

*Telefonica*

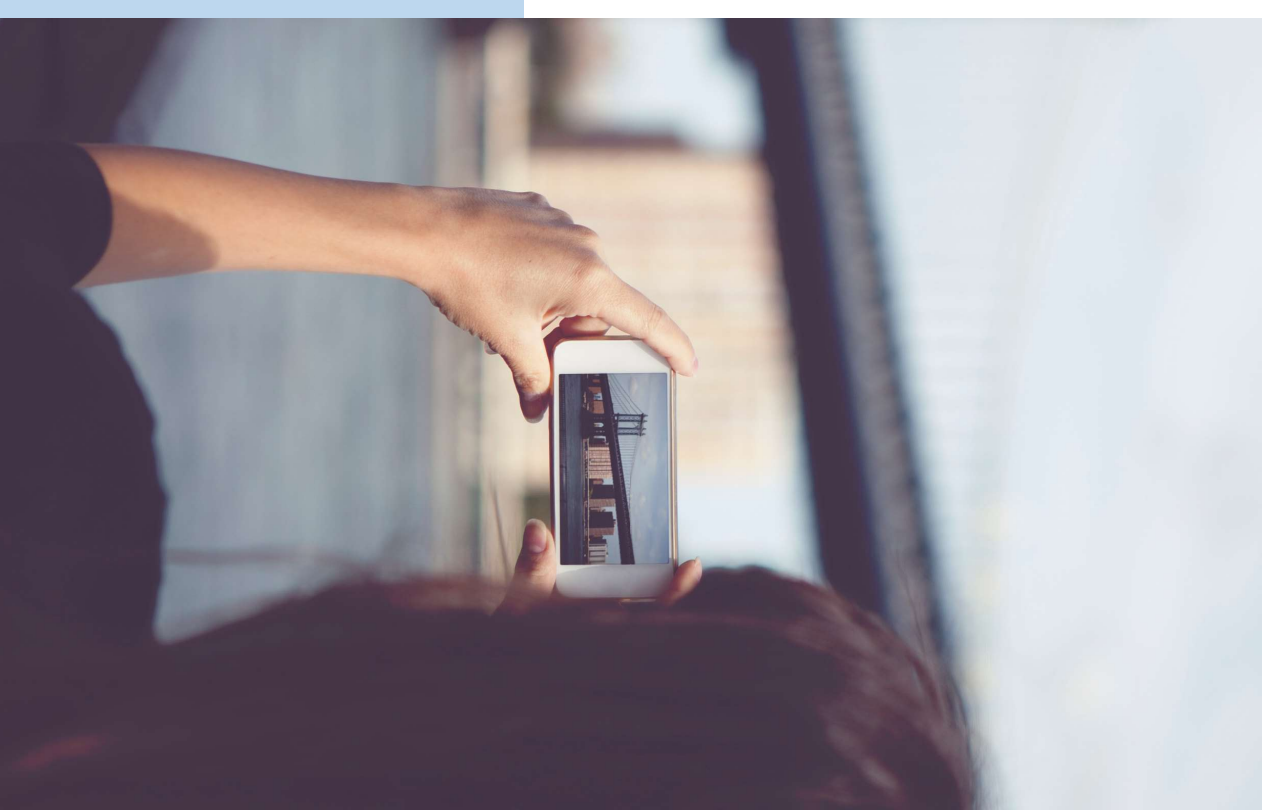
---

# Antenna Information for Council planners

## *General Information Document*

General Information for use as required in local  
planning consultations

Dave Westrup  
Radio Design  
05.06.2020



## Antenna Coverage and Design – Camden Planners Questions

### London Borough of Camden Planners Antenna Questions

Questions have been asked by Camden Planners in regard to antenna deployment, design and use as follows.

1. Camden do not believe that antennas cannot operate horizontally. Could you explain why antennas are not installed horizontally, and the ramifications if we were to adopt such a configuration?

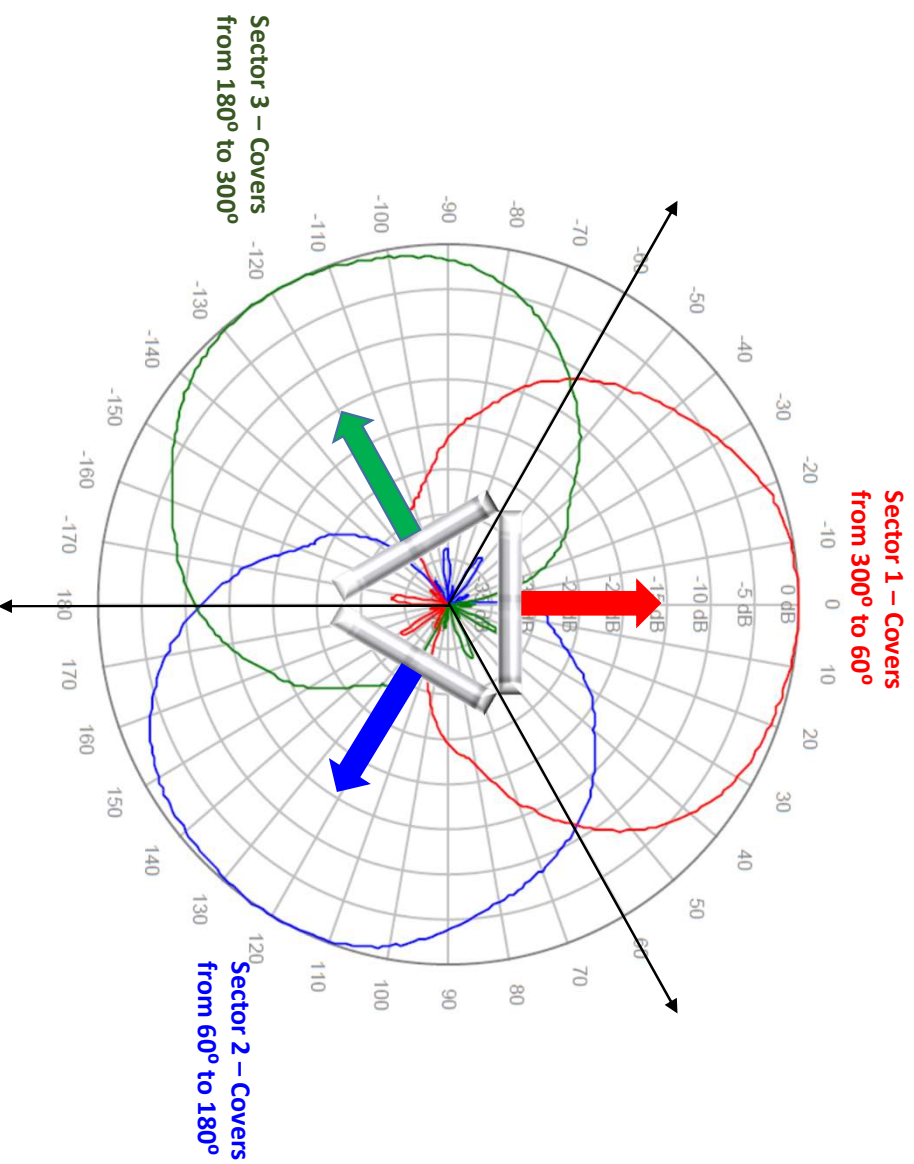
### Document Author Information

The author of this document is Dave Westrup, Antenna and RF Systems Engineer for Telefonica UK, working in the Central Design team and has worked in antennas for both Mobile and fixed Radio networks for nearly 40 years.

I am responsible for all antenna related design work for Telefonica UK, working closely with all worldwide antenna suppliers for Telefonica UK antenna requirements, antenna specifications and performance, other parts of Telefonica such as Spain and Germany for global antenna RFI's and specifications, and our Radio vendors Nokia, Ericsson and Huawei.

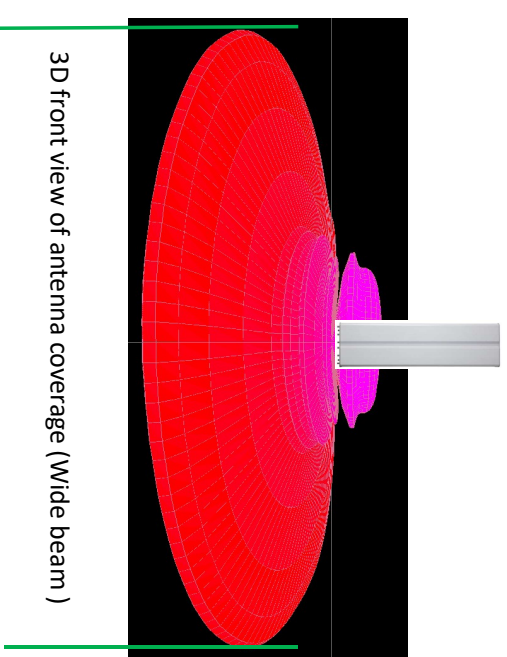
If further information or clarifications is required please contact the author at [dave.westrup@telefonica.com](mailto:dave.westrup@telefonica.com)

## Antenna Coverage – Correct Vertical Orientation of Antennas

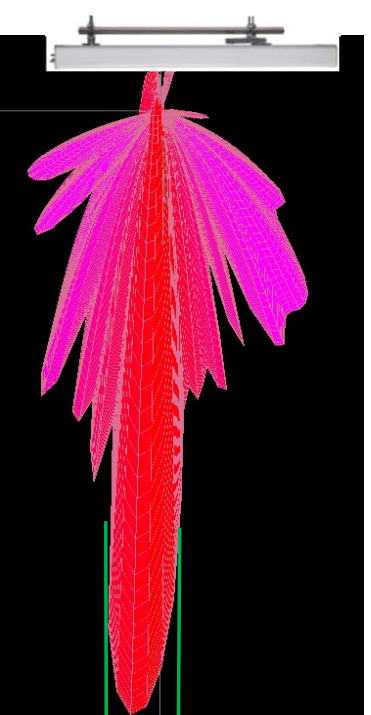


### Plan view (Birds eye view) of a 3 sector (antenna) cell site with *correct* vertically mounted antennas

Each antenna covers a nominal 120° area, so 3 antennas, mounted 120° apart, covers the full 360° area. The antenna coverage is similar to a disc, or plate, it is very wide (120°) in the azimuth (Horizontal plane ), and very narrow (10°) in the elevation (vertical plane)

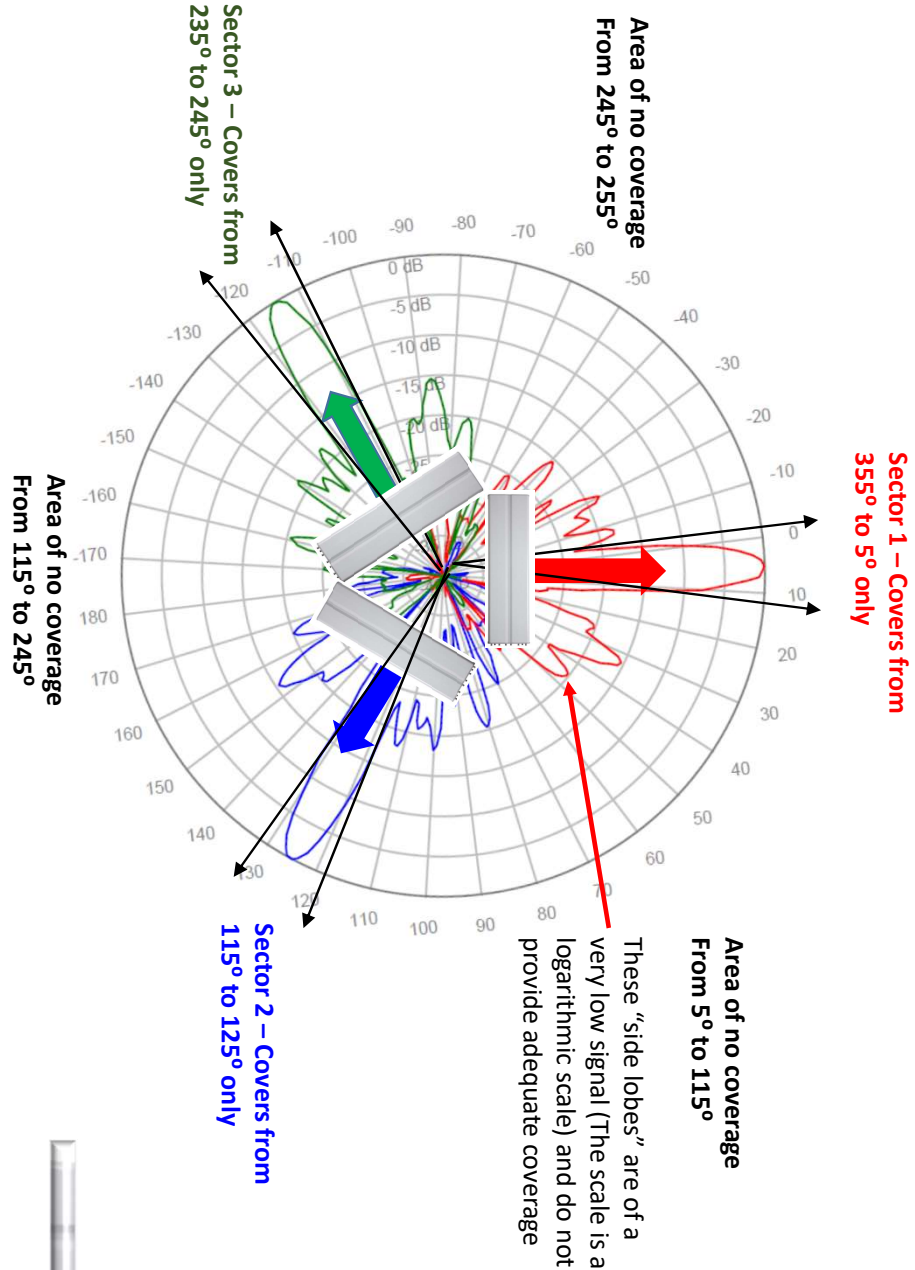


3D front view of antenna coverage (Wide beam )



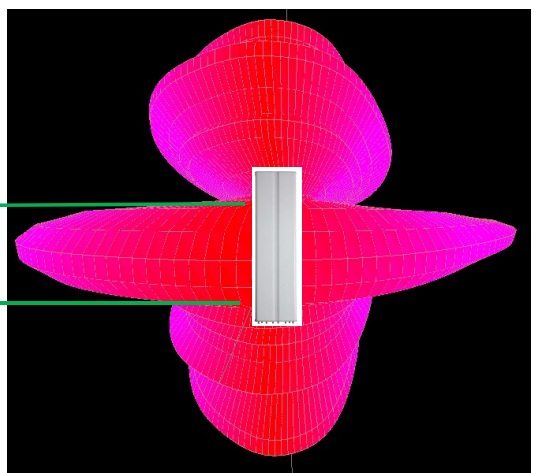
3D side view of antenna Coverage (Narrow Beam)

Antenna Coverage – Incorrect Horizontal Orientation of Antennas

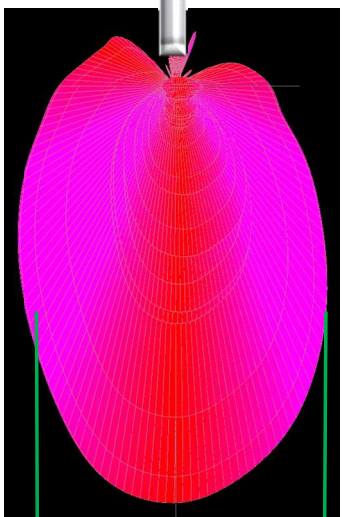


Plan view (Birds eye view) of a 3 sector (antenna) cell site with **Incorrect** Horizontal mounted antennas

If the antenna was mounted horizontal, the “Disc” has now been rotated 90°, so the wide beam is now vertically orientated, and the narrow beam is now horizontally orientated. Instead of each antenna covering 120°, each antenna would only cover approximately 10 Deg, so out of the 360° required coverage, only about 30° would be covered, leaving the customers in the rest of the 330° with no coverage.



3D front view of antenna coverage (Narrow azimuth beam )



3D side view of antenna Coverage (Wide Elevation Beam )