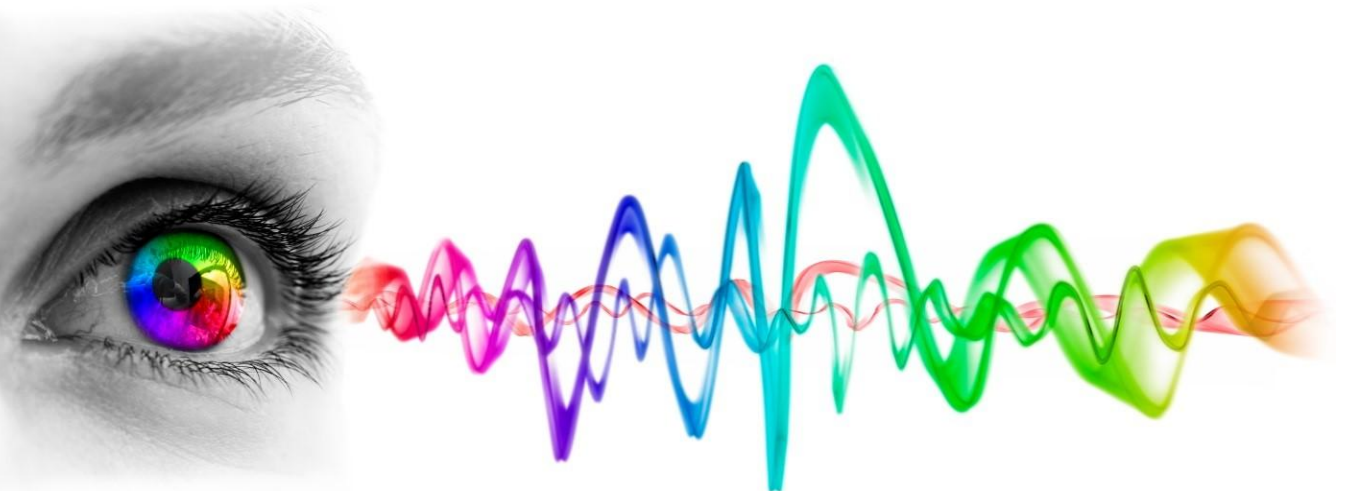


**Multichoice Support Services:**  
**PtP Study Technical Report - Rev AA1**



**23 May 2025**

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Dear Gerhard

Radio Telecommunication Services (Pty) Ltd is pleased to submit the link planning results and link reports for the requested links. We trust that it meets your expectations and look forward to your feedback.

Yours sincerely,

A handwritten signature in black ink, reading "MJK Schutte", is positioned above a horizontal line.

---

Matthys Johannes Koen Schutte  
Executive Director  
Radio Telecommunication Services

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# 1 Background

Multichoice requested Radio Telecommunication Services(RTS) to perform link prediction for the different sites as included in the table below.

| Site Name                | Latitude (DD) | Longitude (DD) | Antenna height (m) | Range (km) | Distance (km) | Frequency (GHz) | FSPL (dB) Total all propagation losses | Tx Power (dBm) (ISFR 2, p16) (CSIR, Brummeria) | RX and TX antenna gain(dBi) |
|--------------------------|---------------|----------------|--------------------|------------|---------------|-----------------|----------------------------------------|------------------------------------------------|-----------------------------|
| CSIR, Brummeria          | -25.755519    | 28.282903      | 30                 | 200        | 0             | 4.2             |                                        | 36                                             | 30                          |
| SANSA, Hartebeesthoek    | -25.88531     | 27.707454      | 15                 | 200        | 59.8          | 4.2             | 217.14                                 | 36                                             | 30                          |
| MC Samrand               | -25.92925     | 28.138156      | 15                 | 200        | 24.2          | 4.2             | 231.41                                 | 36                                             | 30                          |
| MC Randburg              | -26.103473    | 28.001188      | 15                 | 200        | 48            | 4.2             | 206.32                                 | 36                                             | 30                          |
| MC Randburg              | -26.103473    | 28.001188      | 15                 | 200        | 48            | 4.2             | 206.32                                 | 27                                             | 30                          |
| Sentech, Pretoria        | -25.689285    | 27.983905      | 15                 | 200        | 31            | 4.2             | 136.61                                 | 36                                             | 30                          |
| Monitoring point         | -25.855397    | 28.310616      | 15                 | 200        | 11.5          | 4.2             | 177.97                                 | 36                                             | 30                          |
| Embassy 1                | -25.746124    | 28.223237      | 15                 | 200        | 6.09          | 4.2             | 135.43                                 | 36                                             | 30                          |
| Loftus Versfeld Stadium  | -25.753234    | 28.222939      | 15                 | 200        | 6.04          | 4.2             | 151.91                                 | 36                                             | 30                          |
| Embassy 2                | -25.761299    | 28.24748       | 15                 | 200        | 3.61          | 4.2             | 116.76                                 | 36                                             | 30                          |
| O.R. Tambo International | -26.137307    | 28.249935      | 15                 | 200        | 42.7          | 4.2             | 218.37                                 | 36                                             | 30                          |

## 2 Link Investigations

### 2.1 Multichoice PtP link locations

The picture below indicate the position of all the links that were investigated for Multichoice. This section also include the link planning results based on the specifications included in section 1. We used our CHIRplus\_TC software for the link predictions.

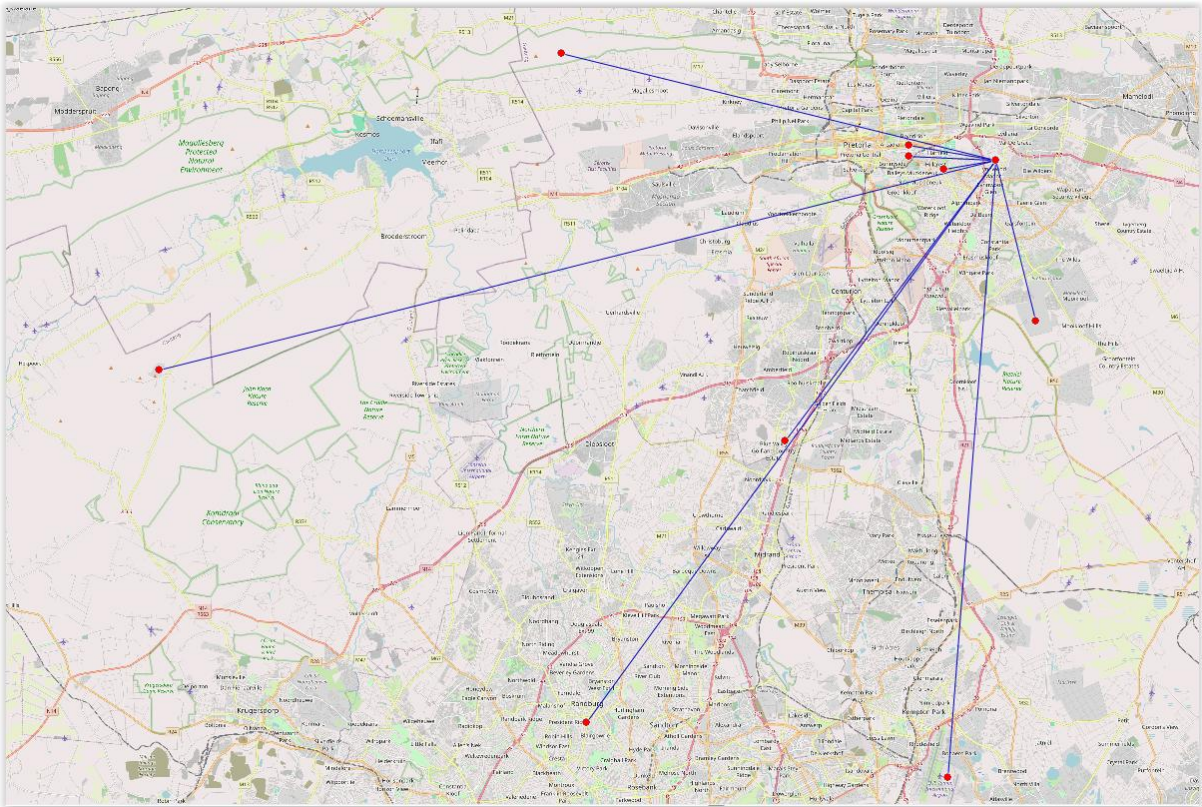


Figure 1 – Multichoice 10 links

## 2.1.1 CSIR, Brummeria to SANSA, Hartebeesthoek link prediction

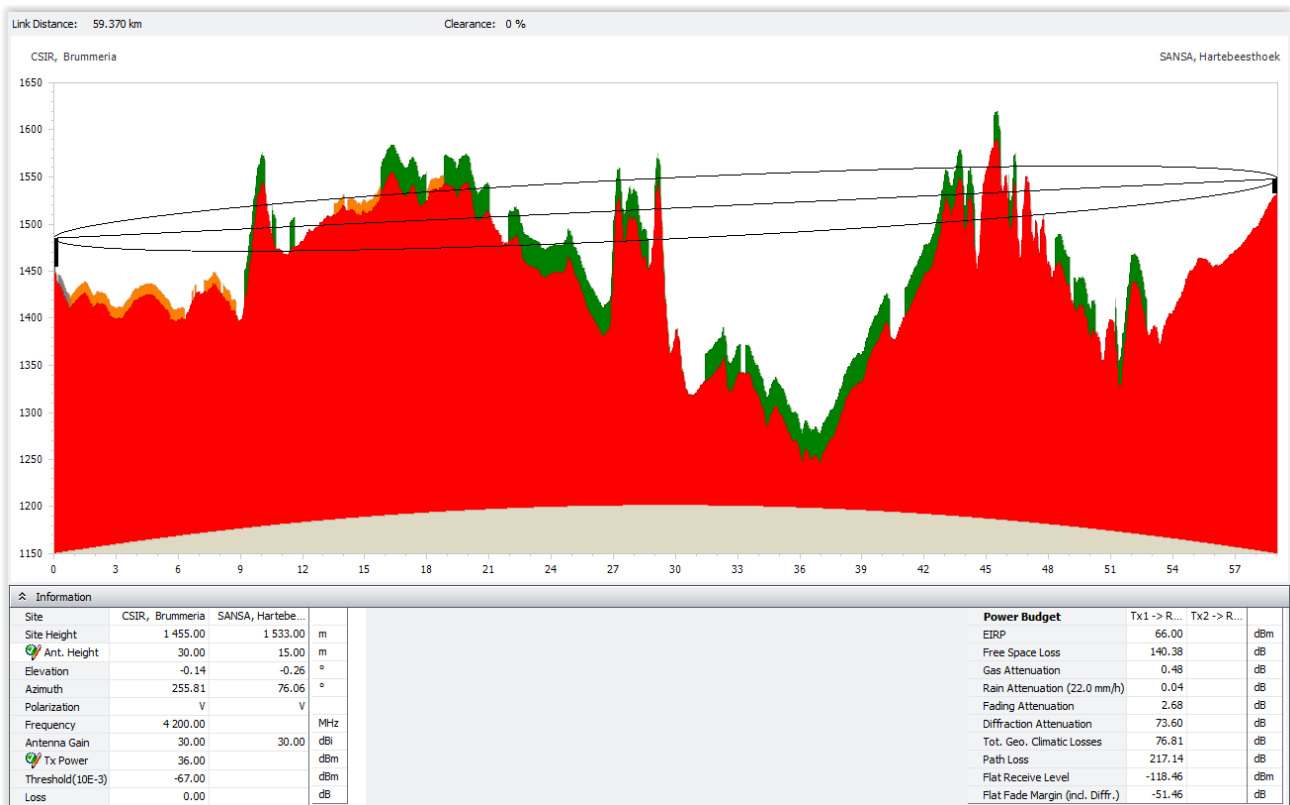


Figure 2 - CSIR, Brummeria to SANSA, Hartebeesthoek link prediction

## 2.1.2 CSIR, Brummeria to MC Samrand link prediction

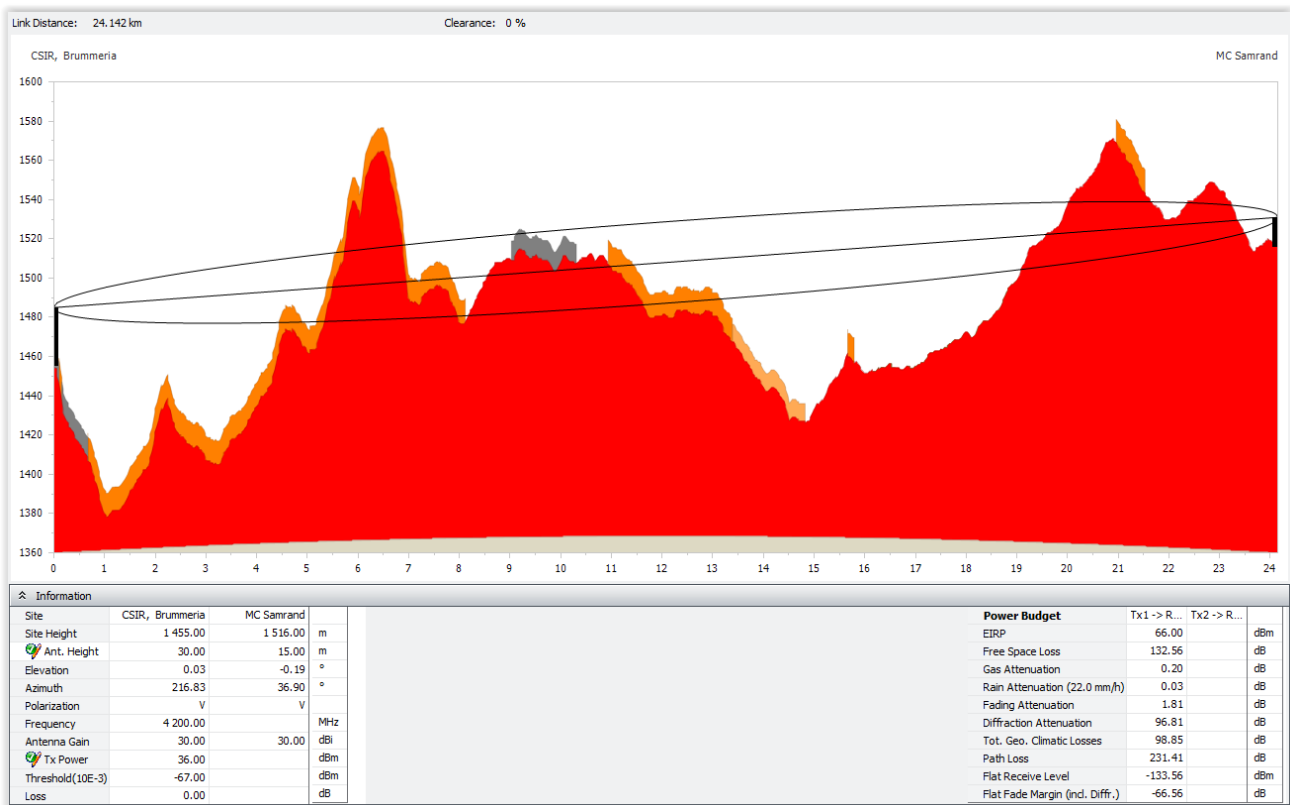


Figure 3 - CSIR, Brummeria to MC Samrand link prediction

### 2.1.3 CSIR, Brummeria to MC Randburg link prediction

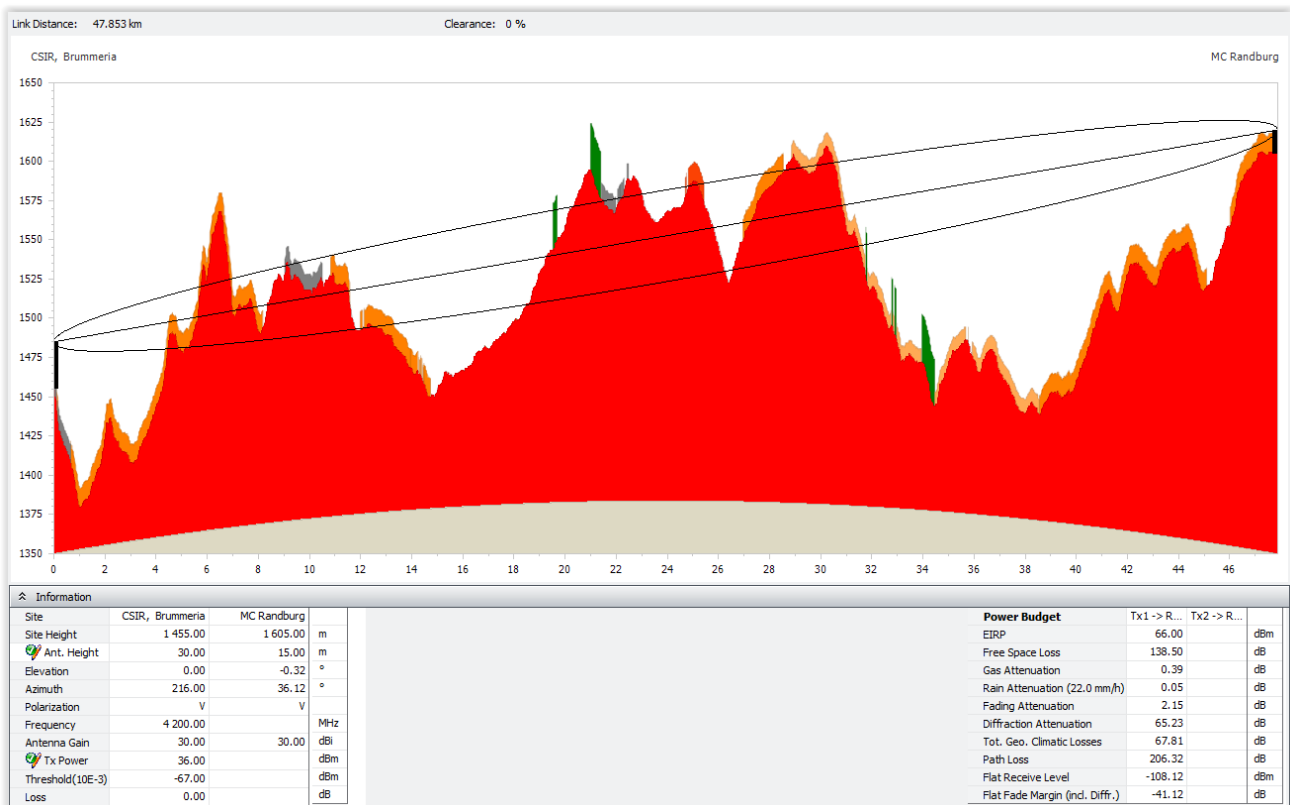


Figure 4 - CSIR, Brummeria to MC Randburg link prediction

## 2.1.4 CSIR, Brummeria to MC Randburg (low power) link prediction (Tx Power 27 dBm)

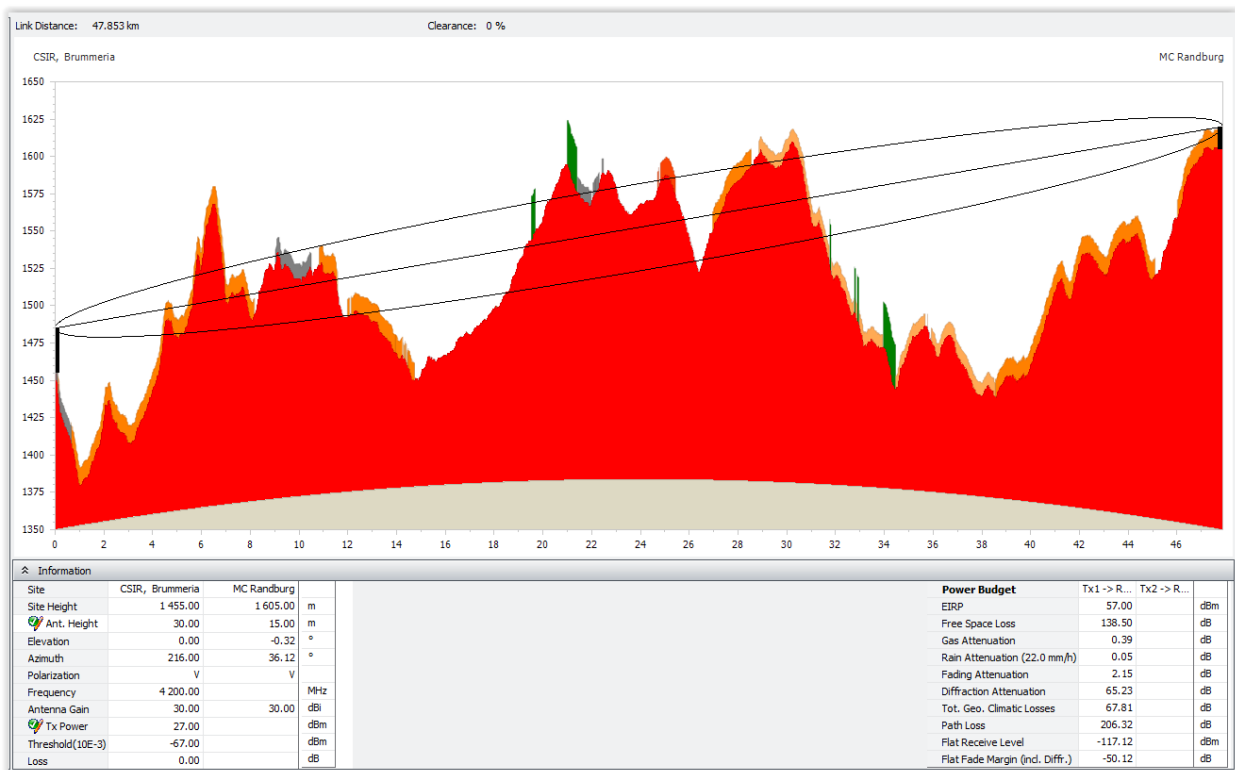


Figure 5- CSIR, Brummeria to MC Randburg low power

link prediction

## 2.1.5 CSIR, Brummeria to Sentech, Pretoria link prediction

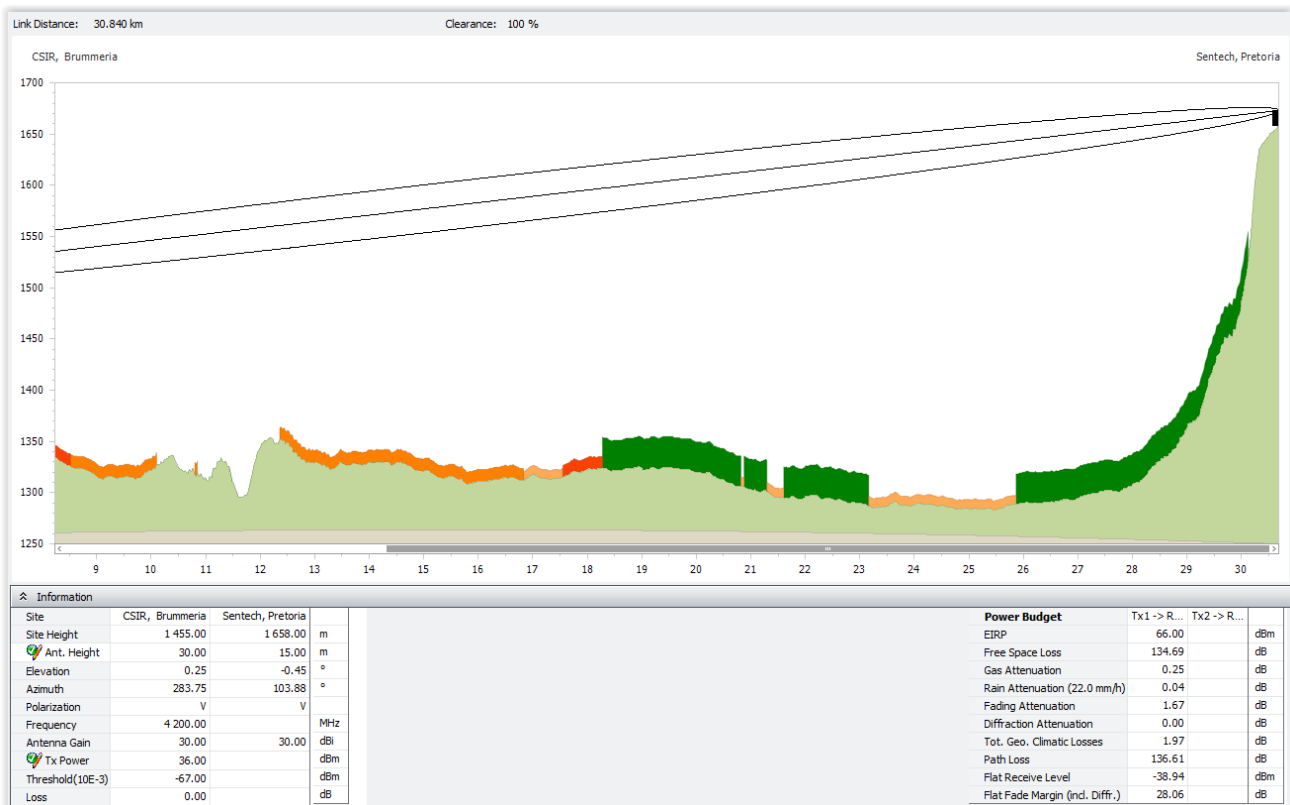


Figure 6 - CSIR, Brummeria to Sentech, Pretoria link prediction

## 2.1.6 CSIR, Brummeria to Monitoring point link prediction

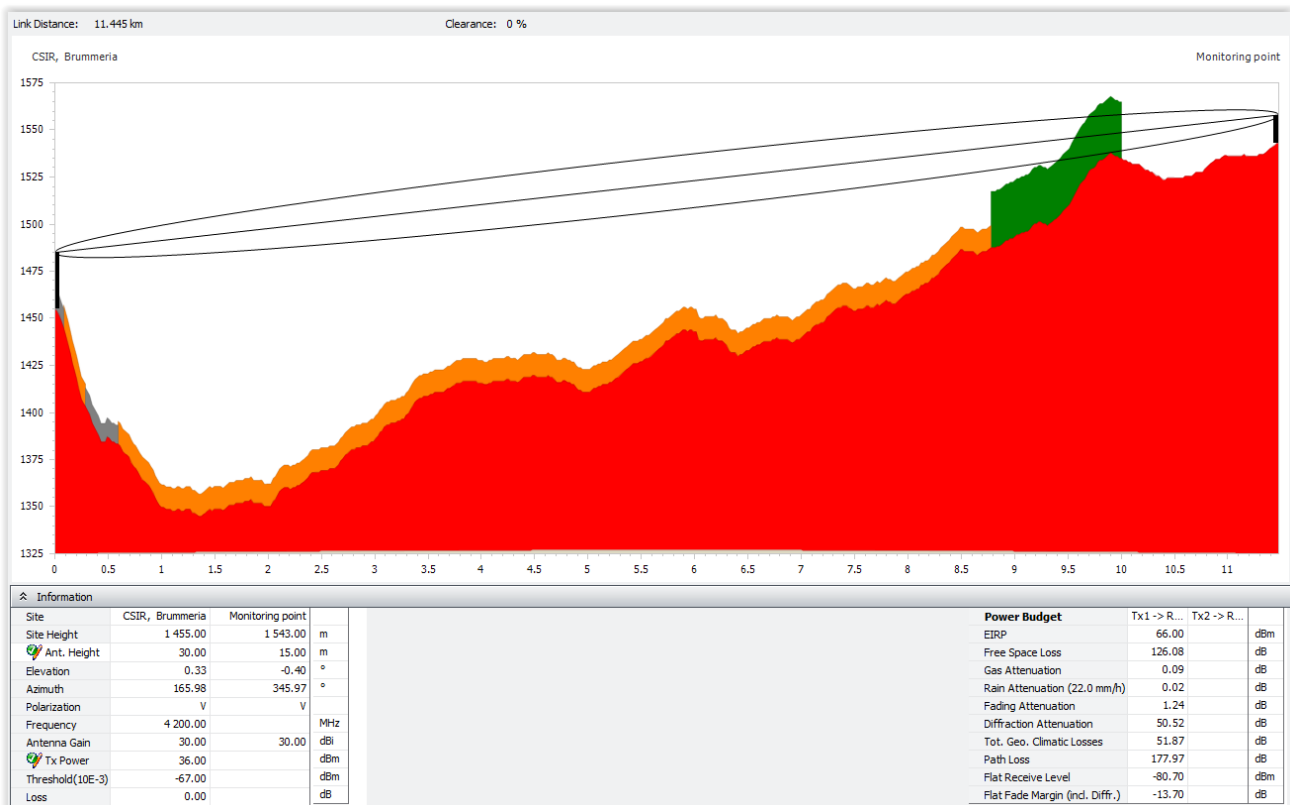


Figure 7 - CSIR, Brummeria to Monitoring point link prediction

## 2.1.7 CSIR, Brummeria to Embassy 1 link prediction

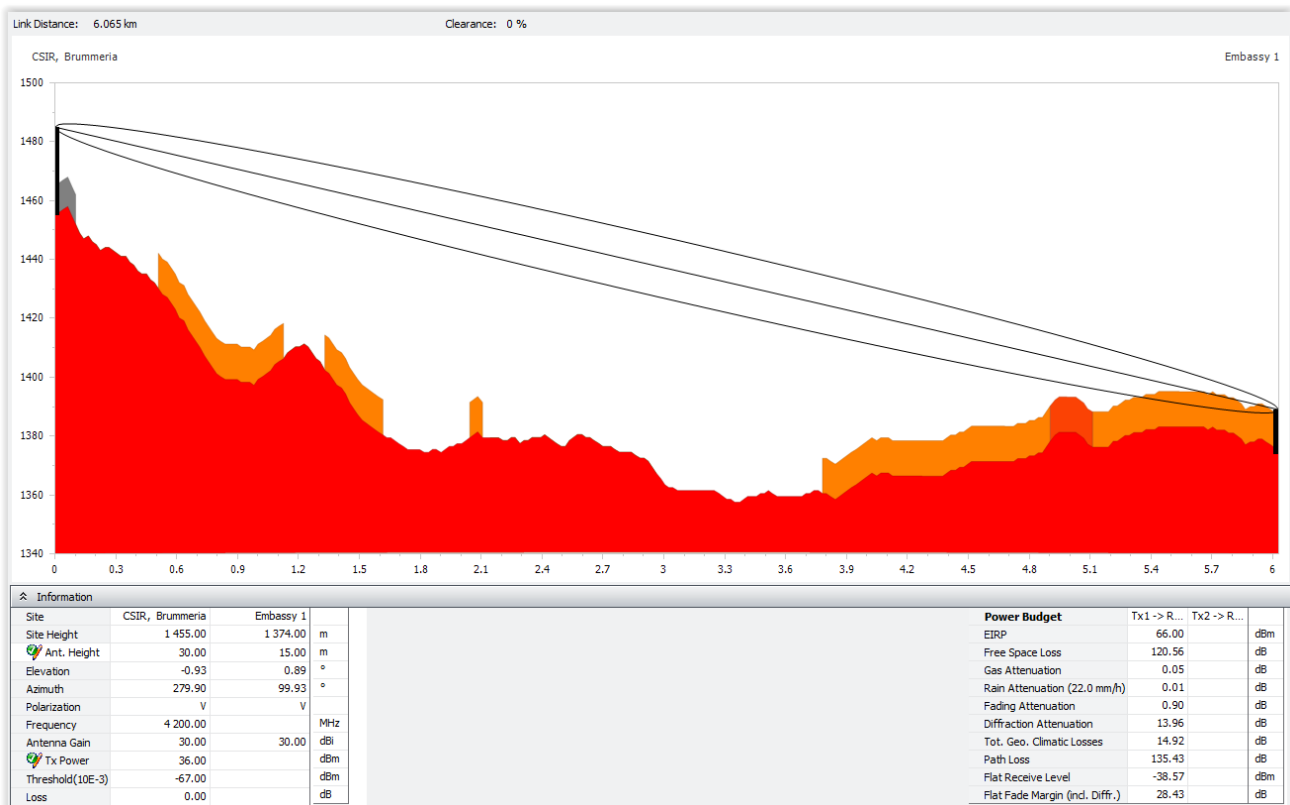


Figure 8 - CSIR, Brummeria to Embassy 1 link prediction

## 2.1.8 CSIR, Brummeria to Loftus Versfeld Stadium link prediction

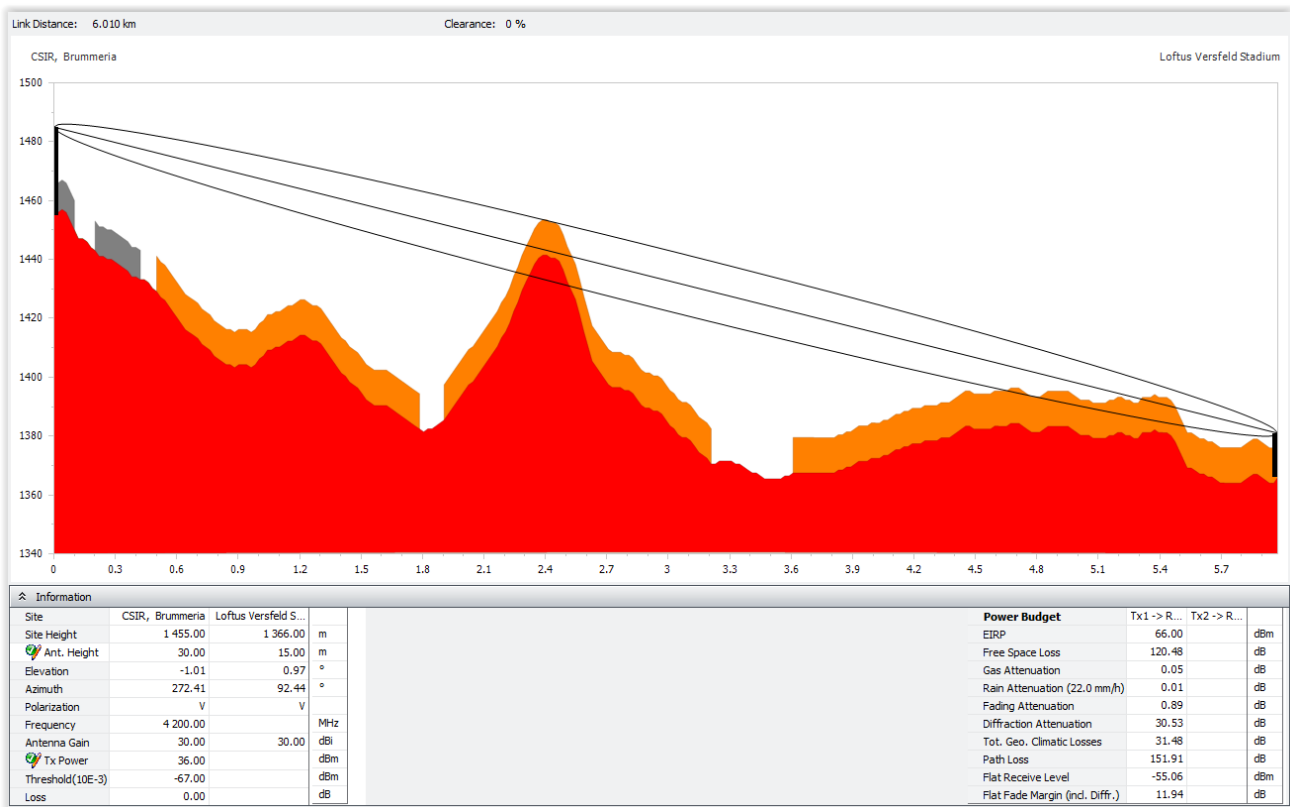


Figure 9 - CSIR, Brummeria to Loftus Versfeld Stadium link prediction

## 2.1.9 CSIR, Brummeria to Embassy 2 link prediction

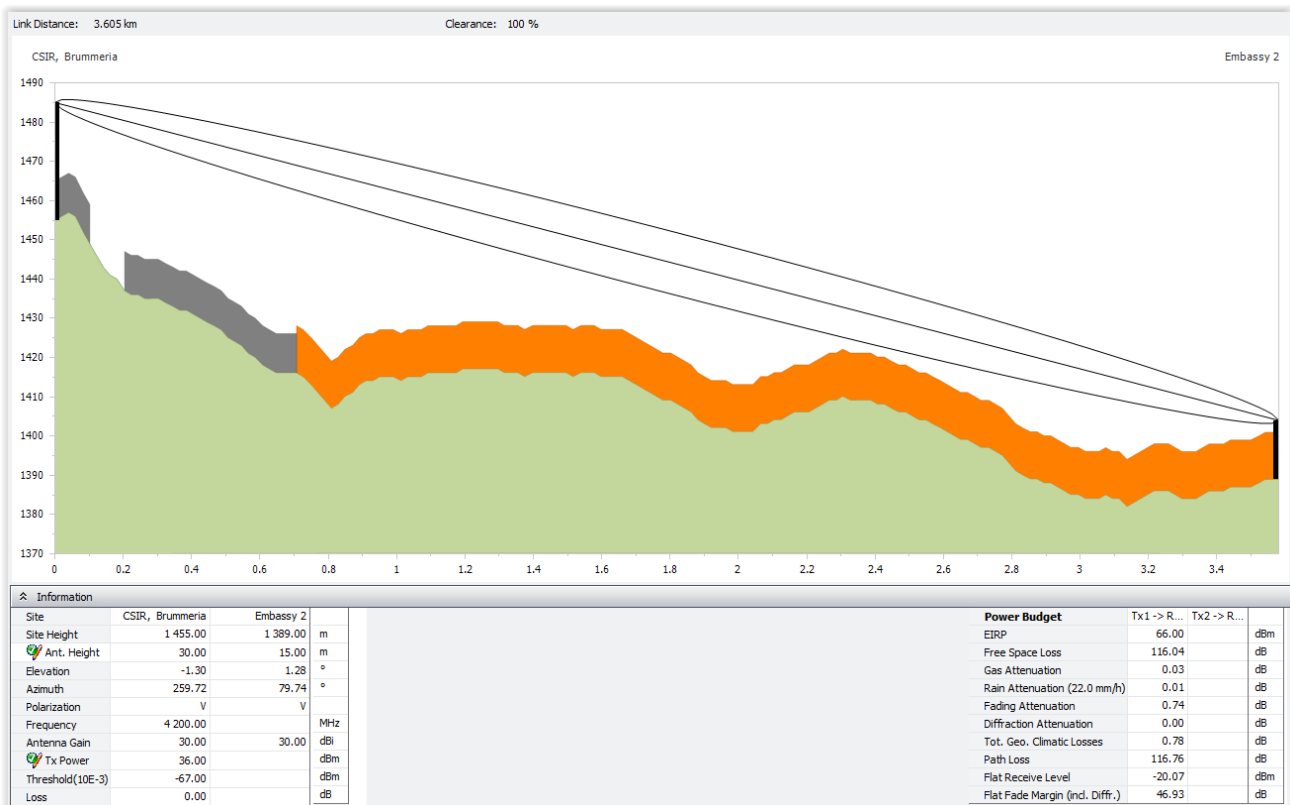


Figure 10 - CSIR, Brummeria to Embassy 2 link prediction

## 2.1.10 CSIR, Brummeria to O.R. Tambo International link prediction

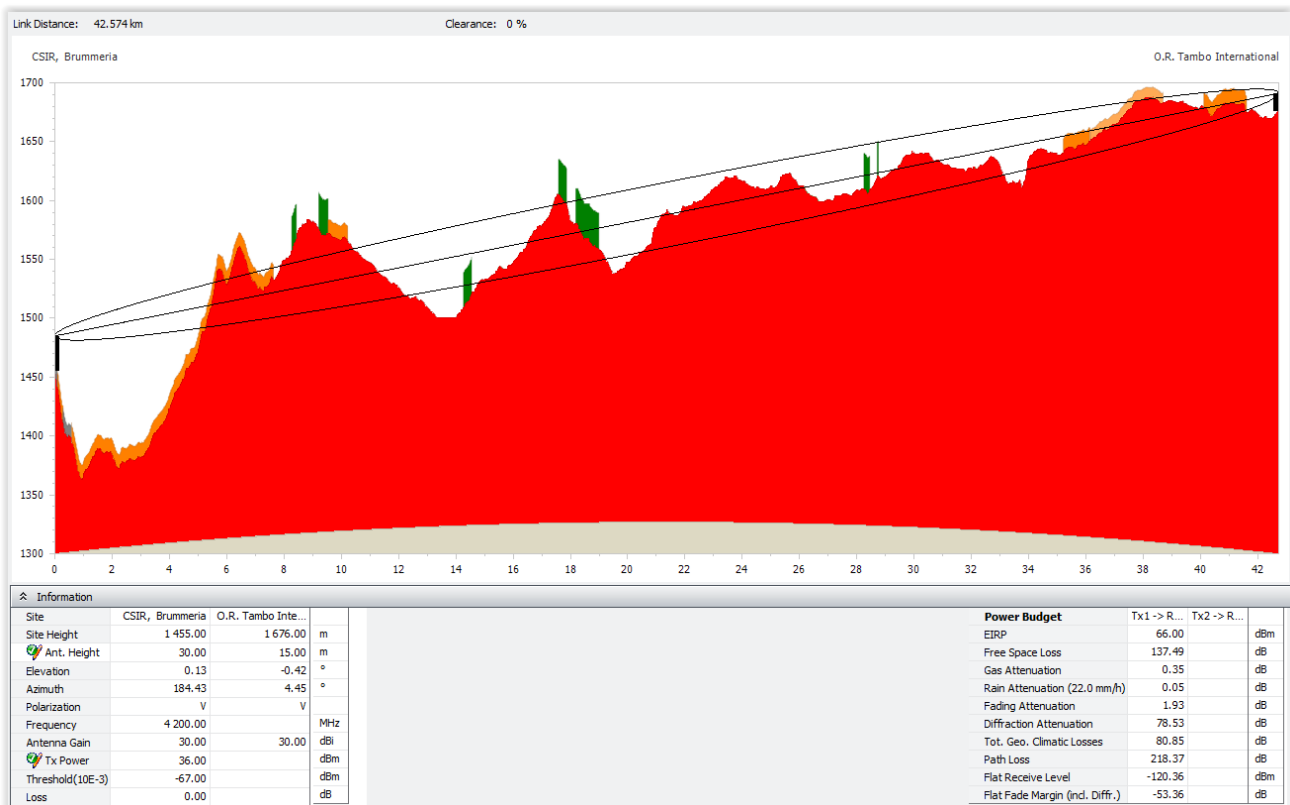


Figure 11- CSIR, Brummeria to O.R. Tambo International link prediction

### 3 Results of the investigation

The table below provides the total propagation losses and the flat receive level for all links as well as the EIRP levels transmitted from each transmission point.

| Site Name                | Latitude (DD) | Longitude (DD) | Antenna height (m) | Range (km) | Distance (km) | Frequency (GHz) | FSPL (dB)<br>Total all propagation losses | EIRP (CSIR, Brummeria) | Interference Power at receive point or Flat Receive Level(FRL)(dBm) |
|--------------------------|---------------|----------------|--------------------|------------|---------------|-----------------|-------------------------------------------|------------------------|---------------------------------------------------------------------|
| CSIR, Brummeria          | -25.755519    | 28.282903      | 30                 | 200        | 0             | 4.2             |                                           | 66                     |                                                                     |
| SANSA, Hartebeesthoek    | -25.88531     | 27.707454      | 15                 | 200        | 59.8          | 4.2             | 217.14                                    | 66                     | -118.46                                                             |
| MC Samrand               | -25.92925     | 28.138156      | 15                 | 200        | 24.2          | 4.2             | 231.41                                    | 66                     | -133.56                                                             |
| MC Randburg              | -26.103473    | 28.001188      | 15                 | 200        | 48            | 4.2             | 206.32                                    | 66                     | -108.12                                                             |
| MC Randburg(low power)   | -26.103473    | 28.001188      | 15                 | 200        | 48            | 4.2             | 206.32                                    | 57                     | -117.12                                                             |
| Sentech, Pretoria        | -25.689285    | 27.983905      | 15                 | 200        | 31            | 4.2             | 136.61                                    | 66                     | -38.94                                                              |
| Monitoring point         | -25.855397    | 28.310616      | 15                 | 200        | 11.5          | 4.2             | 177.97                                    | 66                     | -80.70                                                              |
| Embassy 1                | -25.746124    | 28.223237      | 15                 | 200        | 6.09          | 4.2             | 135.43                                    | 66                     | -38.57                                                              |
| Loftus Versfeld Stadium  | -25.753234    | 28.222939      | 15                 | 200        | 6.04          | 4.2             | 151.91                                    | 66                     | -55.06                                                              |
| Embassy 2                | -25.761299    | 28.24748       | 15                 | 200        | 3.61          | 4.2             | 116.76                                    | 66                     | -20.07                                                              |
| O.R. Tambo International | -26.137307    | 28.249935      | 15                 | 200        | 42.7          | 4.2             | 218.37                                    | 66                     | -120.36                                                             |

You will also notice that we included a second link result for the CSIR to MC Randburg with reduced transmit power of 27dBm as requested.