

TV RECEPTION SURVEY REPORT

THIS POST CONSTRUCTION TV RECEPTION SURVEY WAS CONDUCTED BY:

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EXECUTIVE SUMMARY

The building on Deansgate is complete. Subsequently this Post Construction TV Reception Survey has been conducted to ascertain whether the introduction of the development has caused an impact to existing viewers' television reception in the surrounding area.

Since the Pre- Construction TV Reception Survey, which was undertaken in August 2015, the Winter Hill television transmitter has undergone certain changes (please refer to the Transmitter Technical Background section of this report). Although these changes have taken place, we are still able to conduct the comparison of the Pre and Post Construction Survey results, as the Winter Hill broadcast transmit powers have remained constant.

There has been a considerable number of high-rise buildings being constructed work in Manchester over the past 7 years, which would have an impact on TV reception in the city.

There has been noted a slight reduction in aerial signal to the southeast of the development. This is as largely as predicted in the initial pre-construction report; however, this area has commercial properties, with few visible television aerials and due to the existing and new build multistorey buildings in the locality we expect only a small impact.

A comparison of the pre and post construction test results shows that there has not been any major widescale impact to television reception caused by the new development and that the pre-existing signal levels. But as always, we recommend that funds are available to deal with the investigation of any reported interference and to enable subsequent mitigation requirements.

There were satellite dishes highlighted on the Preconstruction survey that would be affected to the northeast of the development, but when assessing this on the post construction survey they seem to no longer be in use, on investigation the satellite dishes servicing the Lost Dene and the Sawyers Arms were indeed affected by the new construction but have since switched over to an internet-based system from sky to provide live sports.

If there are any other buildings affected, it is likely this would have already been highlighted and complaints received but in the very unlikely event that the signal had to be improved and the complainant had proved the interference was due to 125 Deansgate, the likely cost of mitigation would be in the region of £250-£750 per property, subject to the quality of the signal being received.

INTRODUCTION

Theory predicts, and practical evaluation has confirmed, that the introduction of new structures into an area can cause interference to television reception.

This Post-Construction TV Reception Survey has been undertaken to record the new television reception baseline conditions and assess if the introduction of the development has impacted upon existing viewers' television reception in the surrounding area.

To enable us to make an assessment, an initial desktop study is conducted, followed by a comprehensive field survey.

The desktop study is conducted using plans of the development for example the buildings' location and elevations, along with maps of the surrounding area and details of local television transmitter broadcast information.

The field survey is then conducted at several test point locations surrounding the development. Television signal test results and relevant information are recorded at each of the test point locations.

This report includes the information collated during the desk top study and field survey along with an assessment of where, or if, the introduction of the development has the caused interference to existing viewers' television reception and determine if mitigation is required.

SCOPE

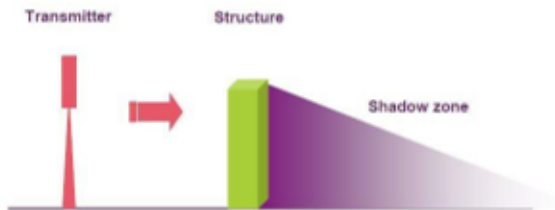
To conduct a desktop study and comprehensive field survey to record existing baseline television reception conditions in the surrounding area to the development. To provide details of any impact zone and methods of mitigation if required, to conform to Local Planning Authority requirements
The results and information recorded during this field survey assist in assessing if, or where, the introduction of the development has the potential to impact upon existing viewers' television reception.

DISCUSSIONS

The introduction of a new building or structure into an area has the potential to cause interference to existing viewers' television reception.

SIGNAL BLOCKING

Wireless signals, especially those using high frequencies such as television, behave much like light. Therefore, it is desirable to have a clear line of sight path between the transmitter and a receiving aerial to achieve the most reliable reception. The presence of a tall structure between the transmitter and receiver will cause a 'shadow' to be cast behind the structure on the side opposite the transmitter. This effect is like the way that an obstruction between a lamp and an observer's eye blocks out the light.

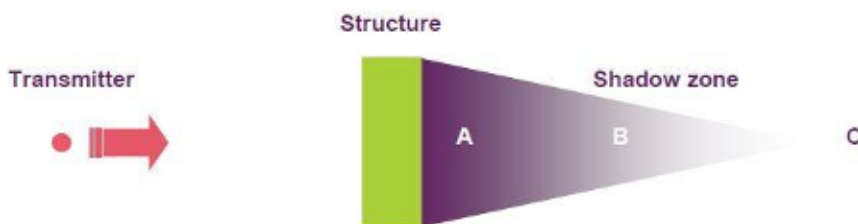


The shadow cast by a structure does not have hard edges though and does not usually extend indefinitely. While there would be a significant reduction in signal levels immediately behind the structure, the blocking effect of the structure diminishes with distance because of diffraction. Diffraction is a process where signals appear to bend behind the structure and partially fill in the shadow.

Zone A - close behind the structure (typically a few tens of metres) there may be a significant reduction in signal level with a possible complete loss of reception.

Zone B - further away (typically a few hundred metres) the signal reduction is less severe, and the shadow will be smaller as diffraction effects partially fill in the shadow. Depending on the size of the structure, some locations could still lose reception completely.

Zone C - some distance away (1-5km) the shadow will effectively have disappeared. The resulting shadow is therefore a triangular shape as shown in Figure 2.



It should be noted that the severity of the reduction and the actual size of the shadow will depend upon many factors including the construction of the structure and its height – the distances given above are for guidance only.

FIELD SURVEY METHOD

Tests are conducted at a selection of locations in the area surrounding the development.

Test results are recorded regarding television signal strength and quality: -

Strength is recorded in: dBµv

Quality is recorded in: VBER (Standard definition SD)
LBER (High-definition HD)

Due to the rollout of the 4G Networks all results are recorded with a CAI approved benchmarked aerial with a balun and LTE filter

An alternative transmitter is evaluated for and where receivable, results are recorded.

All tests are conducted at a 10m height above ground level.

The direction and type of existing viewers' television aerials is noted.

A bearing and distance to the development is recorded at each test point location, for comparison with the bearing and distance to the television transmitter serving the area.

Existing obstructions to television reception are noted.

FIELD SURVEY EQUIPMENT

The field survey is conducted using the following equipment: -

Specialist vehicle complete with telescopic mast.

360° Antenna rotator

14 Element CAI approved wideband UHF antenna with balun and LTE filter, one vertical and one horizontal polarisation.

20m x WF100 twin screened CAI approved coaxial cable.

Televes spectrum analyser/field strength meter

Ordnance survey maps

Garmin GPS receiver

Compass

Digital camera

Digital terrestrial television decode.

SERVICES LIKELY TO BE AFFECTED

TERRESTRIAL TELEVISION RECEPTION

There are two potential ways that the introduction of a new building can cause interference to terrestrial television reception; these are obstruction and reflection.

Obstruction occurs when existing viewers are in an area where their television aerial beam path (direction) to the television transmitter is either through, or within proximity to, the new building or structure. This can result in a reduction of television signal strength and quality and in some cases (if existing viewers are located within the proximity to the new building or structure); receiving terrestrial television signals can become problematic and may not be achievable.

Reflection occurs when the new building reflects terrestrial television signals. These unwanted reflected signals are received on the existing viewer's television aerial along with the direct signals from the television transmitter, resulting in irregularities of television signal strength and quality. However, digital terrestrial television broadcasts are less prone to reflections than the previous analogue television broadcasts, but this must still be considered when assessing any potential impact.

SATELLITE TELEVISION RECEPTION

Satellite television reception requires a clear line of sight between the satellite antenna and the satellite it is aligned to. In most cases the angle of the satellite antenna to the satellite orbiting the earth is between 20- and 30-degrees elevation.

This elevation must be considered when assessing if the introduction of the new building or structure has the potential to obstruct existing viewers' satellite antenna beam path to the satellite.

Satellite reception is very rarely affected on a large scale and is mostly only relevant to existing viewers within the proximity to the new building or structure.

THE DEVELOPMENT:

125 Deansgate
Manchester

CONDUCTED ON BEHALF OF:

Real Estate Venture Capital Management LLP
2nd Floor
60 Charlotte Street
London
W1T 2NU

OVERVIEW OF DEVELOPMENT

The development is located at 125 Deansgate, Manchester, at the site of the old Lincoln House, (which is on the corner of Deansgate and Brazennose Street), and the adjacent property, 123 Deansgate.

DETAILS OF DEVELOPMENT

Development Type:	Redevelopment of existing site with new build.
Number of Buildings:	1
Building Height:	Approximate maximum elevation of 55.5 m.

COORDINATES

Prior to the commencement of the survey, coordinates for the development are entered into a GPS receiver along with the coordinates for the television transmitter serving the area. This enables us to record a bearing and distance from each test point location to the development, for comparison with the bearing and distance to the television transmitter. The coordinates used throughout the survey are listed below and shown on Plan A.

LOCATION**NGR**

Winter Hill Transmitter	SD 66000 14400
Development	SJ 8364

TECHNICAL BACKGROUND – WINTER HILL

Transmitter No: 103.00
 NGR: SD 660144
 Approximate bearing from the development: 313°
 Approximate distance from the development: 25.51 km

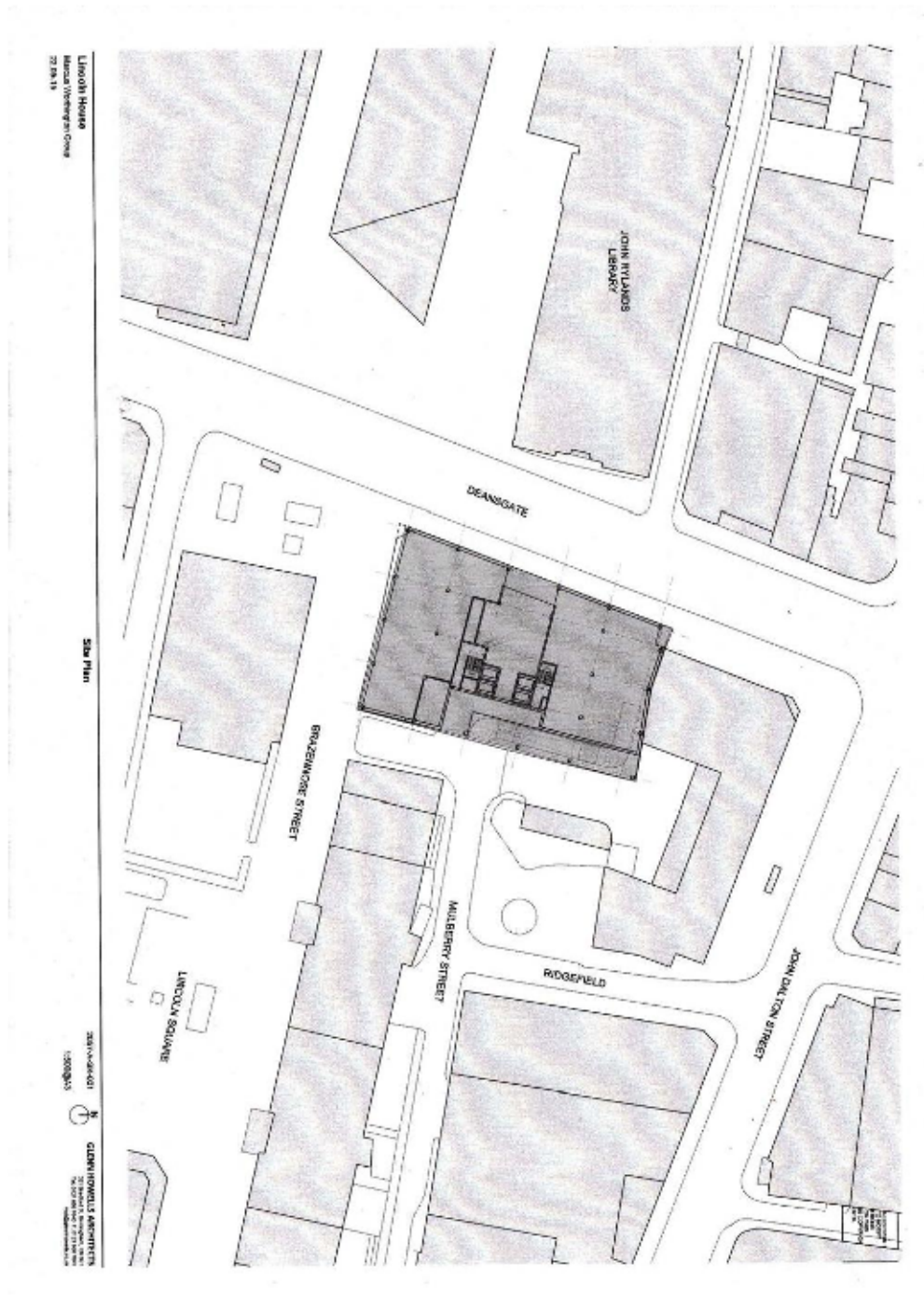
Television Broadcasts from the Winter Hill Transmitter at the time of the Pre-Construction Television Reception Survey (August 2015):

UHF Channel	Frequency	Multiplexer	Format	Broadcast Power
31	554.0	COM7	HD	25,700W
37	602.0	COM8	HD	14,000W
49	698.0	ARQA	SD	100,000W
50	706.0	BBCA	SD	100,000W
54	737.8	BBCB	HD	100,000W
55	746.0	ARQB	SD	100,000W
56	754.0	LM	SD	1,000W
58	770.0	SDN	SD	100,000W
59	778.0	D3+4	SD	100,000W

Television Broadcasts from the Winter Hill Transmitter at the present time (July 2022):

UHF Channel	Frequency	Multiplexer	Format	Broadcast Power
55	746.0	COM7	HD	25,700W
37	602.0	COM6	SD	14,000W
31	698.0	ARQA	SD	100,000W
32	562.0	BBCA	SD	100,000W
35	585.8	BBCB	HD	100,000W
24	498.0	LOC1	SD	1,000W
29	538.0	SDN	SD	100,000W
34	578.0	D3+4	SD	100,000W

PLAN A: THE DEVELOPMENT'S LOCATION



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PHOTO A: The new development



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SCS Technologies Terms & conditions apply (available from www.SCSTechnologies.co.uk)

PHOTO B: The new development



PHOTO C: The new development



TERRESTRIAL TELEVISION SERVICES

Viewers in the surrounding area to the development are receiving their terrestrial television services from the Winter Hill transmitter, located to the northwest.

The Winter Hill transmitter broadcasts 8 digital multiplexers providing the full range of standard definition and high-definition digital terrestrial television services available on Freeview, with regional programming for the northwest. Please refer to the transmitter details for further information about the Winter Hill Transmitter.

The test results recorded during the survey show that reception from the Winter Hill transmitter within the area surveyed is acceptable at most test point positions. However, there are several test points where television signal strengths are low and certain terrestrial television digital multiplexers are receiving corruption. This is due to existing obstructions to television reception in these areas. Please note that the results are recorded at a 10m aerial height in accordance with TV reception survey specifications, and that for existing television aerials sited at multi storey height, reception could be much improved.

During the survey tests were conducted to receive an alternative transmitter to the Winter Hill transmitter that broadcasts the same quantity of television services and regional programming as the Winter Hill transmitter. The result of these tests was that no alternative transmitter could be received at an acceptable quality or strength.

SATELLITE TELEVISION SERVICES

Both Sky TV and Freesat are broadcast from the same fleet of satellites located at an orbital position of 28.2° east of south, with a required satellite dish elevation of approximately 23°.

Sky TV is primarily a subscription-based service offering several packages of various television services at monthly subscription costs.

Freesat is a non-subscription-based service and offers a similar television service line up to Freeview and selectable regional programming.

FIELD SURVEY TEST RESULTS AND INFORMATION

TEST POINT LOCATION 1 Queen Street

NGR: SJ 83715 98130

Alt: 36 m

Mast Height: 10 m

10 element and high gain aerials on 2m and 3m masts, mounted at rooftop height on a 6-storey building, directed towards the Winter Hill Transmitter.

Visible Existing Obstructions: Various multi-storey buildings in the direction of the Winter Hill Transmitter

WINTER HILL TRANSMITTER - REPORT

Pre-Construction signals as per report August 2015

Channel	Frequency	MUX	FORMAT	Level (dB μ V)	CN dB	VBER	LBER	Quality
31	554.0	COM7	HD	40	13		-8	Pass
37	602.0	COM8	HD	35	9		-8	Pass
49	698.0	ARQA	SD	40	14	-8		Pass
50	706.0	BBCA	SD	40	13	-8		Pass
54	737.8	BBCB	HD	41	14		-8	Pass
55	746.0	ARQB	SD	38	6	-5		Pass
56	754.0	LM	SD	32	0.3	-2		Fail
58	770.0	SDN	SD	45	13	-8		Pass
59	778.0	D3+4	SD	47	15	-8		Pass

Post Construction signal levels July 2022

Channel	Frequency	MUX	Format	Level (dB μ V)	CN dB	MER	VBER	LBER	Quality
55	746.0	COM7	HD	22	12	-		-3	Fail
37	602.0	COM6	SD	45	25	21	-7		Pass
31	698.0	ARQA	SD	41	30	21	-7		Pass
32	562.0	BBCA	SD	42	29	21	-7		Pass
35	585.8	BBCB	HD	41	28	19		-2	Fail
24	498.0	LOC1	SD	30	18	10	-3		Fail
29	538.0	SDN	SD	45	31	21	-7		Pass
34	578.0	D3+4	SD	44	28	21	-8		Pass

TV signal strengths are low, and corruption is being received

TEST POINT LOCATION 2 Mulberry Street

NGR: SJ 83726 98216

Alt: 36 m

Mast Height: 10 m

Visible Existing Aerial Arrays: High gain aerial on a 4 m mast mounted at rooftop height on a 5 storey building, directed towards the Winter Hill Transmitter.

Visible Existing Obstructions: Multi storey building in the direction of the Winter Hill Transmitter.

WINTER HILL TRANSMITTER - REPORT

Pre-Construction signals as per report August 2015

Channel	Frequency	MUX	FORMAT	Level (dB μ V)	CN dB	VBER	LBER	Quality
31	554.0	COM7	HD	34	8		-1	Fail
37	602.0	COM8	HD	33	6		-1	Fail
49	698.0	ARQA	SD	35	8	-4		Marginal
50	706.0	BBCA	SD	36	9	-4		Marginal
54	737.8	BBCB	HD	37	10		-8	Pass
55	746.0	ARQB	SD	35	8	-4		Marginal
56	754.0	LM	SD	28	0.8	-1		Fail
58	770.0	SDN	SD	35	8	-3		Marginal
59	778.0	D3+4	SD	34	7	-4		Marginal

Post Construction signal levels July 2022

Channel	Frequency	MUX	Format	Level (dB μ V)	CN dB	MER	VBER	LBER	Quality
55	746.0	COM7	HD	16	2	-		-2	Fail
37	602.0	COM6	SD	48	31	21	-8		Pass
31	698.0	ARQA	SD	47	29	21	-7		Pass
32	562.0	BBCA	SD	45	29	21	-8		Pass
35	585.8	BBCB	HD	48	30	22		-2	Marginal
24	498.0	LOC1	SD	35	18	14	-3		Fail
29	538.0	SDN	SD	47	30	20	-6		Marginal
34	578.0	D3+4	SD	47	31	21	-8		Pass

TV signal strengths are low, and corruption is being received

TEST POINT LOCATION 3 John Dalton Street

NGR: SJ 83726 98246

Alt: 37 m

Mast Height: 10 m

Visible Existing Aerial Arrays: High gain aerial on a 2m mast mounted at rooftop height on a 3-storey building, directed towards the Winter Hill Transmitter

Visible Existing Obstructions: Various multi storey buildings in the direction of the Winter Hill Transmitter

WINTER HILL TRANSMITTER - REPORT

Pre-Construction signals as per report August 2015

Channel	Frequency	MUX	FORMAT	Level (dB μ V)	CN dB	VBER	LBER	Quality
31	554.0	COM7	HD	37	10		-1	Fail
37	602.0	COM8	HD	33	6		-1	Fail
49	698.0	ARQA	SD	43	16	-8		Pass
50	706.0	BBCA	SD	38	9	-5		Pass
54	737.8	BBCB	HD	38	10		-1	Fail
55	746.0	ARQB	SD	39	11	-6		Pass
56	754.0	LM	SD	28	1	-1		Fail
58	770.0	SDN	SD	36	10	-3		Marginal
59	778.0	D3+4	SD	40	12	-7		Pass

Post Construction signal levels July 2022

Channel	Frequency	MUX	Format	Level (dB μ V)	CN dB	MER	VBER	LBER	Quality
55	746.0	COM7	HD	22	5	-		-2	Fail
37	602.0	COM6	SD	38	18	18	-4		Fail
31	698.0	ARQA	SD	45	28	22	-7		Pass
32	562.0	BBCA	SD	42	25	23	-7		Pass
35	585.8	BBCB	HD	40	20	22		-4	Marginal
24	498.0	LOC1	SD	30	-	-	-		Fail
29	538.0	SDN	SD	40	25	22	-7		Marginal
34	578.0	D3+4	SD	42	20	20	-7		Marginal

TV signal strengths are low, and corruption is being received

TEST POINT LOCATION 4 South King Street

NGR: SJ 83794 98273

Alt: 37 m

Mast Height: 10 m

Visible Existing Aerial Arrays: High gain aerials on 3m and 4m masts, mounted at rooftop height on 3 and 4 storey buildings, directed towards the Winter Hill Transmitter.

Visible Existing Obstructions: Various multi storey buildings in the direction of the Winter Hill Transmitter.

WINTER HILL TRANSMITTER - REPORT

Pre-Construction signals as per report August 2015

Channel	Frequency	MUX	FORMAT	Level (dB μ V)	CN dB	VBER	LBER	Quality
31	554.0	COM7	HD	31	4		-1	Fail
37	602.0	COM8	HD	30	4		-1	Fail
49	698.0	ARQA	SD	31	3	-1		Fail
50	706.0	BBCA	SD	32	5	-1		Fail
54	737.8	BBCB	HD	34	6		-1	Fail
55	746.0	ARQB	SD	33	5	-1		Fail
56	754.0	LM	SD	27	0.4	-1		Fail
58	770.0	SDN	SD	32	5	-1		Fail
59	778.0	D3+4	SD	33	5	-1		Fail

Post Construction signal levels July 2022

Channel	Frequency	MUX	Format	Level (dB μ V)	CN dB	MER	VBER	LBER	Quality
55	746.0	COM7	HD	25	18	18		-2	Fail
37	602.0	COM6	SD	32	18	-	-2		Fail
31	698.0	ARQA	SD	30	16	-	-1		Fail
32	562.0	BBCA	SD	35	20	18	-4		Marginal
35	585.8	BBCB	HD	32	15	15		-1	Fail
24	498.0	LOC1	SD	20	-	-	-		Fail
29	538.0	SDN	SD	32	15	-	-6		Fail
34	578.0	D3+4	SD	35	16	16	-4		Fail

TV signal strengths are low, and corruption is being received.

TEST POINT LOCATION 5 Princess Street

NGR: SJ 83918 98117

Alt: 41 m

Mast Height: 10 m

Visible Existing Aerial Arrays: The properties in this area are multi storey with no visible television aerials from the ground.

Visible Existing Obstructions: Various multi storey buildings in the direction of the Winter Hill Transmitter.

WINTER HILL TRANSMITTER - REPORT

Pre-Construction signals as per report August 2015

Channel	Frequency	MUX	FORMAT	Level (dB μ V)	CN dB	VBER	LBER	Quality
31	554.0	COM7	HD	38	6		-1	Fail
37	602.0	COM8	HD	37	5		-1	Fail
49	698.0	ARQA	SD	44	12	-8		Pass
50	706.0	BBCA	SD	43	11	-8		Pass
54	737.8	BBCB	HD	41	9		-8	Pass
55	746.0	ARQB	SD	40	8	-7		Pass
56	754.0	LM	SD	32	0	-4		Marginal
58	770.0	SDN	SD	42	10	-8		Pass
59	778.0	D3+4	SD	43	11	-8		Pass

Post Construction signal levels July 2022

Channel	Frequency	MUX	Format	Level (dB μ V)	CN dB	MER	VBER	LBER	Quality
55	746.0	COM7	HD	22	22	6		-2	Fail
37	602.0	COM6	SD	36	18	15	-5		Fail
31	698.0	ARQA	SD	45	18	18	-6		Marginal
32	562.0	BBCA	SD	45	22	18	-7		Pass
35	585.8	BBCB	HD	40	22	16		-3	Fail
24	498.0	LOC1	SD	20	-	-	-		Fail
29	538.0	SDN	SD	43	20	20	-7		Pass
34	578.0	D3+4	SD	45	22	20	-7		Pass

TV signal strengths are low, and corruption is being received

TEST POINT LOCATION 6 Lloyd Street

NGR: SJ 83688 98102
Alt: 37 m
Mast Height: 10 m

Visible Existing Aerial Arrays: High gain aerial on a 3m mast, mounted at rooftop height on a 5 storey building, directed towards the Winter Hill Transmitter.

Visible Existing Obstructions: Various multi storey buildings in the direction of the Winter Hill Transmitter.

WINTER HILL TRANSMITTER - REPORT Pre-Construction signals as per report August 2015

Channel	Frequency	MUX	FORMAT	Level (dB μ V)	CN dB	VBER	LBER	Quality
31	554.0	COM7	HD	34	7		-1	Fail
37	602.0	COM8	HD	32	6		-1	Fail
49	698.0	ARQA	SD	35	8	-3		Marginal
50	706.0	BBCA	SD	35	7	-4		Marginal
54	737.8	BBCB	HD	36	9		-1	Fail
55	746.0	ARQB	SD	35	8	-2		Fail
56	754.0	LM	SD	28	0.5	-1		Fail
58	770.0	SDN	SD	36	8	-3		Marginal
59	778.0	D3+4	SD	36	9	-4		Marginal

Post Construction signal levels July 2022

Channel	Frequency	MUX	Format	Level (dB μ V)	CN dB	MER	VBER	LBER	Quality
55	746.0	COM7	HD	18	2	-		-3	Fail
37	602.0	COM6	SD	46	29	21	-6		Marginal
31	698.0	ARQA	SD	47	30	21	-6		Marginal
32	562.0	BBCA	SD	46	29	21	-7		Marginal
35	585.8	BBCB	HD	47	30	19		-2	Fail
24	498.0	LOC1	SD	33	18	13	-3		Fail
29	538.0	SDN	SD	47	31	21	-7		Pass
34	578.0	D3+4	SD	44	28	21	-8		Pass

TV signal strengths are low, and corruption is being received.

TEST POINT LOCATION 7 Central Street
 NGR: SJ 83781 97970
 Alt: 39 m
 Mast Height: 10 m

Visible Existing Aerial Arrays: 10 element, 18 element and high gain aerials on a 3m mast, mounted at rooftop height on a 10-storey building, directed towards the Winter Hill Transmitter.

Visible Existing Obstructions: Various multi storey buildings in the direction of the Winter Hill Transmitter.

WINTER HILL TRANSMITTER - REPORT

Pre-Construction signals as per report August 2015

Channel	Frequency	MUX	FORMAT	Level (dB μ V)	CN dB	VBER	LBER	Quality
31	554.0	COM7	HD	36	5		-1	Fail
37	602.0	COM8	HD	36	4		-1	Fail
49	698.0	ARQA	SD	36	4	-3		Marginal
50	706.0	BBCA	SD	36	4	-4		Marginal
54	737.8	BBCB	HD	35	2		-1	Fail
55	746.0	ARQB	SD	35	3	-1		Fail
56	754.0	LM	SD	32	0	-1		Fail
58	770.0	SDN	SD	36	4	-1		Fail
59	778.0	D3+4	SD	36	4	-3		Marginal

Post Construction signal levels July 2022

Channel	Frequency	MUX	Format	Level (dB μ V)	CN dB	MER	VBER	LBER	Quality
55	746.0	COM7	HD	20	20	18		-1	Fail
37	602.0	COM6	SD	35	18	15	-3		Fail
31	698.0	ARQA	SD	38	20	20	-6		Marginal
32	562.0	BBCA	SD	40	22	20	-7		Pass
35	585.8	BBCB	HD	36	20	22		-5	Marginal
24	498.0	LOC1	SD	20	-	-	-		Fail
29	538.0	SDN	SD	36	18	18	-3		Fail
34	578.0	D3+4	SD	38	20	20	-5		Marginal

TV signal strengths are low, and corruption is being received.

TEST POINT LOCATION 8 Princess Street

NGR: SJ 83985 98035

Alt: 42 m

Mast Height: 10 m

Visible Existing Aerial Arrays: The properties in this area are multi storey with no visible television aerials from the ground.

Visible Existing Obstructions: Various multi storey buildings in the direction of the Winter Hill Transmitter.

WINTER HILL TRANSMITTER - REPORT

Pre-Construction signals as per report August 2015

Channel	Frequency	MUX	FORMAT	Level (dB μ V)	CN dB	VBER	LBER	Quality
31	554.0	COM7	HD	47	11		-8	Pass
37	602.0	COM8	HD	45	8		-8	Pass
49	698.0	ARQA	SD	52	15	-8		Pass
50	706.0	BBCA	SD	52	15	-8		Pass
54	737.8	BBCB	HD	53	17		-8	Pass
55	746.0	ARQB	SD	53	15	-8		Pass
56	754.0	LM	SD	39	2	-7		Pass
58	770.0	SDN	SD	52	15	-8		Pass
59	778.0	D3+4	SD	50	14	-8		Pass

Post Construction signal levels July 2022

Channel	Frequency	MUX	Format	Level (dB μ V)	CN dB	MER	VBER	LBER	Quality
55	746.0	COM7	HD	26	16	10		-2	Fail
37	602.0	COM6	SD	45	20	20	-7		Pass
31	698.0	ARQA	SD	48	24	22	-7		Pass
32	562.0	BBCA	SD	49	26	25	-7		Pass
35	585.8	BBCB	HD	52	25	24		-5	Pass
24	498.0	LOC1	SD	32	18	18	-4		Fail
29	538.0	SDN	SD	55	30	28	-8		Pass
34	578.0	D3+4	SD	52	24	22	-7		Pass

TV signal strengths are low, but the quality is acceptable.

TEST POINT LOCATION 9 Deansgate

NGR: SJ 83608 98198
Alt: 35 m
Mast Height: 10 m

Visible Existing Aerial Arrays: High gain aerials on 2m and 3m masts, mounted at rooftop height on 4 storey and 5 storey buildings, directed towards the Winter Hill Transmitter.

Visible Existing Obstructions: Various multi storey buildings in the direction of the Winter Hill Transmitter.

WINTER HILL TRANSMITTER - REPORT

Pre-Construction signals as per report August 2015

Channel	Frequency	MUX	FORMAT	Level (dB μ V)	CN dB	VBER	LBER	Quality
31	554.0	COM7	HD	38	12		-8	Pass
37	602.0	COM8	HD	36	8		-1	Fail
49	698.0	ARQA	SD	39	12	-6		Pass
50	706.0	BBCA	SD	37	9	-4		Marginal
54	737.8	BBCB	HD	39	12		-8	Pass
55	746.0	ARQB	SD	37	10	-3		Marginal
56	754.0	LM	SD	28	1	-1		Fail
58	770.0	SDN	SD	36	9	-3		Marginal
59	778.0	D3+4	SD	37	10	-5		Pass

Post Construction signal levels July 2022

Channel	Frequency	MUX	Format	Level (dB μ V)	CN dB	MER	VBER	LBER	Quality
55	746.0	COM7	HD	17	2.1	-		-	Fail
37	602.0	COM6	SD	44	28	21	-5		Marginal
31	698.0	ARQA	SD	44	27	20	-5		Marginal
32	562.0	BBCA	SD	42	23	21	-5		Marginal
35	585.8	BBCB	HD	42	25	16		-2	Fail
24	498.0	LOC1	SD	30	14	9	-3		Fail
29	538.0	SDN	SD	48	31	21	-7		Pass
34	578.0	D3+4	SD	45	28	21	-7		Pass

TV signal strengths are low, and corruption is being received.

TEST POINT LOCATION 10 **Bridge Street**
 NGR: SJ 83592 98287
 Alt: 35 m
 Mast Height: 10 m

Visible Existing Aerial Arrays: High gain aerials on 2m and 3m masts, mounted at rooftop height on a 3 storey and 4 storey buildings, directed towards the Winter Hill Transmitter.

Visible Existing Obstructions: Multi storey office building in the direction of the Winter Hill Transmitter.

WINTER HILL TRANSMITTER - REPORT

Pre-Construction signals as per report August 2015

Channel	Frequency	MUX	FORMAT	Level (dB μ V)	CN dB	VBER	LBER	Quality
31	554.0	COM7	HD	43	6		-8	Pass
37	602.0	COM8	HD	40	3		-1	Fail
49	698.0	ARQA	SD	48	12	-8		Pass
50	706.0	BBCA	SD	47	10	-7		Pass
54	737.8	BBCB	HD	45	8		-7	Pass
55	746.0	ARQB	SD	43	6	-5		Pass
56	754.0	LM	SD	38	0.5	-6		Pass
58	770.0	SDN	SD	44	7	-6		Pass
59	778.0	D3+4	SD	40	2	-4		Marginal

Post Construction signal levels July 2022

Channel	Frequency	MUX	Format	Level (dB μ V)	CN dB	MER	VBER	LBER	Quality
55	746.0	COM7	HD	30	15	9		-3	Fail
37	602.0	COM6	SD	44	26	22	-7		Pass
31	698.0	ARQA	SD	50	28	22	-7		Pass
32	562.0	BBCA	SD	50	28	26	-7		Pass
35	585.8	BBCB	HD	48	26	24		-4	Pass
24	498.0	LOC1	SD	32	15	12	-2		Fail
29	538.0	SDN	SD	45	20	18	-7		Marginal
34	578.0	D3+4	SD	42	20	20	-7		Marginal

TV signal strengths are low, and corruption is being received

CONCLUSIONS

The new building on Deansgate is complete. Subsequently this Post Construction TV Reception Survey has been conducted to ascertain whether the introduction of the development has caused an impact to existing viewers' television reception in the surrounding area.

Since the Pre- Construction TV Reception Survey, which was undertaken in August 2015, the Winter Hill television transmitter has undergone certain changes (please refer to the Transmitter Technical Background section of this report). Although these changes have taken place, we are still able to conduct the comparison of the Pre and Post Construction Survey results, as the Winter Hill broadcast transmit powers have remained constant

There has been a considerable number of high-rise buildings being constructed work in Manchester over the past 7 years, which would have an impact on TV reception in the city.

There has been noted a slight reduction in aerial signal to the southeast of the development. This is as largely as predicted in the initial pre-construction report; however, this area has commercial properties, with few visible television aerials and due to the existing and new multistorey buildings in the locality, we expect only a small impact.

A comparison of the pre and post construction test results shows that there has not been any major widescale impact to television reception caused by the new development and that the pre-existing signal levels. But as always, we recommend that funds are available to deal with the investigation of any reported interference and to enable subsequent mitigation requirements.

There were satellite dishes highlighted on the Preconstruction survey that would be affected to the northeast of the development, but when assessing this on the post construction survey they seem to no longer be in use, on investigation the satellite dishes servicing the Lost Dene and the Sawyers Arms were indeed affected by the new construction and have since switched over to an internet-based system from sky to provide live sports.

If there are any other buildings affected, it is likely this may would have already been highlighted and complaints received, and as the structure of the development has been in place already for several years mitigation is likely to already have been conducted.

However, since the initial Survey in 2015 several other properties have been constructed and if signals have deteriorated at other test locations not already mentioned it is this building would not be the sole cause.

Map 1 shows each of the test point positions and the television reception impact zone due to the introduction of the new building.

MITIGATION

None required - if any issues highlighted, they may require investigation on a case-by-case basis.

If there are any other buildings affected, it is likely this would have already been highlighted and complaints received but in the very unlikely event that the signal had to be improved and the complainant had proved the interference was due to 125 Deansgate, the likely cost of mitigation would be in the region of £250-£750 per property, subject to the quality of the signal being received

MITIGATION

Terrestrial Television Reception

Remedial Aerial Work

One or a combination of the following may assist in rectifying interference being received to terrestrial television reception.

Change of aerial type to one most suited to the type of interference being received.

Redirecting existing television aerial to an alternative transmitter that is not affected, in some cases the existing television aerial may not be suitable for redirecting and the installation of a suitable television aerial may be required.

Re-siting of the television aerial to a position on the property where interference is reduced or not present.

Increase or decrease of aerial height.

Installation of masthead amplification to improve television signal strengths being received.

Remote Television Aerial

When a remote television aerial is positioned at a location with good quality television reception, (which can be a considerable distance from the affected area), and the signals are brought back via a cable network to the affected properties.

Utilising Satellite Reception

Should rectifying terrestrial television reception prove problematic, the installation of satellite systems using the Freesat platform can assist in rectifying reception issues.

To provide satellite television reception for individual affected dwellings or commercial units requires the installation of a satellite dish and set top box.

Satellite Television Reception

Remedial Satellite Work

One or all the following may assist in rectifying satellite television reception issues.

Re-siting of the satellite antenna to a position on the property where a clear line of sight can be achieved.

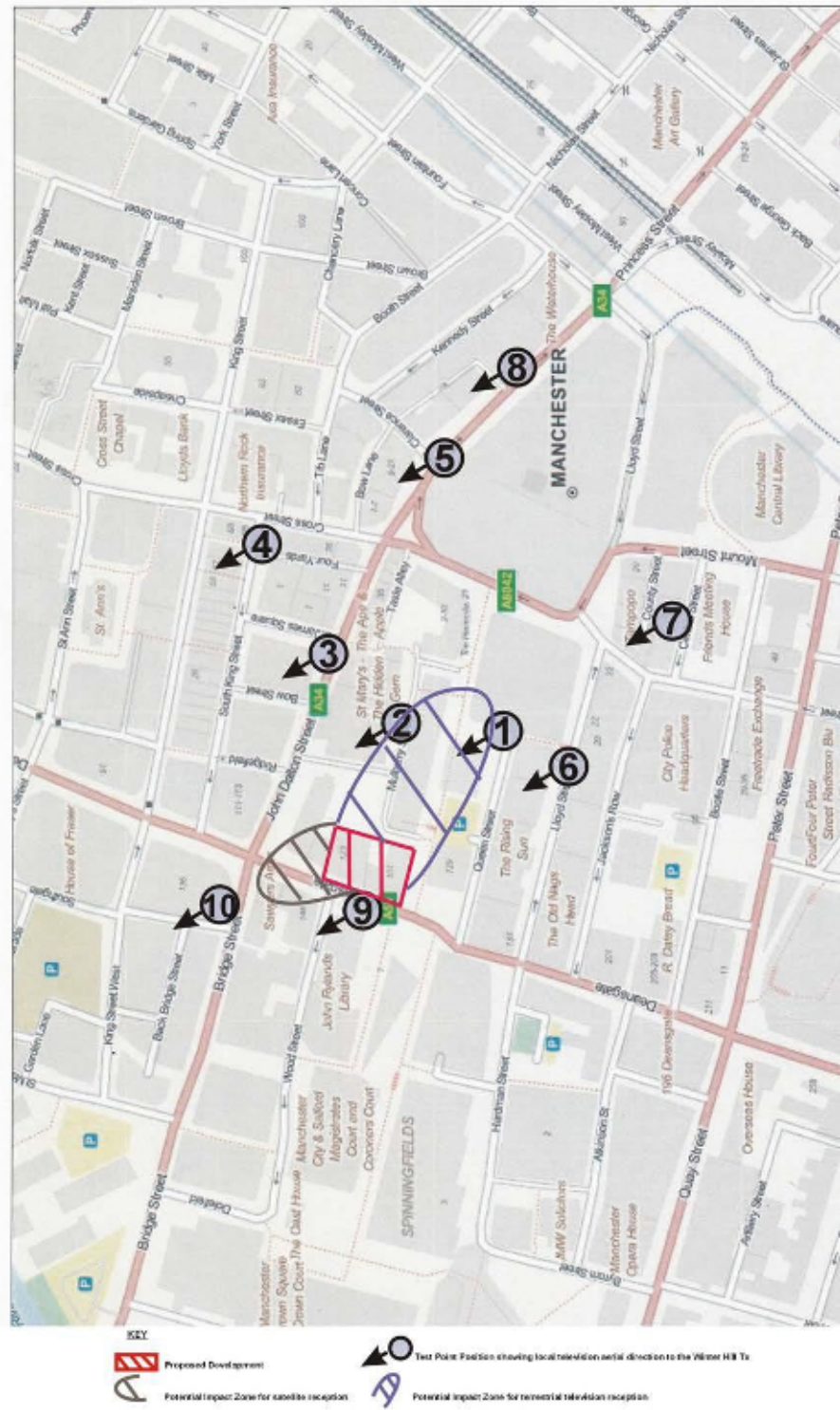
Increase in height of the satellite antenna to achieve a clear line of sight to the satellite.

Remote Satellite Dish

When the receiving satellite dish is sited in a position where a clear line of sight can be achieved; this can sometimes be a considerable distance from the affected property. In some instances, the satellite dish may require siting on the offending property to achieve a clear line of sight, or on an adjoining property where permission will have to be sought. The signals are brought back to the affected property via a cable and amplifier network.

The need for such mitigation would need to be determined on a case-by-case basis.

IMPACT ZONE – MAP 1



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REFERENCE OF TERMS

c.	Circa
CH	The UHF Channel allocation from the transmitter.
MUX	The digital multiplexer allocation/operator.
dB μ v	Carrier strength reading (decibel microvolt).
C/N	Carrier /Noise Ratio
VBER	Measurement for digital signal after error correction (BER after VITERBi)
LBER	BER after been applied the LDPC (low density parity check) error correction.
SD	SD Standard Definition
HD	HD High Definition
NGR	National Grid Reference
ALT	Altitude above sea level at the location.
BRG	Bearing from North.
GPS	Global Positioning System.