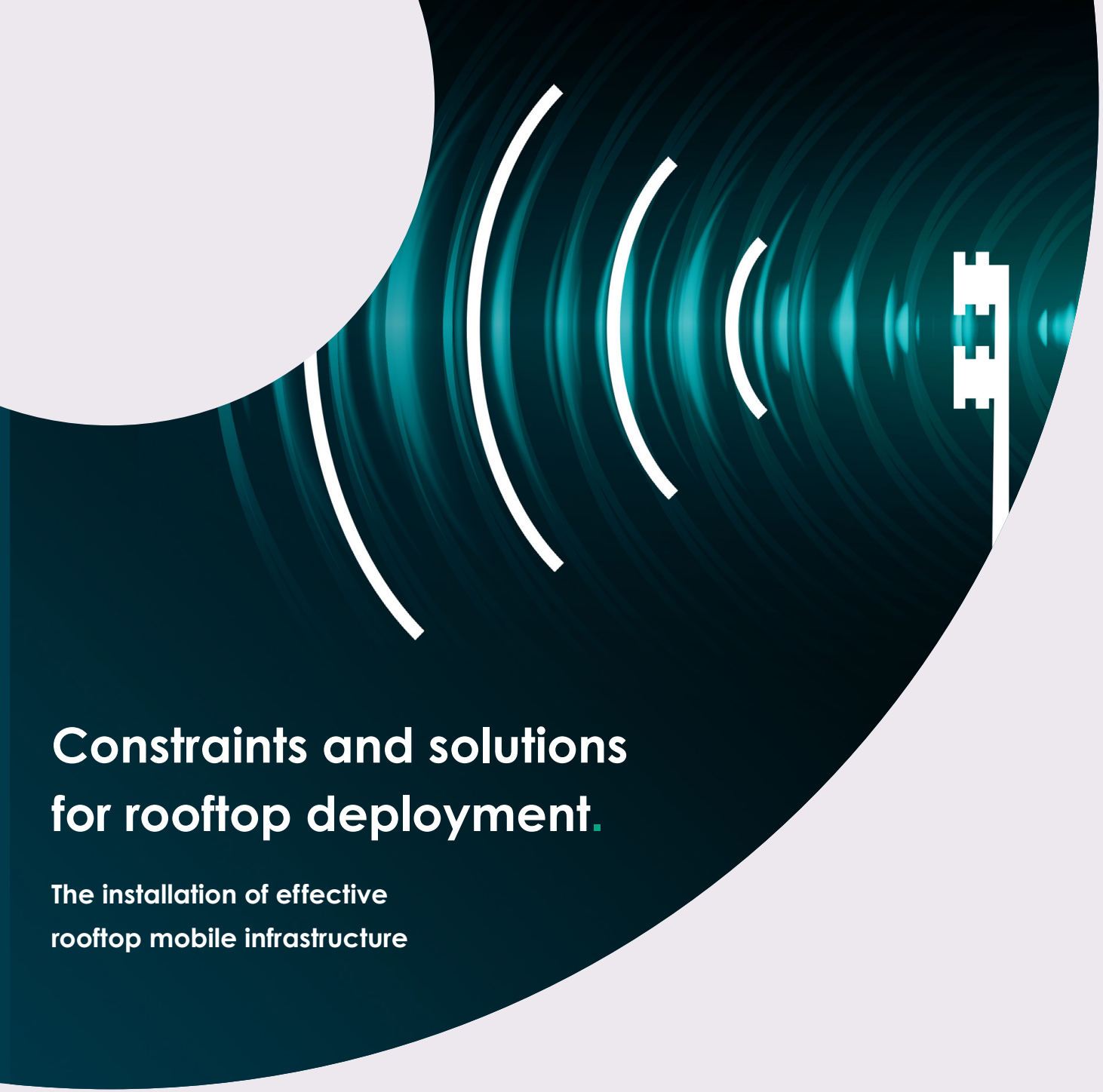


Constraints and solutions for rooftop deployment.

The installation of effective rooftop mobile infrastructure

cornerstone

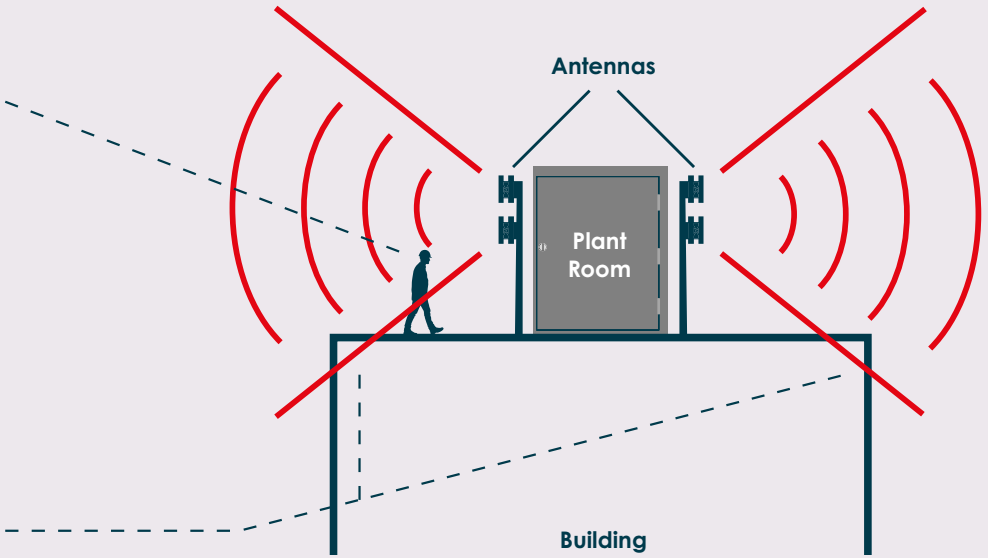
Scenario 1.

Antennas are of low elevation and set back from the rooftop edge.

This scenario is often considered the most visually sympathetic solution as antennas are both set back from the rooftop edge and are of lower elevation, so the perspective is difficult from ground level. However, this is rarely technically viable.

This person is accessing the rooftop and is in the exclusion zone – this is not ICNIRP compliant, as the antennas are too low.

With the antennas positioned here, "clipping" occurs. This is when the radio frequency signal propagation from an antenna 'clips' the building edge and radiates the building. This is not ICNIRP compliant and will impact radio performance and service provision to the point that the solution is unviable.



Each Scenario is indicative and a simplified version to demonstrate the technical constraints and solutions. Although 2D was used for simplicity, antennas must be carefully sited at locations on a building to provide 360 degree coverage, and must always be ICNIRP compliant.

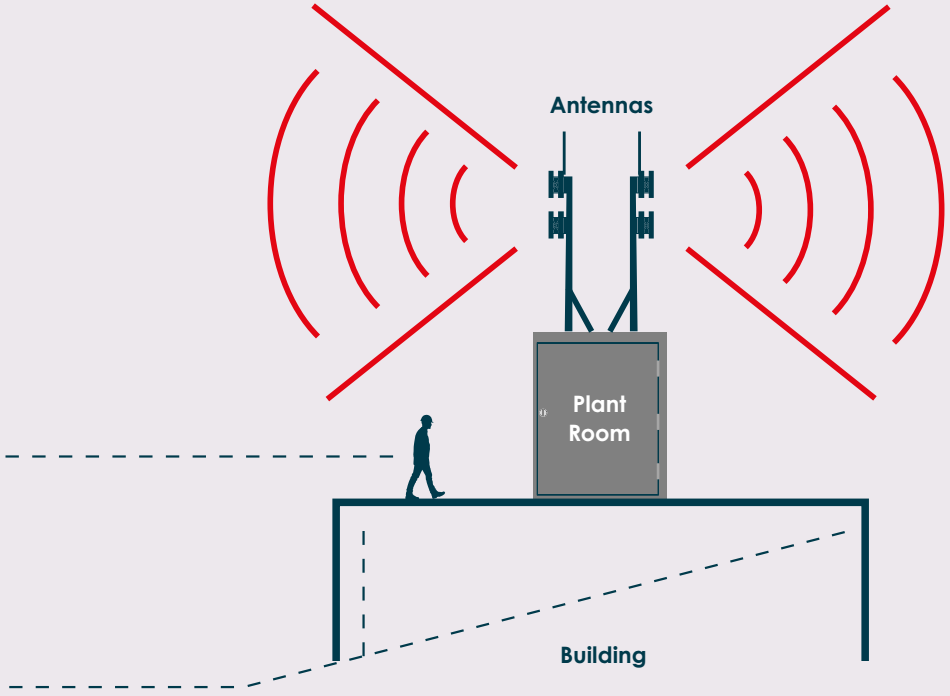
Scenario 2.

Antennas are set back from the rooftop edge and must be elevated.

This scenario is sometimes considered a more visually sympathetic solution, as the antennas are sited away from the rooftop edge, making the perspective more difficult from ground level. This solution means the antennas must be placed higher, which typically requires more robust support structures, and the essential additional height and bulk can be less desirable in some situations.

This person is accessing the rooftop and is not in the exclusion zone. As the antennas are of sufficient height, there is no RF 'clipping' and the rooftop remains accessible, which may be necessary for access to plant, maintenance or fire escape. The rooftop is safe to access and this ensures that the design remains ICNIRP compliant.

No rooftop edge clipping occurs – ICNIRP compliance is achieved, and there will be no impact upon radio performance or service provision – the design solution remains viable.



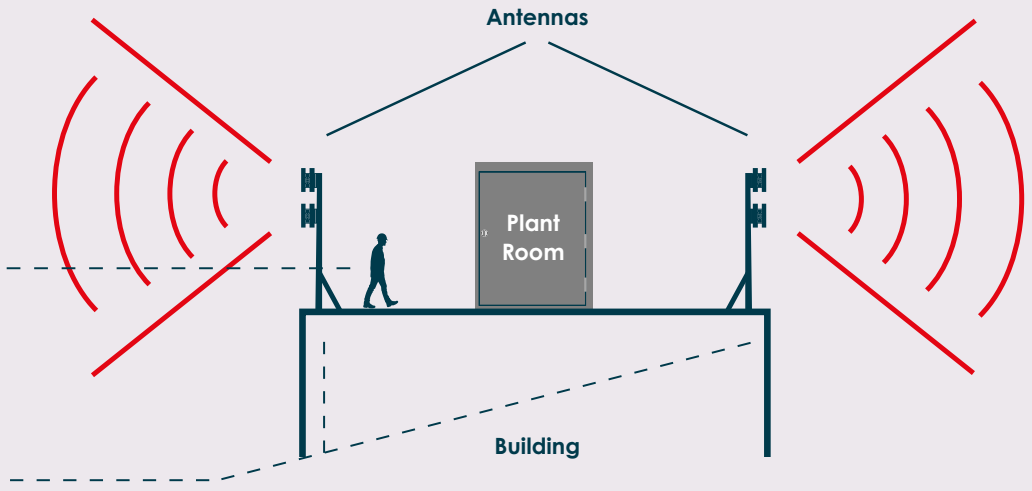
Scenario 3.

Antennas are near edge of rooftop, but less elevation may be required.

This scenario is sometimes considered a less visually sympathetic solution as the antennas are sited on the rooftop edge, making the perspective easier from ground level. However, with this solution there is a reduced necessity for additional antenna elevation, which typically means less structural bracing is needed. The reduced necessity for additional elevation and bracing can, in practice, be the most visually sympathetic solution in some situations, albeit closer to the rooftop edge. This is especially true on medium height to tall buildings, where the natural elevation of the building takes it away from the public realm and provides sufficient antenna elevation for viability.

This person is accessing the rooftop and is not in the exclusion zone. Antennas propagate outward – siting at the edge with outward orientation means that the rooftop remains accessible and there is no rooftop 'clipping'.

ICNIRP compliance is achieved and there will be no impact upon radio performance or service provision – the design solution remains viable.



GRP shrouding, which can mimic the external appearance and finish of the host building, can occasionally be used to make rooftop deployment more visually sympathetic. However, it has restrictions in terms of structural issues, due to wind loading and can add visual bulk. Every rooftop is different and has their own site-specific constraints, so it's important to note that solutions can vary to ensure they are fit for purpose. There is no single solution that fits all rooftops.