



A Developer's Guide

Designing Mobile Coverage Into Modern Residential Buildings

Why coverage problems occur, where they show up, and how to design them out before handover — not after.

Why Modern Buildings Have This Problem

Poor mobile reception is increasingly showing up as a post-handover defect — and it's not because buildings are being built poorly. It's the opposite. The same materials and methods that improve a building's energy efficiency, fire rating and structural strength also block the radio signals mobile phones rely on.

What's causing it

- **Reinforced concrete** — steel-reinforced slabs and columns absorb and reflect mobile signal effectively
- **Double and triple glazing** — low-E glass coatings, now standard for thermal performance, are particularly effective at blocking signal
- **Basements and undercroft parking** — below-ground, enclosed structures typically have no usable signal at all
- **Lift shafts and plant rooms** — surrounded by concrete and structural steel, almost always dead zones
- **Energy-efficient building envelopes** generally — insulation, sarking and metal-backed cladding all contribute to signal loss

None of this is a construction defect in the traditional sense — the building is performing exactly as designed. But to a resident, a dropped call in the lift or no signal in the main bedroom looks and feels like one.

Where Coverage Problems Show Up

Apartment buildings

Coverage is inconsistent floor to floor and even room to room within the same unit. Deep floor plans put bedrooms, bathrooms and home theatres well away from any external wall, and orientation away from the nearest tower makes it worse.

Basement and undercroft car parks

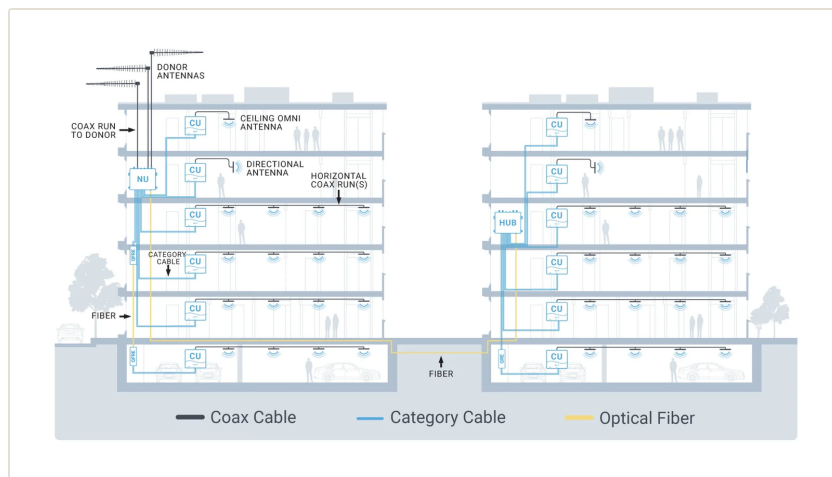
Almost always complete dead zones — fully or partially enclosed by concrete and earth, with no line of sight to any tower. Beyond convenience, this is increasingly treated as a duty-of-care issue: residents need to be able to call for help if they have an accident or feel unsafe.

Luxury homes

High-end builds use the same problem materials at a smaller scale — extensive glazing, steel framing, and basement-level theatres, cellars and garaging — often on larger blocks already further from the nearest tower.

Common complaint areas, building-wide

- Basement and undercroft car parks
- Bedrooms without external-facing windows
- Internal bathrooms and home theatres
- Lift lobbies and internal corridors
- Rooftop recreation and common areas



Example DAS layout across a multi-storey residential building — donor antennas on the roof feed coverage units on every floor and in the basement car park.

Cel-Fi vs DAS: Which Is Right for a Project

Both are carrier-approved solutions — the right choice depends on the scale and complexity of the building.

	Cel-Fi	DAS (Distributed Antenna System)
Best for	A single building or residence	Larger or multi-zone buildings, multiple floors
Speed / cost	Faster to deploy, lower cost	Scales further, higher upfront investment
How it works	Carrier-approved booster unit	Distributed antenna network across zones/floors
Typical fit	Single apartment, luxury home	Apartment building, mixed-use development

In practice, Cel-Fi Quatra units are often used as part of a hybrid DAS architecture — combining booster technology with distributed antenna infrastructure for larger developments.



Cel-Fi Quatra network units, wall-mounted as part of an equipment cabinet.

Why Design Stage Matters

Mobile coverage is almost always treated as an afterthought — addressed only once residents start complaining. By then, the fix is harder and more expensive.

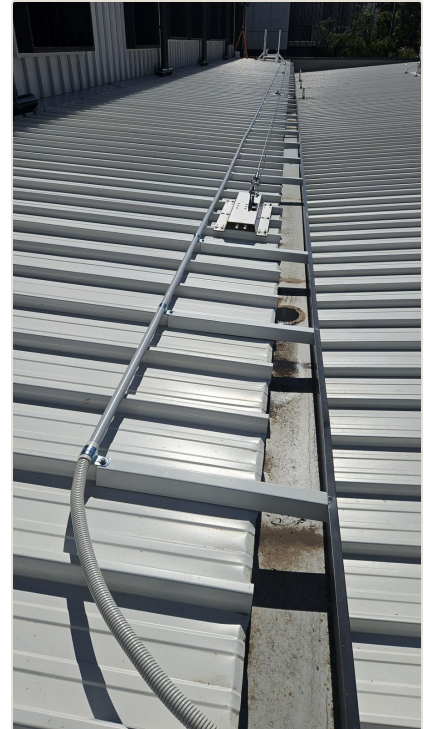
Left until after handover

- Cabling retrofitted through finished walls, ceilings and risers
- Equipment squeezed into whatever space remains
- Strata or body corporate left managing cost, approvals and disruption
- Reputational risk if complaints surface during sales or leasing

Considered at design stage

- Cabling runs through the same risers and ceiling voids as other services
- Equipment room space allocated on the floor plan before construction begins
- System sized correctly for the building's actual floor plan and materials
- Multi-carrier support built in from the outset, at minimal incremental cost

A site survey and coverage design can typically run in parallel with other design-stage services — it doesn't require a completed structure, only confirmed building plans.



Cable runs and roof penetrations planned in from the start, rather than retrofitted later.

Younifi's Process

The same structured process we bring to every in-building coverage project, adapted to residential and mixed-use developments.

1

Site Survey

On-site radio survey (Compass XR) measures actual signal conditions before any antenna is installed.



2

System Design

RF modelling and floor-by-floor analysis determine the right mix of Cel-Fi, DAS, or both.

3

Carrier Validation

Designs validated against Telstra, Optus and Vodafone network requirements before installation.

4

Installation

Certified installation of the antenna network, cabling and equipment, sequenced to the build program.

5

Commissioning

System testing and optimisation to confirm performance against the original design.

6

Documentation & Handover

As-built documentation and system configuration records provided to the building.

Multi-Carrier & Future-Proofing

A system designed for only one carrier creates a problem later — residents on other networks are left without a fix, or the building faces a costly retrofit.

Built in from day one

The Cel-Fi Quatra platform supports up to four independent carrier connections in a single system. Because the additional donor antennas and cabling are comparatively minor works, it costs little more to build in Telstra, Optus and Vodafone support from the start than to retrofit it later.



One Cel-Fi unit per carrier — Telstra, Optus and Vodafone — inside a single equipment cabinet.

Built to scale

Residential developments change over time — additional stages, changing floor plans, or increased common-area usage. A Quatra DAS is modular: coverage units and antennas can be added to extend the system without replacing the core infrastructure.

Compliance

Anything that boosts or rebroadcasts mobile signal indoors must be carrier-approved — unapproved equipment can be shut down remotely by carriers and can breach ACMA regulations. Younifi designs and deploys only carrier-approved Cel-Fi and Quatra systems.

Talk to Younifi Before You Finalise Your Design

The earlier mobile coverage is considered, the cheaper and simpler it is to get right. Book a design-stage consultation and get a straightforward assessment of what your project will need.

younifi.net.au/contact-us



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