

TV/FM & DAB RECEPTION SURVEY REPORT

THIS PRE-CONSTRUCTION TV/FM & DAB RECEPTION SURVEY WAS CARRIED OUT BY:

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DATE OF SURVEY: 6th September 2019
JOB NO: 157929

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EXECUTIVE SUMMARY

This study was undertaken in September 2019, to investigate whether the proposed development could cause interference to television and radio broadcast service reception. The report also details the baseline reception conditions for future reference.

A survey has been undertaken to determine the potential effects of the introduction of the proposed development at Alan Turing Way, Manchester. The development is to consist of a new development, with an elevation of approximately 35m. The majority of the proposed development's location has no existing buildings. Impacts to the reception of digital terrestrial television (Freeview) FM, DAB and digital satellite television services (SKY and Freesat) have all been assessed.

From the results of the desktop and field survey we have located an approximate area where digital terrestrial reception may be affected. However due to the height of most of the existing buildings in this zone, we do not envisage a major significant impact to the disruption to the digital terrestrial signal with the introduction of the proposed new building. Therefore, only minor mitigation may be required.

One area of note is a small area between Stuart and Gibbon street that is adjacent to Alan Turing Way, which also has a property called 'Lock House' as shown on the Potential impact zone map 2 on page 35

We have not indicated a potential impact zone for satellite television reception as the buildings directly to the north are a sufficient distance from the proposed development.
Please refer to MCC standard TV conditions should television reception be impacted

FM & DAB signals were recorded, and we anticipate these not to be affected

Please note if tower cranes are used on site these could cause interference on a greater scale than the completed development. This interference would be for the duration of time that the tower cranes are present.

INTRODUCTION

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

This Pre-Construction TV/FM/DAB Reception Survey has been undertaken to record the existing baseline conditions and assess if the introduction of the proposed new development has the potential to impact 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 carried out using plans of the proposed development for example the proposed buildings location and elevations, along with maps of the surrounding area and details of local television transmitter broadcast information.

The field survey is then carried out at a number of test point locations surrounding the proposed 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 proposed development has the potential to cause interference to existing viewers' television reception, and mitigation if required.

SCOPE

To carry out a desktop study and comprehensive field survey to record existing baseline television reception conditions in the surrounding area to the proposed development. To provide details of any potential impact zone and methods of mitigation if required, to conform to Local Planning Authority requirements

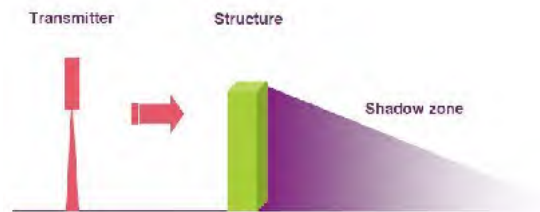
The results and information recorded during this field survey assist in assessing if, or where, the introduction of the proposed development has the potential to impact upon existing viewers' television reception.

DISCUSSIONS

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

SIGNAL BLOCKING

Wireless signals, especially those using relatively 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 in order 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 similar to the way that an obstruction between a lamp and an observer's eye blocks out the light.

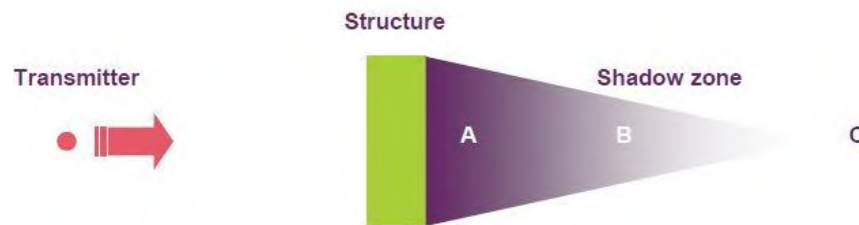


The shadow cast by a structure does not have hard edges though and does not usually extend indefinitely. While there would be a large reduction in signal levels immediately behind the structure, the blocking effect of the structure diminishes with distance because of diffraction. Diffraction is a process 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 large 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 carried out at a selection of locations in the area surrounding the proposed 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 tested for and where receivable, results are recorded.

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

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

A bearing and distance to the proposed 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 carried out 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

- FM Omni aerial
- DAB Omni aerial
- 20m x WF100 twin screened CAI approved coaxial cable
- Televes spectrum analyser/field strength meter
- Ordnance survey maps
- Garmin GPS receiver
- Compass
- Digital camera

SERVICES LIKELY TO BE AFFECTED

TERRESTRIAL TELEVISION RECEPTION

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

Obstruction occurs when existing viewers are located in an area where their television aerial beam path (direction) to the television transmitter is either through, or within very close 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 close 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 or extension 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 taken into account 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 taken into account 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 close proximity to the new building or structure.

FM & DAB RECEPTION

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

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

Reflection occurs when the new building or extension reflects radio signals

FM & DAB reception is very rarely affected on a large scale and is mostly only relevant to existing listeners within close proximity to the new building or structure

THE PROPOSED DEVELOPMENT:

OVG Manchester
near Etihad Stadium
Manchester

CARRIED OUT ON BEHALF OF:

ME- Engineers
57 Great Suffolk Street,
London.
SE1 0BB

OVERVIEW OF PROPOSED DEVELOPMENT

The proposed development is to consist of a new development.

DETAILS OF PROPOSED DEVELOPMENT

Development Type: New development

Proposed Building Height: The development is to have a maximum elevation of approximately 35m.

Please refer to;
Plan A which highlights the proposed development's location
Plan B the proposed site elevation

EXISTING BUILDINGS

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A series of photographs has been taken to highlight the existing building/structure/area at the proposed development's location, and any existing buildings in the surrounding area.

- Photograph A: - The proposed development's location
- Photograph B: - View directly to the north of the proposed development.
- Photograph C: - View directly to the east of the proposed development.
- Photograph D: - View directly to the south of the proposed development.
- Photograph E: - View directly to the west of the proposed development.

COORDINATES

Prior to commencement of the survey, coordinates at the proposed development's location 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 proposed 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

NATIONAL GRID REFERENCE

Proposed Development Position	SJ 86830 98873
Winter Hill Transmitter	SD 66000 14400
Holme Moss FM Transmitter	SE 09497 04077
Sunley Building (city tower) DAB Transmitter	SJ 84268 98194

PLAN A: THE PROPOSED DEVELOPMENT'S LOCATION



PLAN B: THE PROPOSED ELEVATIONS

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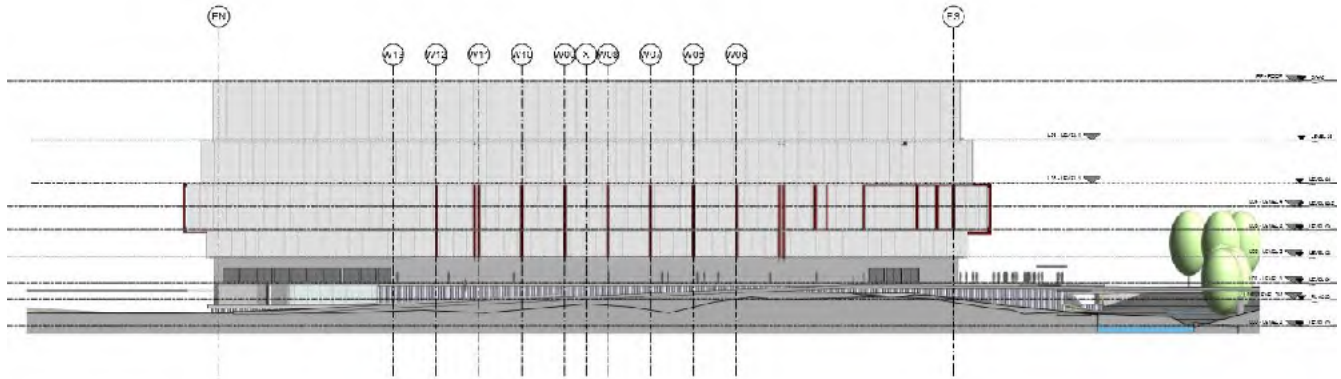


PHOTO A: The proposed developments location



PHOTO B: View directly to the north of the proposed development



PHOTO C: View directly to the east of the proposed development



PHOTO D: View directly to the south of the proposed development



PHOTO E: View directly to the west of the proposed development

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TERRESTRIAL TELEVISION SERVICES

Viewers in the surrounding area to the proposed development are receiving their terrestrial television services from the Winter Hill transmitter, located to the northwest of the building/structure, approx. 24 km away

The Winter Hill transmitter broadcasts 9 digital multiplexers providing the full range of standard definition and high definition digital terrestrial television services available on Freeview, with regional programming. Please refer to the transmitter details for further information

The test results recorded during the survey show that terrestrial television reception from the Winter Hill transmitter has good signal strengths and at the majority of test points the quality is good. Please note that the results are recorded at a 10mt 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 carried out to receive an alternative transmitter to 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 a number of 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.

FM RADIO SERVICES

Listeners in the surrounding area to the proposed development are receiving their radio services from the Holme Moss transmitter, located to the northwest of the building/structure, approx. 23 km away at a compass bearing of 76 degrees

DAB RADIO SERVICES

Listeners in the surrounding area to the proposed development are receiving their radio services from the Sunley Building, (now city tower) Piccadilly transmitter, located to the east of the building/structure, approx. 2.5km away at a compass bearing of 257 degrees

FIELD SURVEY TEST RESULTS AND INFORMATION

TEST POINT 1

Location Etihad Car park H
NGR: SJ 86539 98955
Alt: 59 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	307°	25.6 km
Proposed Development	101°	0.3 km

Visible Existing Aerial Arrays: none

Visible Existing Obstructions: Various buildings/Trees in the general direction of the Winter Hill Transmitter.

WINTER HILL UHF TRANSMITTER - REPORT

Channel	Frequency	MUX	Format	Level (dB μ V)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	69	45	32		-6	Pass
37	602.0	COM8	SD	75	45	34		-6	Pass
49	698.0	ARQA	SD	75	45	33	-8		Pass
50	706.0	BBCA	SD	74	45	33	-8		Pass
54	737.8	BBCB	HD	75	45	32	-8		Pass
55	746.0	ARQB	HD	67	34	30	-8		Pass
56	754.0	LM	SD	59	29	27	-8		Pass
58	770.0	SDN	SD	73	39	35	-8		Pass
59	778.0	D3+4	SD	72	45	34	-8		Pass

FM/DAB TRANSMITTER – REPORT

Channel	Frequency FM	Level (dB μ V) FM	CN Db FM	Frequency DAB	Level (dB μ V) DAB	CN Db DAB
BBC 1	98.9	75	45	225.64(12B)	85	45
BBC 2	89.3	74	44	225.64(12B)	85	45
BBC 3	91.5	73	42	225.64(12B)	85	45
BBC 4	95.1	76	44	225.64(12B)	85	45

TEST POINT 2

Location Etihad Car park G
NGR: SJ 86789 99023
Alt: 56 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	306°	25.7 km
Proposed Development	175°	0.35 km

Visible Existing Aerial Arrays: none

Visible Existing Obstructions: Various buildings/Trees in the general direction of the Winter Hill Transmitter

WINTER HILL UHF TRANSMITTER - REPORT

Channel	Frequency	MUX	Format	Level (dB μ V)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	74	45	32		-6	Pass
37	602.0	COM8	SD	79	45	34		-6	Pass
49	698.0	ARQA	SD	77	45	34		-8	Pass
50	706.0	BBCA	SD	78	45	34		-8	Pass
54	737.8	BBCB	HD	75	45	35		-6	Pass
55	746.0	ARQB	HD	70	32	31		-6	Pass
56	754.0	LM	SD	69	35	29		-8	Pass
58	770.0	SDN	SD	74	39	35		-8	Pass
59	778.0	D3+4	SD	72	45	34		-8	Pass

FM/DAB TRANSMITTER – REPORT

Channel	Frequency FM	Level (dB μ V) FM	CN Db FM	Frequency DAB	Level (dB μ V) DAB	CN Db DAB
BBC 1	98.9	70	35	225.64(12B)	80	45
BBC 2	89.3	69	35	225.64(12B)	80	45
BBC 3	91.5	66	33	225.64(12B)	80	45
BBC 4	95.1	65	28	225.64(12B)	80	45

TEST POINT 3

Location Stuart Street
NGR: SJ 86970 98843
Alt: 62 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	308°	25.9 km
Proposed Development	272°	0.10 km

Visible Existing Aerial Arrays: High gain aerial on 1m mast, mounted at rooftop height on 2 storey properties, directed towards the Winter Hill Transmitter

Visible Existing Obstructions: Various buildings/Trees in the general direction of the Winter Hill Transmitter

WINTER HILL UHF TRANSMITTER - REPORT

Channel	Frequency	MUX	Format	Level (dBμV)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	55	38	30	-5		Pass
37	602.0	COM8	SD	62	44	33		-6	Pass
49	698.0	ARQA	SD	57	38	32		-8	Pass
50	706.0	BBCA	SD	60	40	32		-8	Pass
54	737.8	BBCB	HD	60	43	31	-5		Pass
55	746.0	ARQB	HD	52	30	29	-4		Pass
56	754.0	LM	SD	46	27	26		-5	Pass
58	770.0	SDN	SD	57	37	34		-8	Pass
59	778.0	D3+4	SD	56	40	32		-8	Pass

FM/DAB TRANSMITTER – REPORT

Channel	Frequency FM	Level (dBμV) FM	CN Db FM	Frequency DAB	Level (dBμV) DAB	CN Db DAB
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BBC 1	98.9	79	45	225.64(12B)	72	45
BBC 2	89.3	69	42	225.64(12B)	72	45
BBC 3	91.5	69	41	225.64(12B)	72	45
BBC 4	95.1	64	38	225.64(12B)	72	45

VISIBLE TV AERIAL LOCATED IN THE AREA OF TEST POINT 3



TEST POINT 4

Location

Willdale Close

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NGR: SJ 87062 98889
Alt: 63 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	306°	26.1 km
Proposed Development	265°	0.2 km

Visible Existing Aerial Arrays: 18 element and high gain aerials on 1m masts, mounted at rooftop height on 2 storey properties, directed towards the Winter Hill Transmitter

Visible Existing Obstructions: Various buildings/Trees in the general direction of the Winter Hill Transmitter

WINTER HILL UHF TRANSMITTER - REPORT

Channel	Frequency	MUX	Format	Level (dBμV)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	61	44	30	-6		Pass
37	602.0	COM8	SD	66	44	33		-8	Pass
49	698.0	ARQA	SD	65	43	34		-8	Pass
50	706.0	BBCA	SD	64	42	33		-8	Pass
54	737.8	BBCB	HD	65	45	33	-6		Pass
55	746.0	ARQB	HD	58	33	28	-3		Pass
56	754.0	LM	SD	50	27	25		-5	Pass
58	770.0	SDN	SD	60	38	34		-8	Pass
59	778.0	D3+4	SD	61	43	34		-8	Pass

FM/DAB TRANSMITTER – REPORT

Channel	Frequency FM	Level (dBμV) FM	CN Db FM	Frequency DAB	Level (dBμV) DAB	CN Db DAB
BBC 1	98.9	64	38	225.65(12B)	70	44
BBC 2	89.3	60	40	225.64(12B)	70	44
BBC 3	91.5	62	42	225.64(12B)	70	44
BBC 4	95.1	59	35	225.64(12B)	70	44

VISIBLE TV AERIAL LOCATED IN THE AREA OF TEST POINT 4



TEST POINT 5

Location Ashton New Road
NGR: SJ 87419 98494
Alt: 66 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	306°	26.6 km
Proposed Development	299°	0.7 km

Visible Existing Aerial Arrays: none

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

WINTER HILL UHF TRANSMITTER - REPORT

Channel	Frequency	MUX	Format	Level (dB μ V)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	61	44	30	-6		Pass
37	602.0	COM8	SD	66	44	33		-8	Pass
49	698.0	ARQA	SD	65	43	34		-8	Pass
50	706.0	BBCA	SD	64	42	33		-8	Pass
54	737.8	BBCB	HD	65	45	33	-6		Pass
55	746.0	ARQB	HD	58	33	28	-3		Pass
56	754.0	LM	SD	50	27	25		-5	Pass
58	770.0	SDN	SD	60	38	34		-8	Pass
59	778.0	D3+4	SD	61	43	34		-8	Pass

FM/DAB TRANSMITTER – REPORT

Channel	Frequency FM	Level (dB μ V) FM	CN Db FM	Frequency DAB	Level (dB μ V) DAB	CN Db DAB
BBC 1	98.9	66	39	225.65(12B)	71	42
BBC 2	89.3	62	42	225.64(12B)	71	42
BBC 3	91.5	68	40	225.64(12B)	71	42
BBC 4	95.1	61	33	225.64(12B)	71	42

TEST POINT 6

Location Gibbon Street
NGR: SJ 86974 98687
Alt: 61 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	307°	26.2 km
Proposed Development	324°	0.2 km

Visible Existing Aerial Arrays: none

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

WINTER HILL UHF TRANSMITTER - REPORT

Channel	Frequency	MUX	Format	Level (dB μ V)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	74	45	33	-6		Pass
37	602.0	COM8	SD	77	45	34		-8	Pass
49	698.0	ARQA	SD	76	45	34		-8	Pass
50	706.0	BBCA	SD	76	45	33		-8	Pass
54	737.8	BBCB	HD	74	45	32	-6		Pass
55	746.0	ARQB	HD	65	33	31	-6		Pass
56	754.0	LM	SD	62	31	27		-8	Pass
58	770.0	SDN	SD	68	38	35		-8	Pass
59	778.0	D3+4	SD	66	45	34		-8	Pass

FM/DAB TRANSMITTER – REPORT

Channel	Frequency FM	Level (dB μ V) FM	CN Db FM	Frequency DAB	Level (dB μ V) DAB	CN Db DAB
BBC 1	98.9	70	40	225.64(12B)	76	45
BBC 2	89.3	65	30	225.64(12B)	76	45
BBC 3	91.5	68	42	225.64(12B)	76	45
BBC 4	95.1	71	38	225.64(12B)	76	45

TEST POINT 7

Location Asda Car Park
NGR: SJ 87146 98555
Alt: 63 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	306°	26.4 km
Proposed Development	308°	0.4 km

Visible Existing Aerial Arrays: none

Visible Existing Obstructions: Various buildings/Trees in the general direction of the Winter Hill Transmitter

WINTER HILL UHF TRANSMITTER - REPORT

Channel	Frequency	MUX	Format	Level (dB μ V)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	76	45	31	-6		Pass
37	602.0	COM8	SD	74	45	36		-8	Pass
49	698.0	ARQA	SD	77	45	32		-8	Pass
50	706.0	BBCA	SD	76	45	30		-8	Pass
54	737.8	BBCB	HD	72	45	33	-6		Pass
55	746.0	ARQB	HD	70	33	31	-6		Pass
56	754.0	LM	SD	63	30	26		-8	Pass
58	770.0	SDN	SD	71	35	38		-8	Pass
59	778.0	D3+4	SD	70	45	34		-8	Pass

FM/DAB TRANSMITTER – REPORT

Channel	Frequency FM	Level (dB μ V) FM	CN Db FM	Frequency DAB	Level (dB μ V) DAB	CN Db DAB
BBC 1	98.9	76	45	225.64(12B)	76	45
BBC 2	89.3	75	40	225.64(12B)	76	45

BBC 3	91.5	75	45	225.64(12B)	76	45
BBC 4	95.1	77	41	225.64(12B)	76	45

TEST POINT 8

Location Waterfront Sport City
NGR: SJ 87184 98736
Alt: 63 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	306°	26.3 km
Proposed Development	290°	0.4 km

Visible Existing Aerial Arrays: High Gain aerial at rooftop height on multi-storey buildings.

Visible Existing Obstructions: Various buildings/Trees in the general direction of the Winter Hill Transmitter

WINTER HILL UHF TRANSMITTER - REPORT

Channel	Frequency	MUX	Format	Level (dBμV)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	45	30	17	-2		Marginal
37	602.0	COM8	SD	47	27	21		-5	Pass
49	698.0	ARQA	SD	47	29	23		-6	Pass
50	706.0	BBCA	SD	48	34	20		-8	Pass
54	737.8	BBCB	HD	49	32	20	-6		Pass
55	746.0	ARQB	HD	42	26	16	-6		Pass
56	754.0	LM	SD	34	18	15		-5	Fail
58	770.0	SDN	SD	42	28	21		-5	Pass
59	778.0	D3+4	SD	43	28	21		-8	Pass

FM/DAB TRANSMITTER – REPORT

Channel	Frequency FM	Level (dBμV) FM	CN Db FM	Frequency DAB	Level (dBμV) DAB	CN Db DAB
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BBC 1	98.9	73	45	225.64(12B)	80	45
BBC 2	89.3	72	45	225.64(12B)	80	45
BBC 3	91.5	71	45	225.64(12B)	80	45
BBC 4	95.1	73	43	225.64(12B)	80	45

VISIBLE TV AERIAL LOCATED IN THE AREA OF TEST POINT 8



TEST POINT 9

Location Howarth Close
NGR: SJ 87080 98262
Alt: 65 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	307°	26.5 km

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Proposed Development	336°	0.6 km
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Visible Existing Aerial Arrays: High gain aerial on 1m mast, mounted at rooftop height on 2 storey properties, directed towards the Winter Hill Transmitter

Visible Existing Obstructions: Various buildings/Trees in the general direction of the Winter Hill Transmitter

WINTER HILL UHF TRANSMITTER - REPORT

Channel	Frequency	MUX	Format	Level (dBμV)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	61	44	30	-6		Pass
37	602.0	COM8	SD	66	44	33		-8	Pass
49	698.0	ARQA	SD	65	43	34		-8	Pass
50	706.0	BBCA	SD	64	42	33		-8	Pass
54	737.8	BBCB	HD	65	45	33	-6		Pass
55	746.0	ARQB	HD	58	33	28	-3		Pass
56	754.0	LM	SD	50	27	25		-5	Pass
58	770.0	SDN	SD	60	38	34		-8	Pass
59	778.0	D3+4	SD	61	43	34		-8	Pass

FM/DAB TRANSMITTER – REPORT

Channel	Frequency FM	Level (dBμV) FM	CN Db FM	Frequency DAB	Level (dBμV) DAB	CN Db DAB
BBC 1	98.9	76	45	225.64(12B)	76	45
BBC 2	89.3	75	45	225.64(12B)	76	45
BBC 3	91.5	75	45	225.64(12B)	76	45
BBC 4	95.1	77	45	225.64(12B)	76	45

VISIBLE TV AERIAL LOCATED IN THE AREA OF TEST POINT 9



TEST POINT 10

Location National Cycling Centre
NGR: SJ 87382 98646

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Alt: 67 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	306°	26.5 km
Proposed Development	289°	0.6 km

Visible Existing Aerial Arrays: none

Visible Existing Obstructions: Various buildings/Trees in the general direction of the Winter Hill Transmitter

WINTER HILL UHF TRANSMITTER - REPORT

Channel	Frequency	MUX	Format	Level (dB μ V)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	52	34	24	-3		Pass
37	602.0	COM8	SD	62	41	35		-8	Pass
49	698.0	ARQA	SD	50	34	21		-7	Pass
50	706.0	BBCA	SD	56	37	31		-8	Pass
54	737.8	BBCB	HD	56	42	28	-6		Pass
55	746.0	ARQB	HD	50	33	26	-6		Pass
56	754.0	LM	SD	45	28	27		-4	Marginal
58	770.0	SDN	SD	47	30	22		-6	Pass
59	778.0	D3+4	SD	48	32	22		-7	Pass

FM/DAB TRANSMITTER – REPORT

Channel	Frequency FM	Level (dB μ V) FM	CN Db FM	Frequency DAB	Level (dB μ V) DAB	CN Db DAB
BBC 1	98.9	60	40	225.64(12B)	70	45
BBC 2	89.3	62	41	225.64(12B)	70	45
BBC 3	91.5	69	45	225.64(12B)	70	45
BBC 4	95.1	60	40	225.64(12B)	70	45

CONCLUSIONS for Building development

The proposed development is to be located at Alan Turing Way, Manchester. The development is to consist of a new development, with a maximum elevation of approximately 35m. The majority of the proposed development's location has no existing buildings.

Subsequently, the proposed development will change the existing skyline which can result in an impact to existing viewers' television reception.

By taking into account the proposed development's location and elevation, the details collated during the desktop study, and the results and information recorded during the field survey, we are able to ascertain where, or if, the introduction of the proposed development has the potential to impact upon existing viewers' television reception.

In the case of the proposed development, we have highlighted a potential impact zone for terrestrial television reception shown on Map 1. We have not indicated a potential impact zone for satellite television reception as there are no visible satellite dishes directly to the north that would be affected.

Adjacent Buildings

The potential impact zone for terrestrial television reception covers an area to the southeast of the proposed development. Most of the potential impact zone covers a Car Park area where we do not envisage any issues. However, a portion of the potential impact zone covers a small area of Stuart street and Gibbon street where subsequently mitigation may be required.

One area of note is a small area between Stuart and Gibbon street that is adjacent to Alan Turing Way, which also has a property called 'Lock House' as shown on the Potential impact zone map 2 on page 35

Please note if tower cranes are used on site these could cause interference on a greater scale than the completed development. This interference would be for the duration of time that the tower cranes are present.

Please refer to the Mitigation section of this report for possible remedies to rectifying terrestrial television reception issues., For FM and DAB reception due to the signal being a lower frequency and as such is generally more 'robust' it is rarely affected and any deviation in signal levels would be only noticeable in very close proximity to the development.

We have not indicated a potential impact zone for satellite television reception as the buildings directly to the north are a sufficient distance from the proposed development. We advise that the situation regarding television and satellite reception is monitored closely during the construction and any reports of interference are investigated promptly.

Please note if tower cranes are used on site these could cause interference on a greater scale than the completed development. This interference would be for the duration of time that the tower cranes are present.

Please refer to the Mitigation section of this report for possible examples to rectifying terrestrial television reception issues if required.

MITIGATION

Terrestrial Television Reception

Remedial Aerial Work

One or all 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 utilising 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.

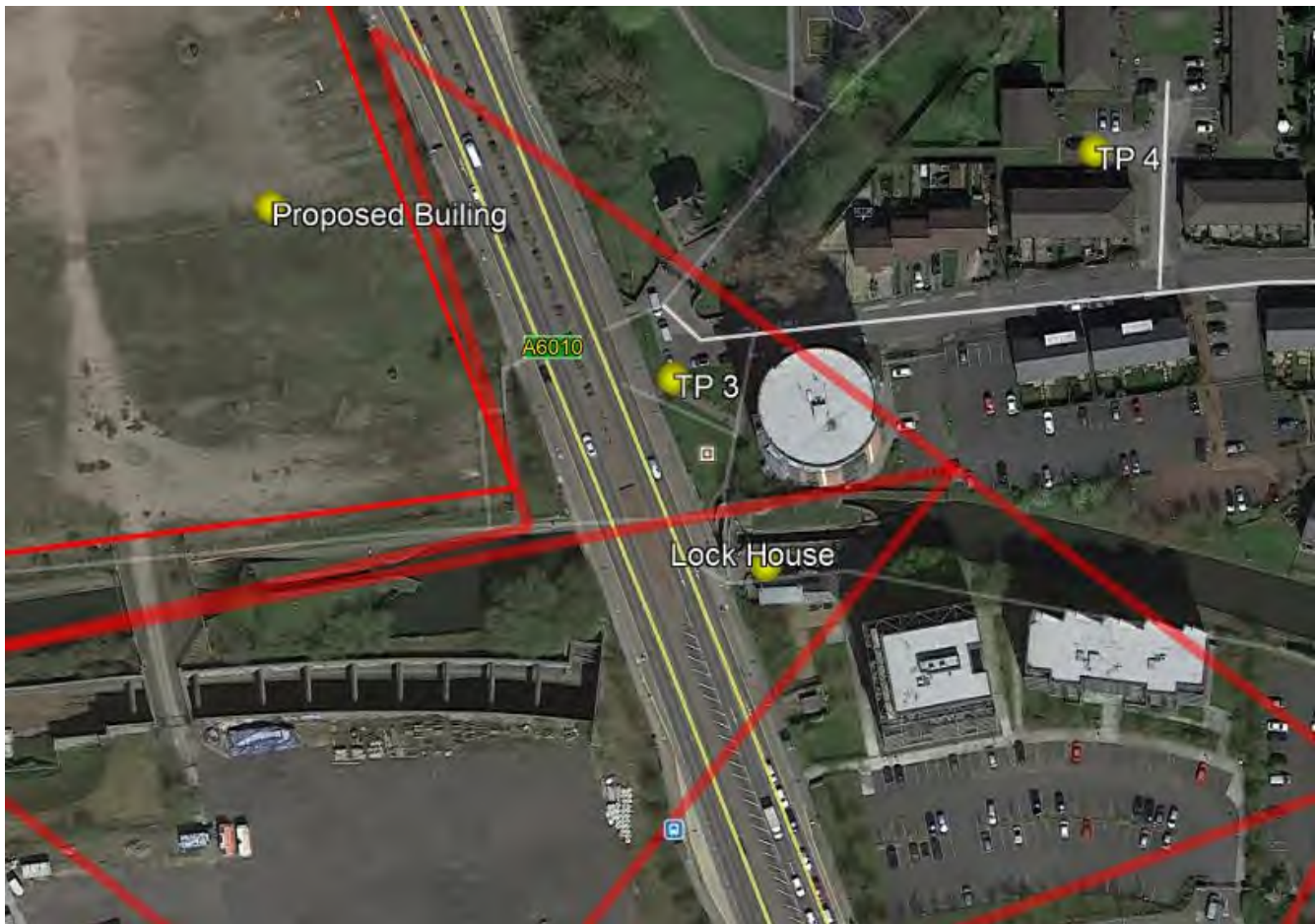
The need for such mitigation would need to be determined on a case by case basis.

POTENTIAL IMPACT ZONE – MAP 1



Red area indicates potential area for interference of Freeview

POTENTIAL IMPACT ZONE – MAP 2 LOCK HOUSE



Red area indicates potential area for interference of Freeview

REFERENCE OF TERMS

c.	Circa
CH	The UHF Channel allocation from the transmitter.
MUX	The digital multiplexer allocation/operator.
Tx	Transmitter.
dBµv	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.