

TV RECEPTION SURVEY REPORT

THIS POST CONSTRUCTION TV RECEPTION SURVEY WAS CARRIED OUT BY:

SCS Technologies Ltd
Unit 4, centre 21 business park
Bridge Lane
Woolston
Warrington
WA1 4AW
0800 3777 485
www.SCStechnologies.co.uk

DATE OF SURVEY: 2nd September 2021
REF NO: TBAER028

The contents of this document are confidential and for the addressee only, not for duplication nor amendments
Unless under a controlled document referenced by SCS Technologies Ltd

Contents

EXECUTIVE SUMMARY	3
INTRODUCTION	4
SIGNAL BLOCKING	5
FIELD SURVEY METHOD	6
FIELD SURVEY EQUIPMENT	6
SERVICES LIKELY TO BE AFFECTED	7
SATELLITE TELEVISION RECEPTION.....	7
THE DEVELOPMENT:	8
CARRIED OUT ON BEHALF OF:	8
OVERVIEW OF THE DEVELOPMENT	8
DETAILS OF THE DEVELOPMENT	8
COORDINATES	8
TECHNICAL BACKGROUND – WINTER HILL.....	9
PHOTO A: THE NEW DEVELOPMENT	10
PHOTO B: THE NEW DEVELOPMENT	11
PHOTO C: THE NEW DEVELOPMENT	12
TERRESTRIAL TELEVISION SERVICES	13
SATELLITE TELEVISION SERVICES	13
FIELD SURVEY TEST RESULTS AND INFORMATION	14
CONCLUSIONS	27
MITIGATION REQUIRED	27
MITIGATION SOLUTIONS	28
TERRESTRIAL TELEVISION RECEPTION	28
POTENTIAL IMPACT ZONE – MAP 1	29
POTENTIAL IMPACT ZONE – MAP 2	30
REFERENCE OF TERMS	31

EXECUTIVE SUMMARY

The new building on Portland Street is now 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 October 2017 and additional testing in March 2019, 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.

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.

This is as largely as predicted in the initial Pre-construction report, the building this development replaced was of a similar stature and therefore has not caused a significant change in the propagation of the Signal.

In addition, since the initial Survey in 2017 several other properties have been constructed and if signals have deteriorated at other test locations not already mentioned it is most likely this building may not be the sole cause.

There were no satellite dishes highlighted on the Pre-construction survey that would be affected to the north of the development, and when assessing this on the post construction survey no satellite dishes were visible that were close enough to be affected from ground level.

If there are any particular buildings affected that have not already been mentioned, it is likely this may have already been highlighted and complaints 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 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 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

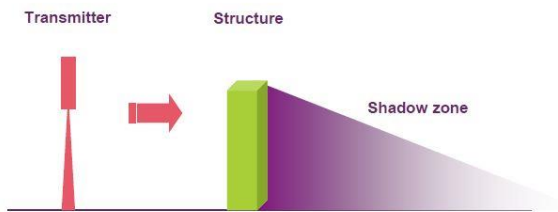
To carry out a desktop study and comprehensive field survey to record existing baseline television reception conditions in the surrounding area to the development. To provide details of any impact zone and methods of mitigation if required, to conform to Local Planning Authority requirements. The results and information recorded during this field survey assist in assessing if, or where, the introduction of the 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 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 like the way that an obstruction between a lamp and an observer's eye blocks out the light.

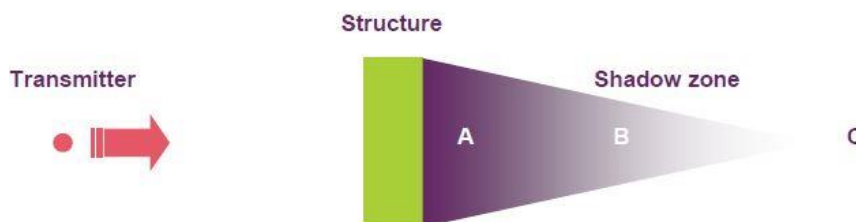


The shadow cast by a structure does not have hard edges though and does not usually extend indefinitely. While there would be a large reduction in signal levels immediately behind the structure, the blocking effect of the structure diminishes with distance because of diffraction. Diffraction is a process 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 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 and 5G 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 10mt 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 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.
- 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

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 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 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 proximity to the new building or structure.

THE DEVELOPMENT:

55 Portland Street
Manchester

CARRIED OUT ON BEHALF OF:

Portland Street Property Limited
Manchester

OVERVIEW OF THE DEVELOPMENT

The development is a redevelopment and extension to 16 storeys at the location of 55 Portland Street.

DETAILS OF THE DEVELOPMENT

Construction of a building of ground floor (including mezzanines) plus 16 upper storeys comprising a new hotel (Use Class C1), with ancillary uses at ground floor (bar, restaurant and public area, business suite), together with associated landscaping, servicing, cycle parking, and other associated works)

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

Development Position	SJ 84239 97911
Winter Hill Transmitter	SD 66000 14400

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 June 2013

UHF Channel	Frequency	Multiplexer	Format	Broadcast Power
31	554.0	COM7	HD	25,700W
37	602.0	COM8	HD	100,000W
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	14,000W
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 September 2021

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

PHOTO A: The new development



The contents of this document are confidential and for the addressee only, not for duplication nor amendments
Unless under a controlled document referenced by SCS Technologies Ltd

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

PHOTO B: The new development



The contents of this document are confidential and for the addressee only, not for duplication nor amendments
Unless under a controlled document referenced by SCS Technologies Ltd

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

PHOTO C: The new development



The contents of this document are confidential and for the addressee only, not for duplication nor amendments
Unless under a controlled document referenced by SCS Technologies Ltd

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

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 the test results show low signal strengths and corruption is being received. We anticipate that reception will be much improved at rooftop height on the multi-storey buildings. 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 28.2° 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 1

Location Abingdon Street
NGR: SJ 84239 97849
Alt: 43 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	310°	24.2 km
Proposed Development	357°	0.06km

Visible Existing Aerial Arrays:

High gain 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 in the general direction of the Winter Hill Transmitter

WINTER HILL TRANSMITTER - REPORT

Channel	Frequency	MUX	Format	Level (dBµV)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	37	22	17		-2	Fail
37	602.0	COM8	HD	36	21	16		-2	Fail
49	698.0	ARQA	SD	43	25	21	-5		Marginal
50	706.0	BBCA	SD	41	22	16	-3		Fail
54	737.8	BBCB	HD	41	22	21		-2	Fail
55	746.0	ARQB	SD	43	23	16	-4		Fail
56	754.0	LM	SD	23	8	7	-2		Fail
58	770.0	SDN	SD	43	25	21	-6		Marginal
59	778.0	D3+4	SD	38	20	17	-5		Fail

Post Construction signal levels

Channel	Frequency	MUX	Format	Level (dBµV)	CN dB	MER	VBER	LBER	Quality
55	746.0	COM7	HD	39	25	16		-2	Fail
37	602.0	COM6	SD	50	33	20	-8		Pass
31	698.0	ARQA	SD	53	37	30	-8		Pass
32	562.0	BBCA	SD	50	28	23	-8		Pass
35	585.8	BBCB	HD	54	30	24		-2	Pass
24	498.0	LOC1	SD	37	21	16	-3		Fail
29	538.0	SDN	SD	52	37	26	-8		Pass
34	578.0	D3+4	SD	53	38	25	-8		Pass

REPORT

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

The contents of this document are confidential and for the addressee only, not for duplication nor amendments
Unless under a controlled document referenced by SCS Technologies Ltd

EST POINT 2

Location Bloom Street
NGR: SJ 84316 97864
Alt: 45 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	308°	24.3 km
Proposed Development	300°	0.1 km

Visible Existing Aerial Arrays:

High gain aerials on 2m and 3m masts, mounted at rooftop height on 2 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

Channel	Frequency	MUX	Format	Level (dBμV)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	36	23	16		-2	Fail
37	602.0	COM8	HD	35	20	16		-2	Fail
49	698.0	ARQA	SD	41	23	21	-4		Fail
50	706.0	BBCA	SD	39	21	17	-5		Fail
54	737.8	BBCB	HD	45	27	23		-2	Marginal
55	746.0	ARQB	SD	45	28	25	-8		Pass
56	754.0	LM	SD	27	9	11	-5		Fail
58	770.0	SDN	SD	39	23	21	-7		Fail
59	778.0	D3+4	SD	39	22	21	-6		Fail

Post Construction signal levels

Channel	Frequency	MUX	Format	Level (dBμV)	CN dB	MER	VBER	LBER	Quality
55	746.0	COM7	HD	37	22	16		-2	Fail
37	602.0	COM6	SD	45	24	18	-5		Fail
31	698.0	ARQA	SD	47	28	22	-6		Marginal
32	562.0	BBCA	SD	45	24	20	-7		Marginal
35	585.8	BBCB	HD	45	28	24		-3	Pass
24	498.0	LOC1	SD	30	18	16	-3		Fail
29	538.0	SDN	SD	42	22	20	-6		Fail
34	578.0	D3+4	SD	42	20	20	-5		Fail

REPORT

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

TEST POINT 3

Location Chorlton street
NGR: SJ 84462 97862
Alt: 44 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	310°	24.3 km
Proposed Development	281°	0.2 km

Visible Existing Aerial Arrays:

High gain aerials on 2m and 3m masts, mounted at rooftop height on 3 storey properties, directed towards the Winter Hill Transmitter

Visible Existing Obstructions:

Various multi-storey buildings/Trees in the general direction of the Winter Hill Transmitter

WINTER HILL TRANSMITTER - REPORT

Channel	Frequency	MUX	Format	Level (dBμV)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	35	23	16		-2	Fail
37	602.0	COM8	HD	33	20	16		-2	Fail
49	698.0	ARQA	SD	47	29	23	-8		Pass
50	706.0	BBCA	SD	48	29	25	-8		Pass
54	737.8	BBCB	HD	38	22	16		-2	Fail
55	746.0	ARQB	SD	38	22	16	-3		Fail
56	754.0	LM	SD	19	4	4	-3		Fail
58	770.0	SDN	SD	37	19	16	-3		Fail
59	778.0	D3+4	SD	34	18	16	-3		Fail

Post Construction signal levels

Channel	Frequency	MUX	Format	Level (dBμV)	CN dB	MER	VBER	LBER	Quality
55	746.0	COM7	HD	38	22	16		-2	Fail
37	602.0	COM6	SD	35	22	19	-3		Fail
31	698.0	ARQA	SD	50	30	26	-8		Pass
32	562.0	BBCA	SD	50	32	28	-8		Pass
35	585.8	BBCB	HD	42	24	20		-2	Fail
24	498.0	LOC1	SD	33	18	16	-3		Fail
29	538.0	SDN	SD	40	20	18	-5		Fail
34	578.0	D3+4	SD	38	20	17	-3		Fail

REPORT

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

TEST POINT 4

Location Whitworth Street
NGR: SJ 84494 97775
Alt: 46 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	308°	24.5 km
Proposed Development	301°	0.3 km

Visible Existing Aerial Arrays:

High gain aerials on 2m and 3m 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

Channel	Frequency	MUX	Format	Level (dBμV)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	29	17	16		-2	Fail
37	602.0	COM8	HD	37	28	17		-2	Fail
49	698.0	ARQA	SD	34	19	16	-3		Fail
50	706.0	BBCA	SD	36	19	16	-3		Fail
54	737.8	BBCB	HD	35	19	16		-2	Fail
55	746.0	ARQB	SD	33	18	16	-3		Fail
56	754.0	LM	SD	20	4	4	-3		Fail
58	770.0	SDN	SD	33	20	16	-4		Fail
59	778.0	D3+4	SD	32	17	16	-3		Fail

Post Construction signal levels

Channel	Frequency	MUX	Format	Level (dBμV)	CN dB	MER	VBER	LBER	Quality
55	746.0	COM7	HD	30	16	16		-2	Fail
37	602.0	COM6	SD	40	22	19	-3		Fail
31	698.0	ARQA	SD	36	20	20	-7		Marginal
32	562.0	BBCA	SD	38	20	16	-4		Fail
35	585.8	BBCB	HD	33	18	16		-2	Fail
24	498.0	LOC1	SD	22	4	4	-3		Fail
29	538.0	SDN	SD	36	20	18	-4		Fail
34	578.0	D3+4	SD	33	20	17	-3		Fail

REPORT

Television signal strengths are low, and corruption is being received

TEST POINT 5

Location Whitworth Street (south)
 NGR: SJ 84385 97723
 Alt: 45 m
 Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	310°	24.45km
Proposed Development	323°	0.2 km

Visible Existing Aerial Arrays:

High gain aerials on 2m and 3m masts, mounted at rooftop height on 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

Channel	Frequency	MUX	Format	Level (dBμV)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	47	31	27		-3	Pass
37	602.0	COM8	HD	45	28	27		-2	Pass
49	698.0	ARQA	SD	55	32	32	-7		Pass
50	706.0	BBCA	SD	53	31	31	-8		Pass
54	737.8	BBCB	HD	50	28	29		-4	Pass
55	746.0	ARQB	SD	50	25	26	-8		Pass
56	754.0	LM	SD	30	8	13	-7		Pass
58	770.0	SDN	SD	48	26	29	-8		Pass
59	778.0	D3+4	SD	43	25	21	-8		Pass

Post Construction signal levels

Channel	Frequency	MUX	Format	Level (dBμV)	CN dB	MER	VBER	LBER	Quality
55	746.0	COM7	HD	49	32	28		-4	Pass
37	602.0	COM6	SD	47	30	26	-7		Pass
31	698.0	ARQA	SD	56	32	30	-8		Pass
32	562.0	BBCA	SD	54	30	28	-8		Pass
35	585.8	BBCB	HD	52	30	28		-5	Pass
24	498.0	LOC1	SD	33	20	18	-2		Fail
29	538.0	SDN	SD	50	30	28	-8		Pass
34	578.0	D3+4	SD	47	28	26	-8		Pass

REPORT

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

TEST POINT 6

Location Granby Row
NGR: SJ 84383 97622
Alt: 41 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	309°	24.3 km
Proposed Development	334°	0.3 km

Visible Existing Aerial Arrays:

None

Visible Existing Obstructions:

Various multi-storey buildings in the general direction of the Winter Hill Transmitter

WINTER HILL TRANSMITTER - REPORT

Channel	Frequency	MUX	Format	Level (dBμV)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	28	17	16		-2	Fail
37	602.0	COM8	HD	27	14	16		-2	Fail
49	698.0	ARQA	SD	36	20	16	-3		Fail
50	706.0	BBCA	SD	39	23	21	-6		Fail
54	737.8	BBCB	HD	34	18	16		-2	Fail
55	746.0	ARQB	SD	38	19	18	-3		Fail
56	754.0	LM	SD	19	4	4	-3		Fail
58	770.0	SDN	SD	32	16	16	-3		Fail
59	778.0	D3+4	SD	31	17	18	-3		Fail

Post Construction signal levels

Channel	Frequency	MUX	Format	Level (dBμV)	CN dB	MER	VBER	LBER	Quality
55	746.0	COM7	HD	30	18	16		-2	Fail
37	602.0	COM6	SD	29	20	16	-2		Fail
31	698.0	ARQA	SD	40	24	22	-6		Marginal
32	562.0	BBCA	SD	40	25	18	-5		Fail
35	585.8	BBCB	HD	36	20	18		-2	Fail
24	498.0	LOC1	SD	36	18	16	-4		Fail
29	538.0	SDN	SD	36	20	18	-5		Fail
34	578.0	D3+4	SD	34	18	16	-3		Fail

REPORT

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

TEST POINT 7

Location Princess Street
NGR: SJ 84686 98830
Alt: 42 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	305°	24.3km
Proposed Development	346°	0.27 km

Visible Existing Aerial Arrays:

None

Visible Existing Obstructions:

Various multi-storey buildings in the general direction of the Winter Hill Transmitter

WINTER HILL TRANSMITTER - REPORT

Channel	Frequency	MUX	Format	Level (dBμV)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	36	23	16		-2	Fail
37	602.0	COM8	HD	33	21	16		-2	Fail
49	698.0	ARQA	SD	38	23	16	-3		Fail
50	706.0	BBCA	SD	41	25	19	-5		Fail
54	737.8	BBCB	HD	37	22	16		-2	Fail
55	746.0	ARQB	SD	38	18	16	-3		Fail
56	754.0	LM	SD	22	6	4	-3		Fail
58	770.0	SDN	SD	38	20	16	-3		Fail
59	778.0	D3+4	SD	33	18	18	-3		Fail

Post Construction signal levels

Channel	Frequency	MUX	Format	Level (dBμV)	CN dB	MER	VBER	LBER	Quality
55	746.0	COM7	HD	38	22	16		-2	Fail
37	602.0	COM6	SD	32	22	19	-3		Fail
31	698.0	ARQA	SD	42	24	20	-6		Marginal
32	562.0	BBCA	SD	44	28	18	-6		Fail
35	585.8	BBCB	HD	39	24	18		-2	Fail
24	498.0	LOC1	SD	30	18	16	-2		Fail
29	538.0	SDN	SD	40	20	18	-5		Fail
34	578.0	D3+4	SD	36	18	17	-3		Fail

REPORT

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

TEST POINT 8

Location Canal Street
NGR: SJ 84299 97771
Alt: 44 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	310°	24.1 km
Proposed Development	336°	0.16 km

Visible Existing Aerial Arrays:

High gain 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 in the general direction of the Winter Hill Transmitter

WINTER HILL TRANSMITTER - REPORT

Channel	Frequency	MUX	Format	Level (dBμV)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	29	17	16		-2	Fail
37	602.0	COM8	HD	37	28	17		-2	Fail
49	698.0	ARQA	SD	34	19	16	-3		Fail
50	706.0	BBCA	SD	36	19	16	-3		Fail
54	737.8	BBCB	HD	35	19	16		-2	Fail
55	746.0	ARQB	SD	33	18	16	-3		Fail
56	754.0	LM	SD	20	4	4	-3		Fail
58	770.0	SDN	SD	33	20	16	-4		Fail
59	778.0	D3+4	SD	32	17	16	-3		Fail

Post Construction signal Levels

Channel	Frequency	MUX	Format	Level (dBμV)	CN dB	MER	VBER	LBER	Quality
55	746.0	COM7	HD	30	18	16		-2	Fail
37	602.0	COM6	SD	35	26	19	-3		Fail
31	698.0	ARQA	SD	36	20	16	-3		Fail
32	562.0	BBCA	SD	36	20	16	-3		Fail
35	585.8	BBCB	HD	34	20	18		-2	Fail
24	498.0	LOC1	SD	32	20	16	-3		Fail
29	538.0	SDN	SD	35	20	16	-4		Fail
34	578.0	D3+4	SD	33	18	17	-3		Fail

REPORT

Television signal strengths are low, and corruption is being received

Additional test points undertaken in March 2019

TEST POINT 1a

Location Bloom Street/car park
NGR: SJ 84289 97867
Alt: 45 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	308°	24.3 km
Development	300°	0.1 km

Visible Existing Aerial Arrays:

High gain aerals on 2m and 3m masts, mounted at rooftop height on 2 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

Channel	Frequency	MUX	Format	Level (dBµV)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	47	32	19		-2	Pass
37	602.0	COM8	SD	53	35	20	-8		Pass
49	698.0	ARQA	SD	55	37	24	-7		Pass
50	706.0	BBCA	SD	53	31	21	-8		Pass
54	737.8	BBCB	HD	47	32	17		-2	Marginal
55	746.0	ARQB	HD	44	29	20		-2	Pass
56	754.0	LM	SD	36	20	17	-4		Fail
58	770.0	SDN	SD	45	27	21	-5		Marginal
59	778.0	D3+4	SD	43	27	21	-5		Marginal

Post Construction signal Levels

Channel	Frequency	MUX	Format	Level (dBµV)	CN dB	MER	VBER	LBER	Quality
55	746.0	COM7	HD	42	30	20		-4	Pass
37	602.0	COM6	SD	49	32	23	-8		Pass
31	698.0	ARQA	SD	52	39	33	-8		Pass
32	562.0	BBCA	SD	50	32	30	-8		Pass
35	585.8	BBCB	HD	45	30	20		-2	Pass
24	498.0	LOC1	SD	33	21	17	-4		Fail
29	538.0	SDN	SD	50	37	32	-8		Pass
34	578.0	D3+4	SD	48	34	24	-8		Pass

REPORT

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

TEST POINT 2a

Location Sackville Street
NGR: SJ 84351 97837
Alt: 44 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	310°	24.3 km
Development	310°	0.2 km

Visible Existing Aerial Arrays:

High gain aerials on 2m and 3m masts, mounted at rooftop height on 3 storey properties, directed towards the Winter Hill Transmitter

Visible Existing Obstructions:

Various multi-storey buildings/Trees in the general direction of the Winter Hill Transmitter

WINTER HILL TRANSMITTER - REPORT

Channel	Frequency	MUX	Format	Level (dBμV)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	52	36	21		-2	Pass
37	602.0	COM8	SD	51	28	21	-5		Pass
49	698.0	ARQA	SD	54	36	21	-7		Pass
50	706.0	BBCA	SD	54	30	23	-8		Pass
54	737.8	BBCB	HD	52	31	20		-2	Pass
55	746.0	ARQB	HD	48	31	20		-2	Pass
56	754.0	LM	SD	44	27	25	-7		Pass
58	770.0	SDN	SD	48	30	21	-7		Pass
59	778.0	D3+4	SD	48	31	20	-8		Pass

Post Construction signal Levels

Channel	Frequency	MUX	Format	Level (dBμV)	CN dB	MER	VBER	LBER	Quality
55	746.0	COM7	HD	48	33	22		-4	Pass
37	602.0	COM6	SD	49	32	23	-7		Pass
31	698.0	ARQA	SD	52	30	28	-8		Pass
32	562.0	BBCA	SD	52	30	28	-7		Pass
35	585.8	BBCB	HD	49	32	22		-4	Pass
24	498.0	LOC1	SD	40	24	22	-4		Marginal
29	538.0	SDN	SD	50	32	30	-8		Pass
34	578.0	D3+4	SD	47	32	22	-7		Pass

REPORT

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

TEST POINT 3a

Location Bloom / Sackville Street
NGR: SJ 84334 97861
Alt: 44 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	308°	24.5 km
Development	301°	0.2 km

Visible Existing Aerial Arrays:

High gain aerials on 2m and 3m 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

Channel	Frequency	MUX	Format	Level (dB μ V)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	49	32	19		-2	Pass
37	602.0	COM8	SD	52	31	21	-7		Pass
49	698.0	ARQA	SD	54	35	25	-8		Pass
50	706.0	BBCA	SD	56	35	28	-8		Pass
54	737.8	BBCB	HD	53	37	24		-2	Pass
55	746.0	ARQB	HD	45	22	20		-2	Pass
56	754.0	LM	SD	37	20	19	-4		Fail
58	770.0	SDN	SD	51	34	24	-8		Pass
59	778.0	D3+4	SD	47	30	21	-8		Pass

Post Construction signal Levels

Channel	Frequency	MUX	Format	Level (dB μ V)	CN dB	MER	VBER	LBER	Quality
55	746.0	COM7	HD	50	30	20		-4	Pass
37	602.0	COM6	SD	54	32	26	-8		Pass
31	698.0	ARQA	SD	52	36	28	-8		Pass
32	562.0	BBCA	SD	55	34	32	-8		Pass
35	585.8	BBCB	HD	48	30	22		-2	Pass
24	498.0	LOC1	SD	33	22	16	-4		Fail
29	538.0	SDN	SD	54	36	33	-8		Pass
34	578.0	D3+4	SD	52	30	26	-8		Pass

REPORT

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

TEST POINT 4a

Location Richmond Street (South)
NGR: SJ 84313 97815
Alt: 44 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	310°	24.45km
Development	315°	0.2 km

Visible Existing Aerial Arrays:

High gain aerials on 3m masts, mounted at rooftop height on 2 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

Channel	Frequency	MUX	Format	Level (dBμV)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	55	37	28		-3	Pass
37	602.0	COM8	SD	61	40	29	-7		Pass
49	698.0	ARQA	SD	59	40	25	-8		Pass
50	706.0	BBCA	SD	58	35	22	-8		Pass
54	737.8	BBCB	HD	54	38	20		-2	Pass
55	746.0	ARQB	HD	50	30	19		-2	Pass
56	754.0	LM	SD	41	24	21	-5		Marginal
58	770.0	SDN	SD	48	30	21	-5		Pass
59	778.0	D3+4	SD	45	30	31	-8		Pass

Post Construction signal Levels

Channel	Frequency	MUX	Format	Level (dBμV)	CN dB	MER	VBER	LBER	Quality
55	746.0	COM7	HD	42	30	20		-4	Pass
37	602.0	COM6	SD	49	32	23	-8		Pass
31	698.0	ARQA	SD	52	39	33	-8		Pass
32	562.0	BBCA	SD	50	32	30	-8		Pass
35	585.8	BBCB	HD	45	30	20		-2	Pass
24	498.0	LOC1	SD	33	21	17	-4		Fail
29	538.0	SDN	SD	50	37	32	-8		Pass
34	578.0	D3+4	SD	48	34	24	-8		Pass

REPORT

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

TEST POINT 5a

Location Richmond Street
NGR: SJ 84331 97836
Alt: 44 m
Mast Height: 10 m

LOCATION	BEARING	DISTANCE
Winter Hill Transmitter	309°	24.3 km
Development	334°	0.3 km

Visible Existing Aerial Arrays:

High gain aerials on 3m masts, mounted at rooftop height on 2 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

Channel	Frequency	MUX	Format	Level (dBμV)	CN dB	MER	VBER	LBER	Quality
31	554.0	COM7	HD	49	29	20		-2	Pass
37	602.0	COM8	SD	54	33	20	-8		Pass
49	698.0	ARQA	SD	54	36	21	-8		Pass
50	706.0	BBCA	SD	57	33	20	-7		Pass
54	737.8	BBCB	HD	51	31	19		-2	Pass
55	746.0	ARQB	HD	48	30	19		-2	Pass
56	754.0	LM	SD	45	24	21	-7		Marginal
58	770.0	SDN	SD	50	32	20	-7		Pass
59	778.0	D3+4	SD	50	33	19	-8		Pass

Post Construction signal Levels

Channel	Frequency	MUX	Format	Level (dBμV)	CN dB	MER	VBER	LBER	Quality
55	746.0	COM7	HD	44	28	22		-4	Pass
37	602.0	COM6	SD	56	33	24	-7		Pass
31	698.0	ARQA	SD	54	36	28	-8		Pass
32	562.0	BBCA	SD	56	33	24	-8		Pass
35	585.8	BBCB	HD	53	32	27		-6	Pass
24	498.0	LOC1	SD	42	28	25	-7		Marginal
29	538.0	SDN	SD	50	34	24	-8		Pass
34	578.0	D3+4	SD	48	32	20	-7		Pass

REPORT

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

CONCLUSIONS

The new building is now 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 October 2017, 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 minimal reduction in the aerial signal to the southeast of the development. This is as largely as predicted in the initial Pre-construction report, the building that this new development replaced was of a similar stature and therefore has not caused a significant change in the propagation of the Signal.

In addition, since the initial Survey in 2017 several other properties have been constructed and if signals have deteriorated at other locations not already mentioned it is most likely this building may not be the sole cause.

There were no satellite dishes highlighted on the Pre-construction survey that would be affected to the north of the development, and when assessing this on the post construction survey no satellite dishes were visible that were close enough to be affected from ground level.

Map 1 shows each of the test point positions and the television reception impact zone, predicted from the Pre-construction survey due to the introduction of the new building.

MITIGATION REQUIRED

None currently required, if any issues become 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.

MITIGATION SOLUTIONS

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.

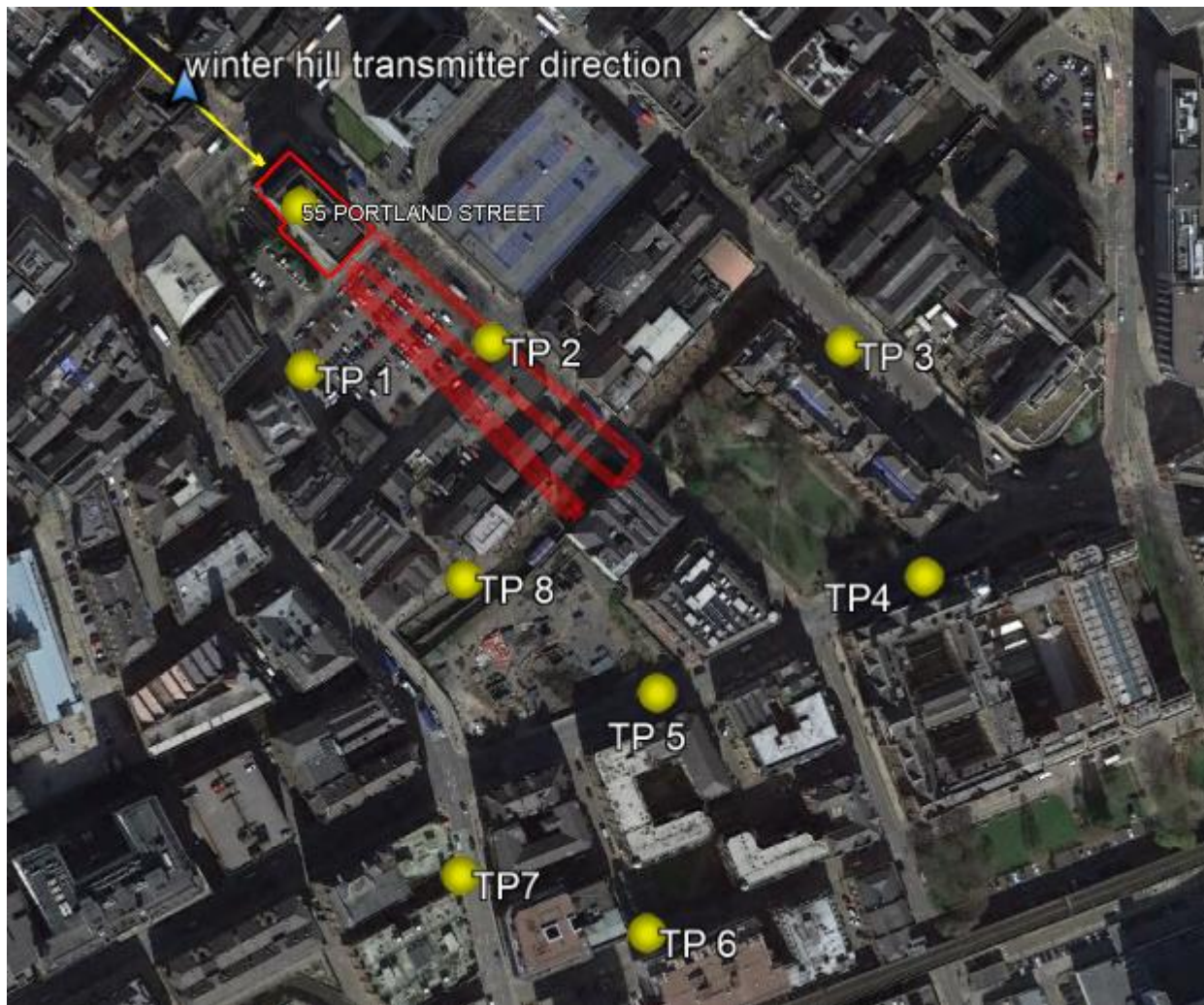
Re-siting of the satellite antenna to a position on the property where a clear line of sight can be achieved.

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

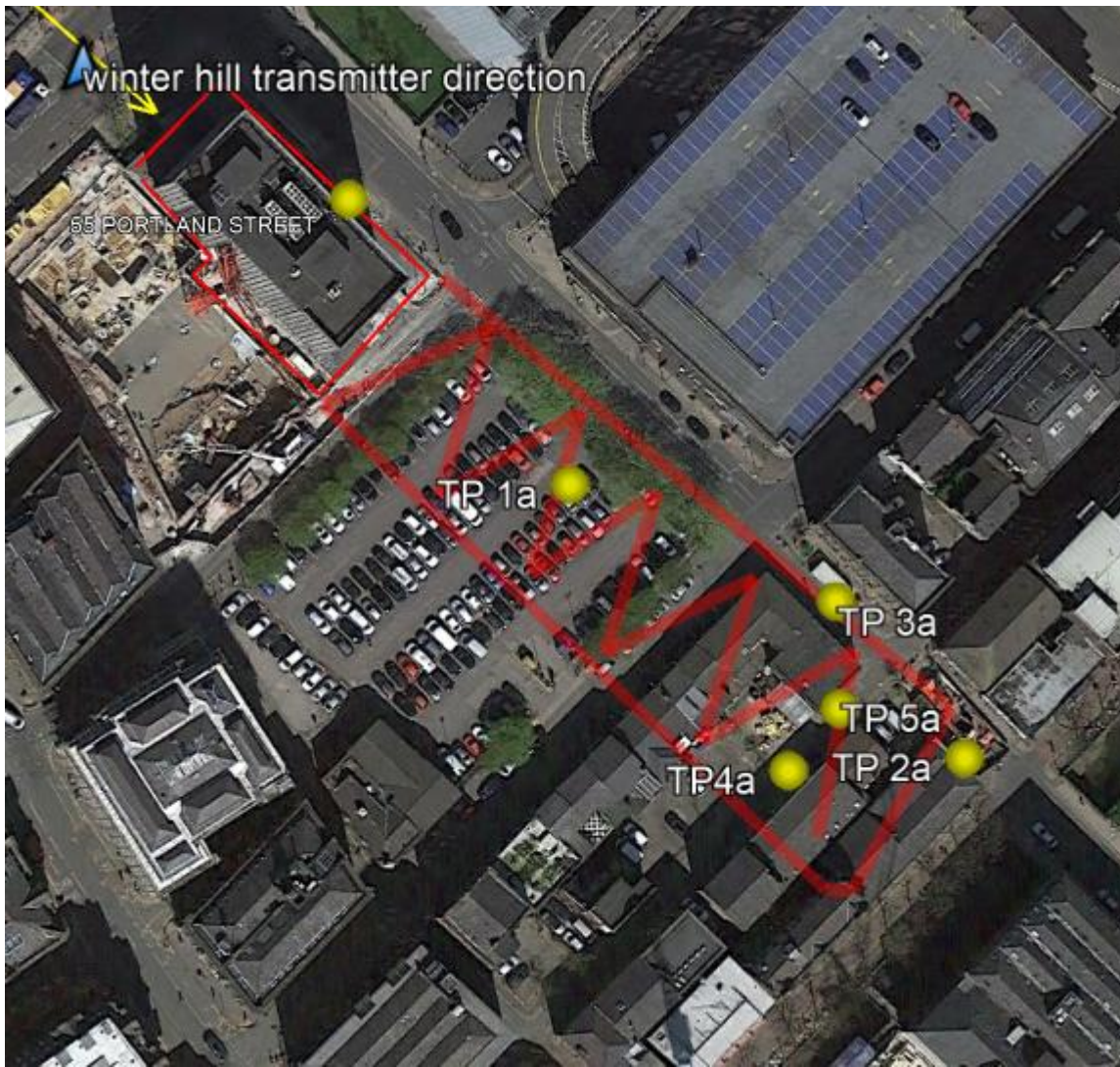
Remote Satellite Dish

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 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.

POTENTIAL IMPACT ZONE – MAP 1



POTENTIAL IMPACT ZONE – MAP 2



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.