TV RECEPTION SURVEY REPORT

THIS POST CONSTRUCTION TV RECEPTION SURVEY WAS CARRIED OUT BY:

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DATE OF SURVEY: 23rd January 2020
HOTELM44JR - 161019

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EXECUTIVE SUMMARY

The new building on Sharp street is now almost complete, this Post Construction TV reception survey has been conducted in order 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 April 2016, 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 carry out the comparison of the Pre and Post Construction Survey results, as the Winter Hill broadcast powers have remained constant.

There has been noted a slight reduction in aerial signal to the southeast of the proposed development covering test points 1, 5, 6 and 9. This is as largely as predicted in the initial pre-construction report, however this area has predominantly commercial properties so we expect minor or very little impact.

A comparison of the other pre and post construction test results shows that there has not been any wide scale impact to television reception caused by the new development and that the pre-existing signal levels have been generally maintained.

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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 carried out 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 carried out at a number of 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 carry out 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 proposed development has the potential to impact upon existing viewers' television reception.

DISCUSSIONS

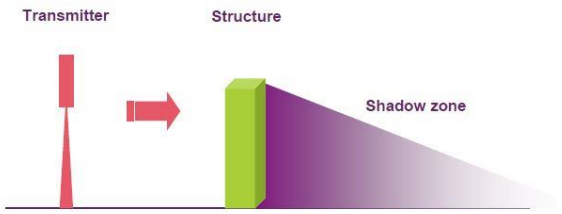
The introduction of a new building or structure into an area has the potential to cause interference to existing viewers' television reception.

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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.

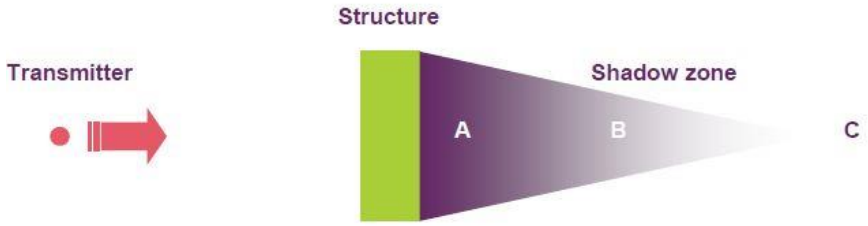


The shadow cast by a structure does not have hard edges though and does not usually extend indefinitely. While there would be a large reduction in signal levels immediately behind the structure, the blocking effect of the structure diminishes with distance because of diffraction. Diffraction is a process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

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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
- 360º 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 decoder

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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 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 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.

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THE DEVELOPMENT:
Sharp Street Development
Sharp Street
Manchester

CARRIED OUT ON BEHALF OF:
Create Developments Ltd
1 Neptune Court
Hallam Way
Blackpool
FY4 5LZ

OVERVIEW OF DEVELOPMENT
The development consists of the introduction of a new build multi-storey building at Sharp Street, Manchester, on land bordered by Baptist Street, Ludgate Hill and Rochdale Road

DETAILS OF PROPOSED DEVELOPMENT
Development Type: New Build.

Building Height: The development is in two sections. The section to the east is 7 storey and the section to the west is 9 storey.

Please refer to Plan A which highlights the development's location.

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

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

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COORDINATES

Prior to commencement of the survey, coordinates at the 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 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
Winter Hill Transmitter	SD 66000 14400
Development	SJ 84591 99039
Development	SJ 84628 99063

The above development coordinates are highlighting the 2 extremes of the building location

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TECHNICAL BACKGROUND – WINTER HILL

TRANSMITTER No: 103.00

NGR: SD 6600 14400

APPROXIMATE BEARING FROM THE DEVELOPMENT: 309°

APPROXIMATE DISTANCE FROM THE DEVELOPMENT: 24.12 km

Television Broadcasts from the Winter Hill Transmitter at the time of the Pre Construction Television Reception Survey (April 2016):

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

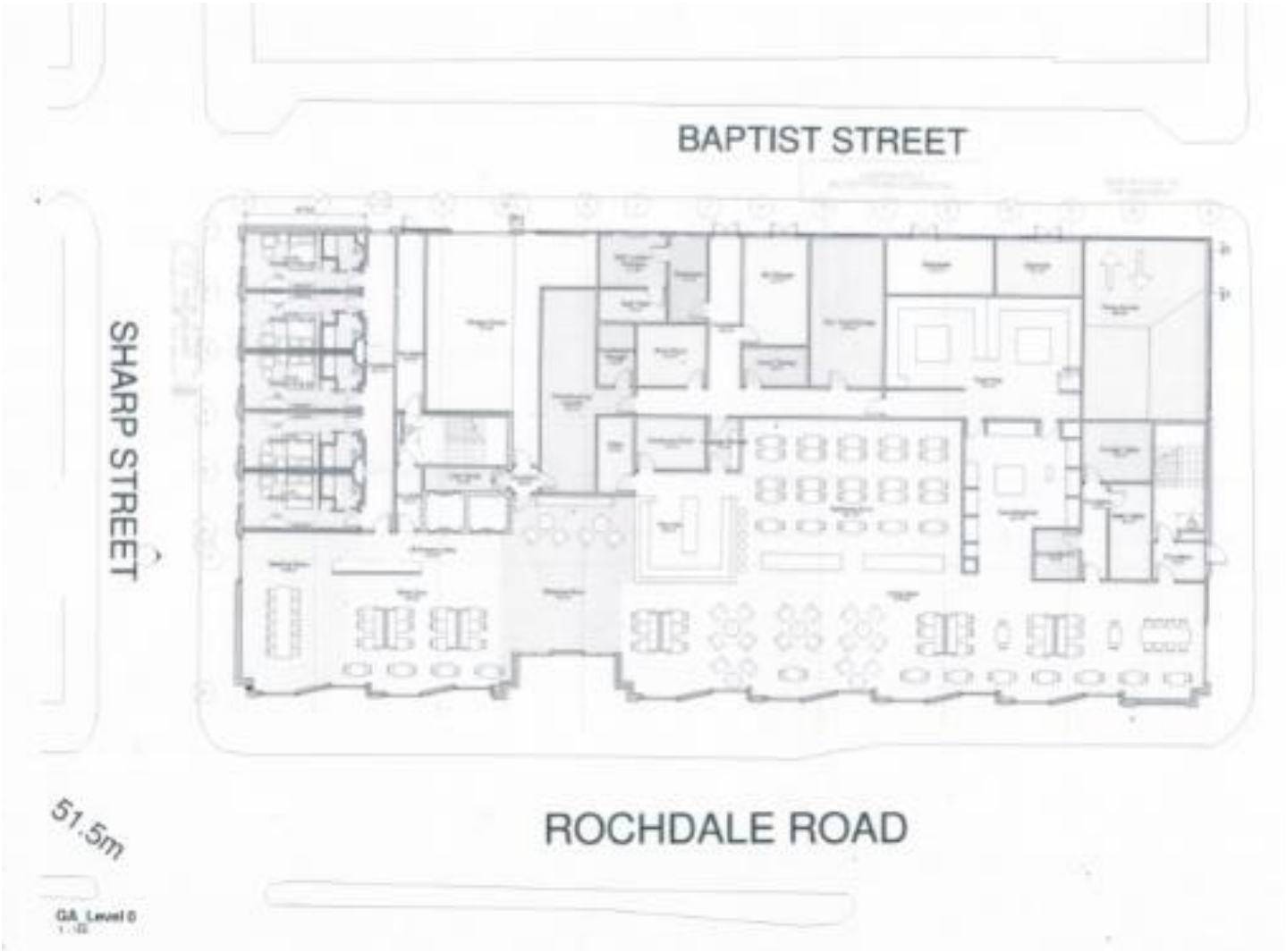
Television Broadcasts from the Winter Hill Transmitter at the present time (January 2020):

UHF Channel	Frequency	Multiplexer	Format	Broadcast Power
31	554.0	COM7	HD	25,700W
37	602.0	COM6	SD	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	HD	100,000W
56	754.0	LM	SD	1,000W
58	770.0	SDN	SD	100,000W
59	778.0	D3+4	SD	100,000W

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PLAN A: THE DEVELOPMENT'S LOCATION



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PHOTO A: The developments location



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PHOTO B: View directly to the north of the development



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PHOTO C: View directly to the east of the development



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PHOTO D: View directly to the south of the development



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PHOTO E: View directly to the west of the development



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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 9 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 the majority of test point positions. However, there are a number of 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 carried out 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 28.2º east of south, with a required satellite dish elevation of approximately 23º.

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.

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FIELD SURVEY TEST RESULTS AND INFORMATION

TEST POINT 1

Location Thompson Street
NGR: SJ 84695 98999
Alt: 52 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	309°	24.25 km
Development A	295°	0.13 km
Development B	316°	0.11 km

Visible Existing Aerial Arrays: This area is commercial / industrial / car parking with no visible TV aerials

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 10341 on the 6th April 2016

Channel	Frequency	MUX	Format	Level (dBµv)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	47	12	28		-8	Pass
37	602.0	COM8	HD	47	12	29		-8	Pass
49	698.0	ARQA	SD	52	16	28	-8		Pass
50	706.0	BBCA	SD	54	18	32	-8		Pass
54	737.8	BBCB	HD	54	18	30		-8	Pass
55	746.0	ARQB	SD	56	20	30	-8		Pass
56	754.0	LM	SD	37	6	19	-7		Pass
58	770.0	SDN	SD	53	26	32	-8		Pass
59	778.0	D3+4	SD	54	23	31	-8		Pass

Post Construction signal levels

Channel	Frequency	MUX	Format	Level (dBµv)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	46	29	16		-2	Pass
37	602.0	COM6	SD	52	35	23	-8		Pass
49	698.0	ARQA	SD	51	31	21	-6		Pass
50	706.0	BBCA	SD	49	27	21	-6		Pass
54	737.8	BBCB	HD	50	33	20		-2	Pass
55	746.0	ARQB	HD	41	24	16		-2	Pass
56	754.0	LM	SD	16	1	-	-		Fail
58	770.0	SDN	SD	42	30	22	-4		Pass
59	778.0	D3+4	SD	43	28	18	-5		Pass

Television reception is of an acceptable quality and strength

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TEST POINT 2

Location Thompson Street (Smithfield Project)
NGR: SJ 84757 98929
Alt: 51 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	309°	24.32 km
Development A	303°	0.20 km
Development B	316°	0.19 km

Visible Existing Aerial Arrays: 10 element aerials on 2m masts, mounted at rooftop height on 3 storey properties, directed towards the Winter Hill Transmitter

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

WINTER HILL TRANSMITTER - REPORT
Pre-Construction signals as per report 10341 on the 6th April 2016

Channel	Frequency	MUX	Format	Level (dBµv)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	51	25	31		-8	Pass
37	602.0	COM8	HD	47	20	27		-8	Pass
49	698.0	ARQA	SD	52	25	30	-8		Pass
50	706.0	BBCA	SD	53	26	30	-8		Pass
54	737.8	BBCB	HD	55	28	30		-8	Pass
55	746.0	ARQB	SD	53	26	30	-8		Pass
56	754.0	LM	SD	37	11	19	-7		Pass
58	770.0	SDN	SD	55	27	32	-8		Pass
59	778.0	D3+4	SD	54	27	32	-8		Pass

Post Construction signal levels

Channel	Frequency	MUX	Format	Level (dBµv)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	52	36	27		-3	Pass
37	602.0	COM6	SD	55	35	28	-8		Pass
49	698.0	ARQA	SD	55	35	32	-8		Pass
50	706.0	BBCA	SD	56	36	33	-8		Pass
54	737.8	BBCB	HD	55	39	27		-3	Pass
55	746.0	ARQB	HD	48	30	25		-3	Pass
56	754.0	LM	SD	17	1	-	-		Fail
58	770.0	SDN	SD	47	31	31	-8		Pass
59	778.0	D3+4	SD	48	34	32	-8		Pass

Terrestrial television reception is of an acceptable quality and strength

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TEST POINT 3

Location Thompson Street
NGR: SJ 84796 98894
Alt: 51 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	309°	24.38 km
Development A	304°	0.25 km
Development B	314°	0.24 km

Visible Existing Aerial Arrays: This area is commercial / industrial / car parking with no visible TV aerials.

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

WINTER HILL TRANSMITTER - REPORT
Pre-Construction signals as per report 10341 on the 6th April 2016

Channel	Frequency	MUX	Format	Level (dBµv)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	51	25	31		-8	Pass
37	602.0	COM8	HD	48	21	28		-8	Pass
49	698.0	ARQA	SD	53	26	30	-8		Pass
50	706.0	BBCA	SD	55	28	27	-8		Pass
54	737.8	BBCB	HD	55	28	29		-8	Pass
55	746.0	ARQB	SD	54	25	30	-8		Pass
56	754.0	LM	SD	37	11	18	-7		Pass
58	770.0	SDN	SD	55	27	28	-8		Pass
59	778.0	D3+4	SD	53	26	26	-8		Pass

Post Construction signal levels

Channel	Frequency	MUX	Format	Level (dBµv)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	50	28	33		-6	Pass
37	602.0	COM6	SD	52	28	30	-8		Pass
49	698.0	ARQA	SD	53	26	28	-8		Pass
50	706.0	BBCA	SD	54	36	30	-8		Pass
54	737.8	BBCB	HD	56	30	30		-6	Pass
55	746.0	ARQB	HD	52	28	28		-6	Pass
56	754.0	LM	SD	16	5	-	-		Fail
58	770.0	SDN	SD	54	30	30	-8		Pass
59	778.0	D3+4	SD	56	28	28	-8		Pass

Terrestrial television reception is of an acceptable quality and strength.

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TEST POINT 4

Location	Cassidy close
NGR:	SJ 84875 98937
Alt:	51 m
Mast Height:	10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	309°	24.41 km
Development A	289°	0.30 km
Development B	297°	0.28 km

Visible Existing Aerial Arrays: This area is primarily commercial / industrial but there is a visible TV aerial mounted on the Fire and Rescue Training Centre: - high gain aerial on a 4m mast mounted at rooftop height on a single storey building, directed towards the Winter Hill Transmitter

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

WINTER HILL TRANSMITTER - REPORT
Pre-Construction signals as per report 10341 on the 6th April 2016

Channel	Frequency	MUX	Format	Level (dBµv)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	57	29	33		-8	Pass
37	602.0	COM8	HD	56	30	32		-8	Pass
49	698.0	ARQA	SD	61	33	31	-8		Pass
50	706.0	BBCA	SD	61	34	34	-8		Pass
54	737.8	BBCB	HD	61	34	32		-8	Pass
55	746.0	ARQB	SD	61	31	32	-8		Pass
56	754.0	LM	SD	44	17	22	-7		Pass
58	770.0	SDN	SD	61	31	32	-8		Pass
59	778.0	D3+4	SD	61	34	32	-8		Pass

Post Construction signal levels

Channel	Frequency	MUX	Format	Level (dBµv)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	60	30	30		-6	Pass
37	602.0	COM6	SD	55	32	28	-7		Pass
49	698.0	ARQA	SD	61	33	31	-8		Pass
50	706.0	BBCA	SD	63	32	32	-8		Pass
54	737.8	BBCB	HD	58	38	30		-6	Pass
55	746.0	ARQB	HD	59	28	28		-6	Pass
56	754.0	LM	SD	18	4	-	-		Fail
58	770.0	SDN	SD	63	40	33	-8		Pass
59	778.0	D3+4	SD	61	35	33	-8		Pass

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Terrestrial television reception is of an acceptable quality and strength

TEST POINT 5

Location Bendix Street
NGR: SJ 84637 98993
Alt: 52m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	309°	24.19 km
Development A	313°	0.07 km
Development B	350°	0.07 km

Visible Existing Aerial Arrays: High gain aerial on a 3m mast mounted at approximately 10 storey height on an apartment block, directed towards the Winter Hill Transmitter. This aerial will be feeding a communal TV system within the block

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

WINTER HILL TRANSMITTER - REPORT

Pre-Construction signals as per report 10341 on the 6th April 2016

channel	Frequency	MUX	Format	Level (dBµv)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	43	17	21		-8	Pass
37	602.0	COM8	HD	40	14	12		-8	Pass
49	698.0	ARQA	SD	50	24	29	-8		Pass
50	706.0	BBCA	SD	48	22	24	-8		Pass
54	737.8	BBCB	HD	49	23	25		-8	Pass
55	746.0	ARQB	SD	50	22	25	-8		Pass
56	754.0	LM	SD	34	8	16	-7		Pass
58	770.0	SDN	SD	48	22	24	-8		Pass
59	778.0	D3+4	SD	49	22	24	-8		Pass

Post Construction signal levels

Channel	Frequency	MUX	Format	Level (dBµv)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	44	28	20		-3	Pass
37	602.0	COM6	SD	45	28	28	-6		Pass
49	698.0	ARQA	SD	44	26	26	-4		Pass
50	706.0	BBCA	SD	50	29	28	-8		Pass
54	737.8	BBCB	HD	46	31	31		-3	Pass
55	746.0	ARQB	HD	41	27	16		-2	Marginal
56	754.0	LM	SD	17	1	-	-		Fail
58	770.0	SDN	SD	45	30	28	-4		Pass
59	778.0	D3+4	SD	44	28	22	-7		Pass

Terrestrial television reception has low signal strengths but the quality is acceptable.

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TEST POINT 6

Location Hatter Street
NGR: SJ 84633 99013
Alt: 52 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	309°	24.18 km
Development A	288°	0.06 km
Development B	345°	0.05 km

Visible Existing Aerial Arrays: 10 element aerials on a 2m mast mounted on a 2-storey commercial building with possible first floor accommodation directed towards the Winter Hill Transmitter

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

WINTER HILL TRANSMITTER - REPORT
Pre-Construction signals as per report 10341 on the 6th April 2016

Channel	Frequency	MUX	Format	Level (dBµv)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	44	18	20		-8	Pass
37	602.0	COM8	HD	42	16	18		-8	Pass
49	698.0	ARQA	SD	51	24	29	-8		Pass
50	706.0	BBCA	SD	48	22	24	-8		Pass
54	737.8	BBCB	HD	50	23	25		-8	Pass
55	746.0	ARQB	SD	51	25	26	-8		Pass
56	754.0	LM	SD	35	9	17	-7		Pass
58	770.0	SDN	SD	49	23	24	-8		Pass
59	778.0	D3+4	SD	50	22	24	-8		Pass

Post Construction signal levels

Channel	Frequency	MUX	Format	Level (dBµv)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	42	26	18		-2	Pass
37	602.0	COM6	SD	49	32	21	-6		Pass
49	698.0	ARQA	SD	47	31	21	-4		Pass
50	706.0	BBCA	SD	47	29	21	-8		Pass
54	737.8	BBCB	HD	45	30	16		-2	Pass
55	746.0	ARQB	HD	42	27	16		-2	Pass
56	754.0	LM	SD	17	1	-	-		Fail
58	770.0	SDN	SD	42	28	20	-3		Pass
59	778.0	D3+4	SD	42	27	21	-5		Pass

Television reception is of a good quality and strength

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TEST POINT 7

Location Junction of Goulden Street and Mason Street
NGR: SJ 84690 98890
Alt: 53 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	310°	24.30 km
Development A	327°	0.18 km
Development B	341°	0.19 km

Visible Existing Aerial Arrays: 10 element aerials on 2m masts, mounted at rooftop height on 3 storey properties, directed towards the Winter Hill Transmitter

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

WINTER HILL TRANSMITTER - REPORT
Pre-Construction signals as per report 10341 on the 6th April 2016

Channel	Frequency	MUX	Format	Level (dBµv)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	49	13	28		-8	Pass
37	602.0	COM8	HD	49	13	22		-8	Pass
49	698.0	ARQA	SD	56	19	22	-5		Marginal
50	706.0	BBCA	SD	56	19	20	-5		Marginal
54	737.8	BBCB	HD	56	19	28		-8	Pass
55	746.0	ARQB	SD	55	18	29	-8		Pass
56	754.0	LM	SD	37	5	18	-7		Pass
58	770.0	SDN	SD	55	18	32	-8		Pass
59	778.0	D3+4	SD	55	19	30	-8		Pass

Post Construction signal levels

Channel	Frequency	MUX	Format	Level (dBµv)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	47	30	23		-2	Pass
37	602.0	COM6	SD	59	39	34	-8		Pass
49	698.0	ARQA	SD	53	32	20	-4		Pass
50	706.0	BBCA	SD	54	26	19	-8		Pass
54	737.8	BBCB	HD	55	34	23		-4	Pass
55	746.0	ARQB	HD	52	30	26		-4	Pass
56	754.0	LM	SD	19	1	-	-		Fail
58	770.0	SDN	SD	53	34	33	-8		Pass
59	778.0	D3+4	SD	52	32	26	-8		Pass

Television reception is of a good quality and strength

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TEST POINT 8

Location Junction of Oldham Street & Goulden Street
NGR: SJ 84756 98794
Alt: 55 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	310°	24.41 km
Development A	325°	0.29 km
Development B	334°	0.30 km

Visible Existing Aerial Arrays: 10 element aerials on 2m and 3m masts, mounted at rooftop height on 2 and 3 storey properties, directed towards the Winter Hill Transmitter

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

WINTER HILL TRANSMITTER - REPORT
Pre-Construction signals as per report 10341 on the 6th April 2016

Channel	Frequency	MUX	Format	Level (dBµv)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	56	15	32		-8	Pass
37	602.0	COM8	HD	55	14	25		-8	Pass
49	698.0	ARQA	SD	61	20	27	-8		Pass
50	706.0	BBCA	SD	61	20	22	-8		Pass
54	737.8	BBCB	HD	64	23	32		-8	Pass
55	746.0	ARQB	SD	65	23	31	-8		Pass
56	754.0	LM	SD	46	5	20	-7		Pass
58	770.0	SDN	SD	63	21	36	-8		Pass
59	778.0	D3+4	SD	64	22	33	-8		Pass

Post Construction signal levels

Channel	Frequency	MUX	Format	Level (dBµv)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	50	12	12		-4	Pass
37	602.0	COM6	SD	51	22	20	-7		Pass
49	698.0	ARQA	SD	52	24	28	-8		Pass
50	706.0	BBCA	SD	68	28	25	-8		Pass
54	737.8	BBCB	HD	61	22	33		-6	Pass
55	746.0	ARQB	HD	63	22	22		-6	Pass
56	754.0	LM	SD	20	12	14	-6		Fail
58	770.0	SDN	SD	60	20	22	-8		Pass
59	778.0	D3+4	SD	64	27	28	-7		Pass

Television reception is of a good quality and strength

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TEST POINT 9

Location Anita Street
NGR: SJ 84705 98934
Alt: 55 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	309°	24.28 km
Development A	313°	0.15 km
Development B	329°	0.15 km

Visible Existing Aerial Arrays: 10 element aerials on 2m and 3m masts, mounted at rooftop height on 2 and 3 storey properties, directed towards the Winter Hill Transmitter

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

WINTER HILL TRANSMITTER - REPORT
Pre-Construction signals as per report 10341 on the 6th April 2016

Channel	Frequency	MUX	Format	Level (dBµv)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	50	19	30		-8	Pass
37	602.0	COM8	HD	43	11	22		-8	Pass
49	698.0	ARQA	SD	48	16	23	-6		Pass
50	706.0	BBCA	SD	50	17	21	-6		Pass
54	737.8	BBCB	HD	45	13	12		-8	Pass
55	746.0	ARQB	SD	46	14	19	-5		Marginal
56	754.0	LM	SD	34	2	6	-3		Fail
58	770.0	SDN	SD	46	14	24	-8		Pass
59	778.0	D3+4	SD	45	13	23	-8		Pass

Post Construction signal levels

Channel	Frequency	MUX	Format	Level (dBµv)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	48	32	23		-2	Pass
37	602.0	COM6	SD	57	39	31	-8		Pass
49	698.0	ARQA	SD	50	31	21	-7		Pass
50	706.0	BBCA	SD	52	30	20	-8		Pass
54	737.8	BBCB	HD	49	32	18		-2	Pass
55	746.0	ARQB	HD	43	25	16		-2	Pass
56	754.0	LM	SD	16	-	-	-		Fail
58	770.0	SDN	SD	44	28	21	-4		Pass
59	778.0	D3+4	SD	42	27	20	-5		Pass

Television reception is of a good quality and strength

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CONCLUSIONS

The new building on Sharp street is now almost complete. Subsequently this Post Construction TV Reception Survey has been conducted in order 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 April 2016, 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 carry out the comparison of the Pre Construction and Post Construction Survey results, as the Winter Hill broadcast powers have remained constant.

A comparison of the pre and post construction test results shows that there has been no wide scale impact to television reception caused by the new development and that the pre-existing signal levels have been generally maintained.

There has been noted a slight reduction in aerial signal to the southeast of the proposed development covering test points 1, 5, 6 and 9. This is as largely as predicted in the initial pre-construction report, however this area has predominantly commercial properties so we expect minor or very little impact.

If there is a particular building affected it is likely this may have already been highlighted and complaints received. However since the initial Survey in 2016 several other properties have been constructed and if signals have deteriorated at other test locations not already mentioned it is most likely this building would not be the sole or primary 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 currently required- if any issues highlighted, they may require investigation on a case by case basis.

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

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MITIGATION

Terrestrial Television Reception

Remedial Aerial Work

One or all 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 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 of 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

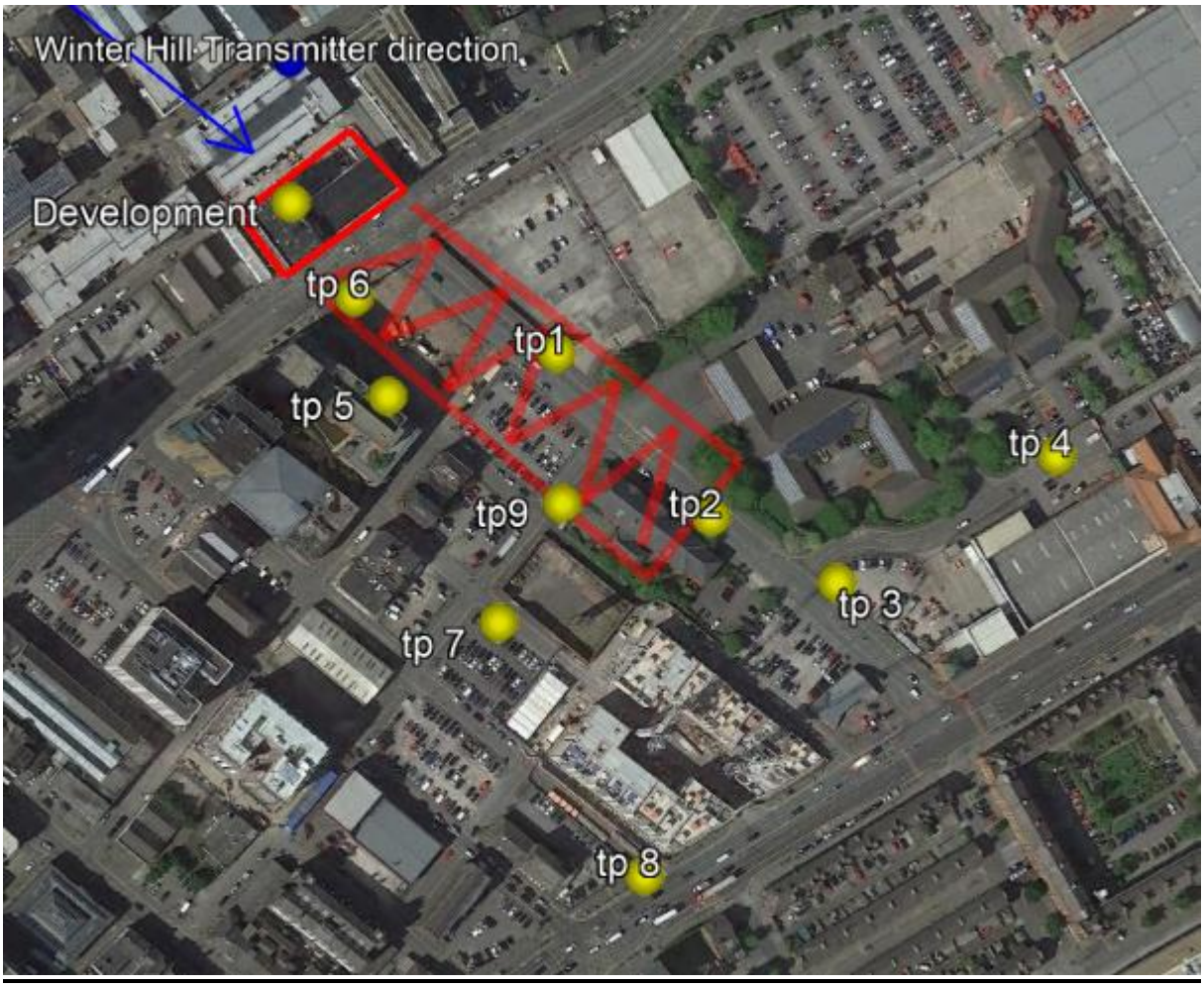
When the receiving satellite dish is sited in a position where a clear line of sight can be achieved; this can sometimes be a considerable distance from the affected property. In some instances, the satellite dish may require siting on the offending property in order to achieve a clear line of sight, 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.

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POTENTIAL 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.
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.

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