
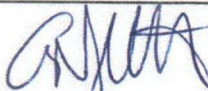
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1 Introduction

Osnaburgh Street is a new development off Euston Road, London. As with any new development of significant height there is the potential for television reception to be adversely affected.

In order to satisfy planning condition 28 Arup were commissioned to undertake a desk study that identified areas where television reception could potentially be affected by the development and detail possible mitigation measures. Arup were also commissioned to conduct pre and post construction terrestrial television signal strength surveys in the aforementioned areas in order to identify the true effects of the completed development on television reception.

This document provides a comparison between, and helps to explain the reasoning behind, the pre and post development survey reports (9654-RL-01b and 9701-RL-01b respectively).

2 Survey Comparisons

2.1 Methodology

The purpose of both surveys was to measure the general field strength and signal/noise levels for television reception over the television broadcast band 450MHz – 650MHz.

Both surveys carried out measurements at the same survey zones as shown in Figure 1 below.



Figure 1: Survey points

For both surveys, measurements were taken at 6 survey points in each zone, A to E. These survey points were equally spaced along the black line, moving away from the letter in the circle.

Both surveys employ the same electric and plane-wave standard test methods based on European and International standards, taking measurements in the frequency domain using a broadband Log Periodic Antenna as the field transducer.

2.2 Results

The following sections compare the measurements in each zone A to E.

2.2.1 Frequency Spectrum Plots

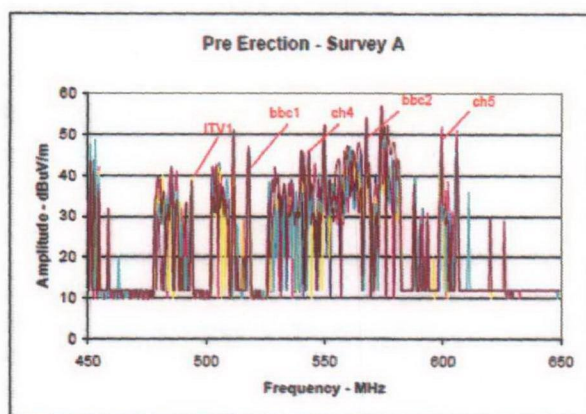


Figure 2: Frequency spectrum pre construction

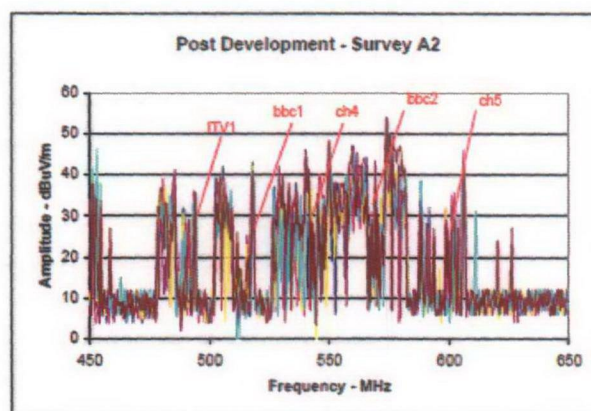


Figure 3: Frequency spectrum post construction

The above two plots show the television frequency spectrum for pre and post construction at point A. The main use of these plots is to identify the frequency peaks of the different channels. Radio waves are continuously dynamic and as such many of the changes seen above are merely variations due to time. The field variation surveys are of more use when analysing television channel signal change as these show how one frequency (i.e. channel) varies at each survey point. As such this report will focus on the field variation surveys only.

2.2.2 Field Variation Surveys

For each survey zone, A to E, two field variation surveys were conducted both pre and post construction. One was at the BBC1 frequency, the other at the Channel 5 frequency. The BBC1 survey is representative of the Crystal Palace transmitter (all digital terrestrial channels and analogue BBC1, BBC2, ITV and C4). The C5 survey is representative of the Croydon transmitter (which transmits analogue Channel 5 only).

As previously stated radio waves are continuously dynamic and are therefore constantly changing. The results of the physical survey must be taken in context with the areas of predicted effects (Figure 1) as only changes within predicted shadow areas are likely to be attributable to the development. Whilst signal strength alone is not a definitive indication of whether television reception will be acceptable, it provides a good indication of when issues may be expected.

Changes outside the predicted shadow areas can be attributed to factors such as signal fade and changes to the urban landscape elsewhere.

Changes of greater than 10dB can be considered to be significant and attributable to something other than natural signal variation (signal fade).

The survey results should be read in comparison with Figure 1.

2.2.2.1 Survey Zone A – Crystal Palace

The BBC1 (Crystal Palace transmitter) field variation surveys at zone A for pre and post construction are shown below in Figures 4 and 5 respectively. The blue shaded area denotes the test positions across which the predicted signal shadow zone falls. As such only changes within this zone should be considered to be attributable to the development.

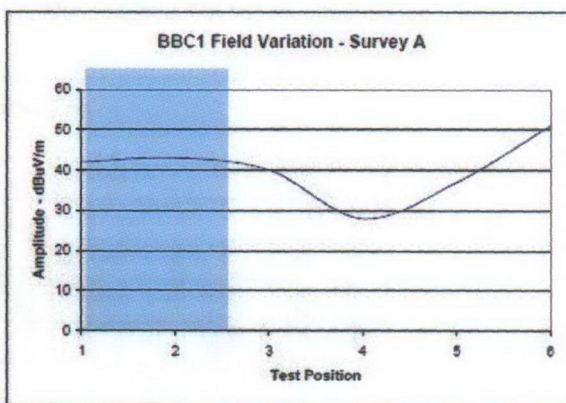


Figure 4: Field variation survey pre construction

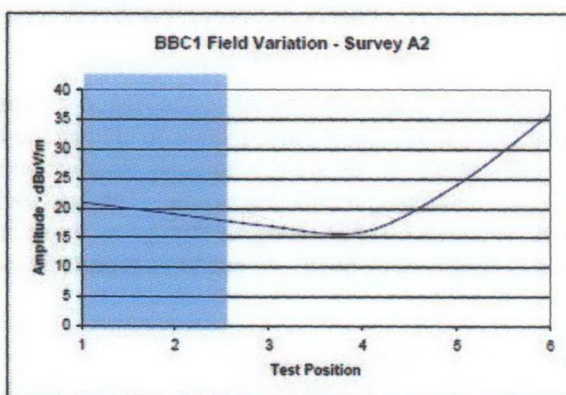


Figure 5: Field variation survey post construction

As can be seen from the figures above, the Crystal Palace signal level within the blue shaded area is significantly (approximately 20dB (10:1)) less for the post construction survey compared to the pre construction survey.

Therefore, it can be concluded that the development has had a significant impact on Crystal Palace television signals at survey zone A.

2.2.2.2 Survey Zone A – Croydon

The Channel 5 (Croydon transmitter) field variation surveys at zone A for pre and post construction are shown below in Figures 6 and 7 respectively. The red shaded area denotes the test positions across which the predicted signal shadow zone falls. As such only changes within this zone should be considered to be attributable to the development.

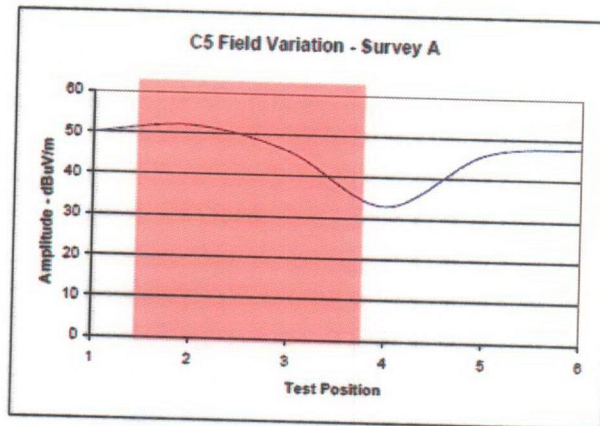


Figure 6: Field variation survey pre construction

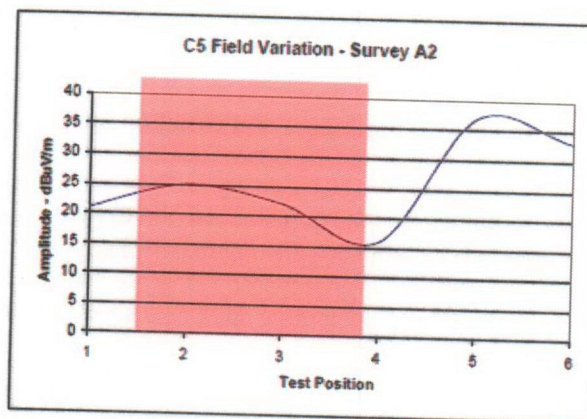


Figure 7: Field variation survey post construction

As can be seen from the figures above, there is a significant drop (approximately 25dB) in signal levels in the predicted shadow areas for the Croydon transmitter. Therefore, it can be concluded that the development has had a significant impact on Croydon television signals at survey zone A.

2.2.2.3 Survey Zone B – Crystal Palace

The BBC1 (Crystal Palace transmitter) field variation surveys at zone B for pre and post construction are shown below in Figures 8 and 9 respectively. The blue shaded area denotes the test positions across which the predicted signal shadow zone falls. As such only changes within this zone should be considered to be attributable to the development.

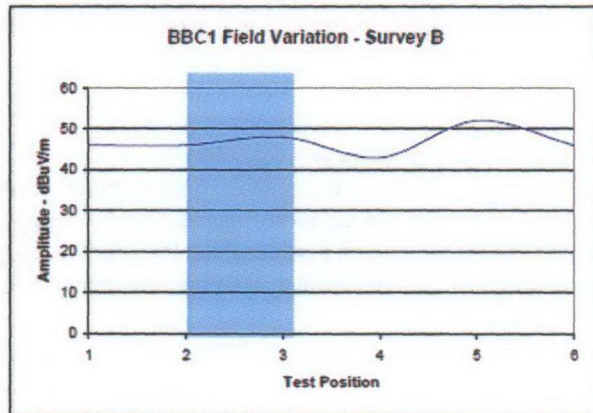


Figure 8: Field variation survey pre construction

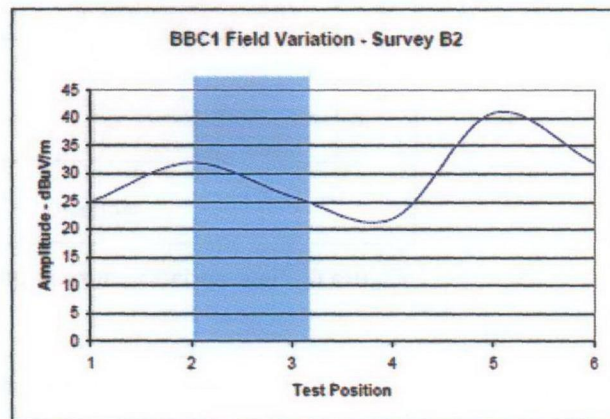


Figure 9: Field variation survey post construction

As can be seen from the figures above, the Crystal Palace signal level within the blue shaded area is still significantly (approximately 20dB (10:1)) reduced in some areas for the post construction survey compared to the pre construction survey. Therefore, it can be concluded that the development has had a significant impact on Crystal Palace television signals at survey zone B.

It can also be concluded that the Crystal Palace television signals within the shadow areas between zones A and B are similarly affected.

2.2.2.4 Survey Zone B – Croydon

The Channel 5 (Croydon transmitter) field variation surveys at zone A for pre and post construction are shown below in Figures 10 and 11 respectively. The red shaded area denotes the test positions across which the predicted signal shadow zone falls. As such only changes within this zone should be considered to be attributable to the development.

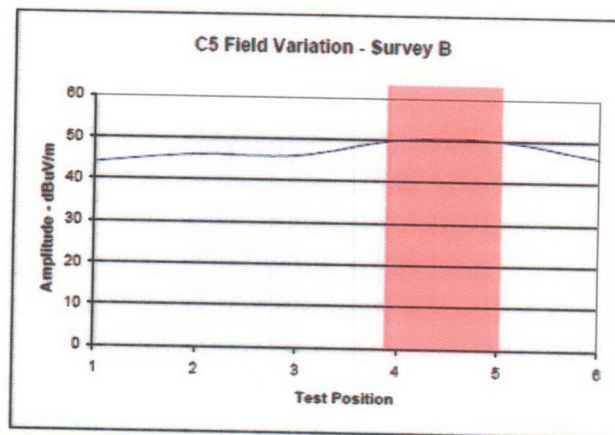


Figure 10: Field variation survey pre construction

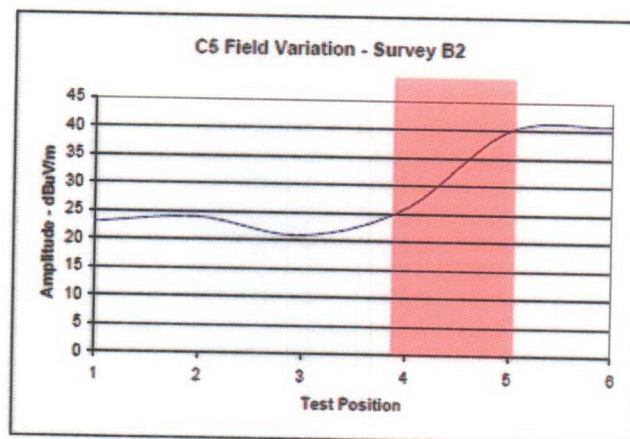


Figure 11: Field variation survey post construction

As can be seen from the figures above, there is a significant drop (approximately 25dB) in signal levels in some areas of the predicted shadow area for the Croydon transmitter. Therefore, it can be concluded that the development has had a significant impact on Croydon television signals at survey zone A.

It can also be concluded that the Croydon television signals within the shadow areas between zones A and B are similarly affected.

2.2.2.5 Survey Zone C – Crystal Palace

The BBC1 (Crystal Palace transmitter) field variation surveys at zone C for pre and post construction are shown below in Figures 12 and 13 respectively. The blue shaded area denotes the test positions across which the predicted signal shadow zone falls. As such only changes within this zone should be considered to be attributable to the development.

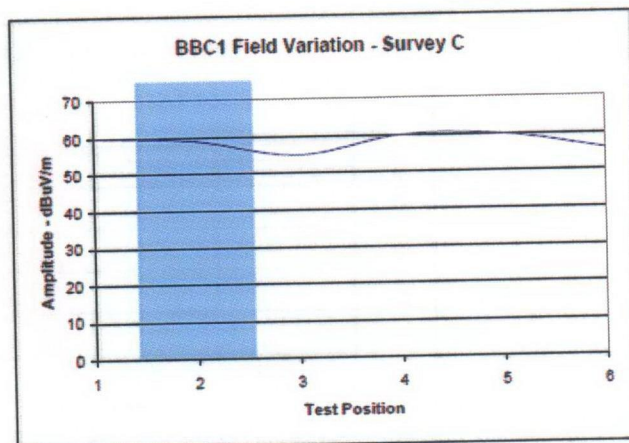


Figure 12: Field variation survey pre construction

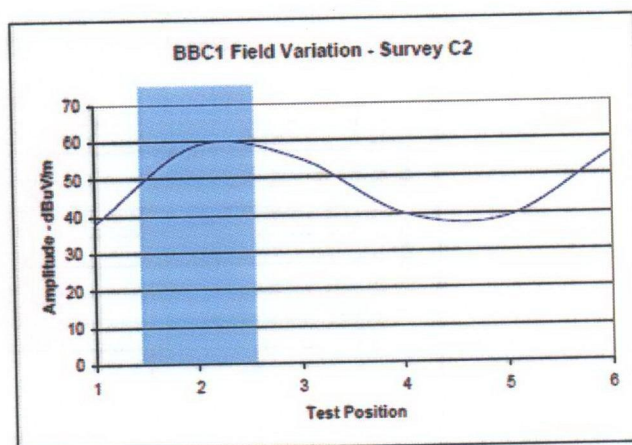


Figure 13: Field variation survey post construction

As can be seen from the figures above, there is no significant (>10dB) change in the Crystal Palace signal within the predicted shadow area. Natural variation in signal levels along with other changes to the urban landscape cause minor changes to recorded signal levels at different points in time. Therefore, it can be concluded that at zone C there is no significant impact to Crystal Palace television signals as a result of the development.

It can also be concluded that the effects to Crystal Palace television signals due to the development cease (within the predicted shadow area) between survey zones B and C. It is possible that there may be some residual impacts to signals between these zones attributable to the development.

2.2.2.6 Survey Zone C – Croydon

The Channel 5 (Croydon transmitter) field variation surveys at zone C for pre and post construction are shown below in Figures 14 and 15 respectively. The red shaded area denotes the test positions across which the predicted signal shadow zone falls. As such only changes within this zone should be considered to be attributable to the development.

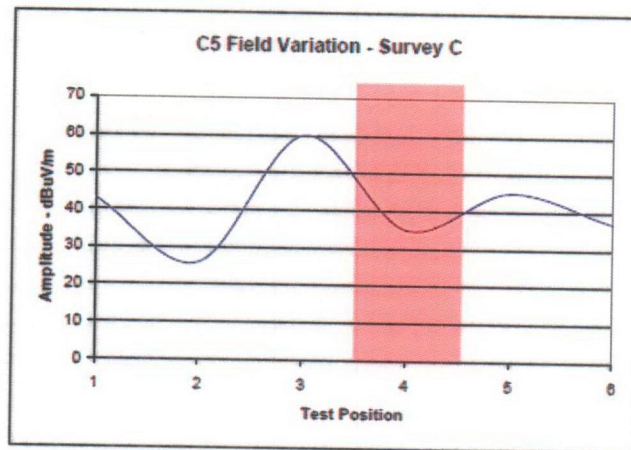


Figure 14: Field variation survey pre construction

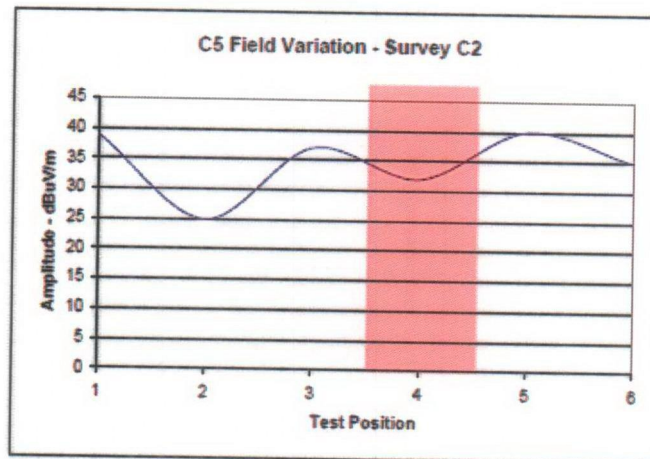


Figure 15: Field variation survey post construction

As can be seen from the figures above, there is no significant (>10dB) change in the Croydon signal within the predicted shadow area. Natural variation in signal levels along with other changes to the urban landscape cause minor changes to recorded signal levels at different points in time. Therefore, it can be concluded that at zone C there is no significant impact to Croydon television signals as a result of the development.

It can also be concluded that the effects to Croydon television signals due to the development cease (within the predicted shadow area) between survey zones B and C. It is possible that there may be some residual impacts to signals between these zones attributable to the development.

2.2.2.7 Survey Zone D – Crystal Palace

Survey zone D is only significant to the Croydon transmitter as no Crystal Palace signal shadows fall that far north. Figures 16 and 17 show no significant change in Crystal Palace signals across the whole frequency spectrum. Any minor changes shown are attributable to natural signal variation (signal fade) and other changes in the urban landscape.

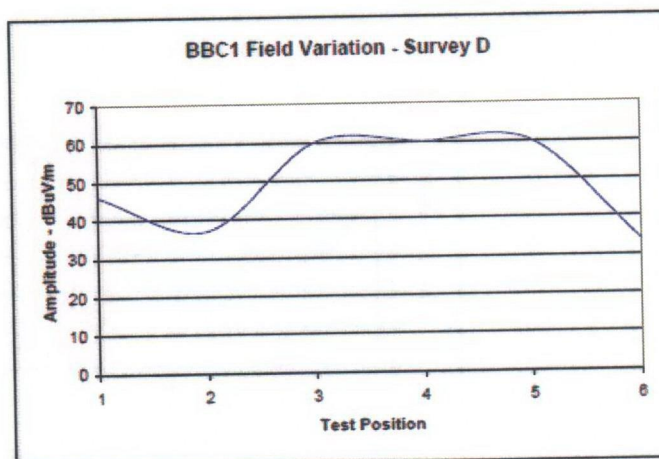


Figure 16: Field variation survey pre construction

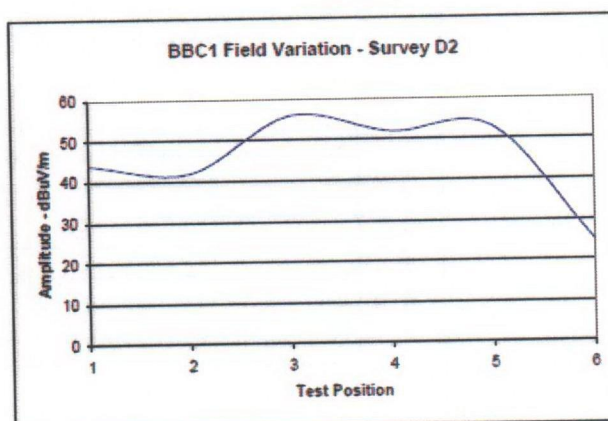


Figure 17: Field variation survey post construction

2.2.2.8 Survey Zone D – Croydon

Based on the above evidence for survey zone C, there should be no significant change to Croydon television signals in the predicted shadow area between pre construction and post construction surveys. This is highlighted by figures 18 and 19 below.

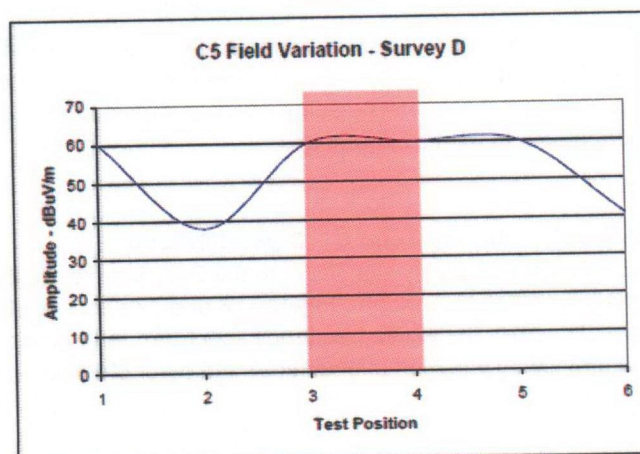


Figure 18: Field variation survey pre construction

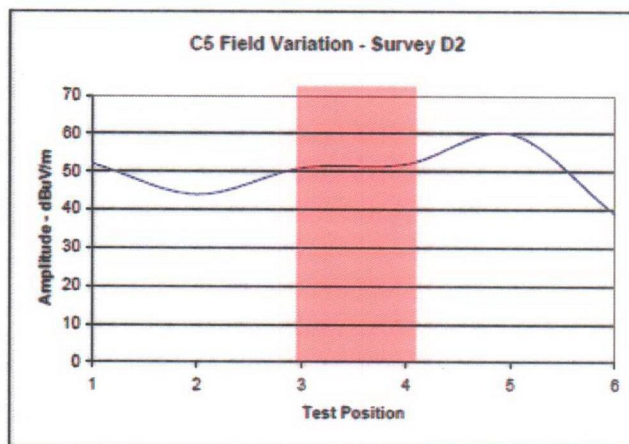


Figure 19: Field variation survey post construction

As before, any minor changes shown are attributable to natural signal variation (signal fade) and other changes in the urban landscape.

2.2.2.9 Survey Zone E

In a similar manner to survey zone D, survey zone E is only relevant to the Croydon transmitter. As concluded at zone C, and backed up by zone D results, neither Crystal Palace nor Croydon signals are affected further north than between zones B and C. As such it is unnecessary to compare signals at zone E.

2.3 Conclusions

As stated in the post survey report:

- The Osnaburgh Street Development has had some effect on the TV reception in the surveyed area, particularly in the shadow areas immediately to the north of the development.
- The field survey measurements obtained show the quality of TV reception in the area immediately to the north of the development along Albany Street can be expected to be significantly affected as far north as Albert Road.
- Due to interaction and scattering some localised poor reception can also be expected in the Primrose Hill area particularly in the shadow areas; however it should be noted that this cannot be totally attributed to the development. TV reception is not expected to be noticeably affected to the north of Chalk Farm Road. (Survey zone C).

These conclusions are relevant to both analogue and digital terrestrial television.