A Comprehensive Guide to Choosing the Right Camera

Why Most "Best CCTV Camera" Lists Are Wrong — And Why the Cameras They Recommend Can't Give You Detail Beyond 4–5 Metres

If you've ever searched Google for "best CCTV camera", "top home security cameras", or "best outdoor CCTV system", you've probably noticed something strange. Every list looks almost identical. The same brands. The same compact housings. The same ultra-wide lenses. The same promises of "4K clarity", "AI detection", and "crystal-clear night vision".

And yet, when people install these cameras in the real world — on a driveway, overlooking a yard, inside a barn, or outside a workshop — they quickly discover something the marketing never mentions:

These cameras can't give you usable detail beyond 4–5 metres, no matter how many megapixels they claim to have.

We know this because we spend our days helping people who've already bought these systems and are now frustrated, confused, and often a bit angry. They were promised "4K". They were promised "AI". They were promised "professional-grade security". What they got was a wide, dramatic image that looks impressive until they actually need it.

The truth is simple, and it's the foundation of everything we do:

CCTV performance is governed by physics, not marketing.

And the physics are brutally clear. If the lens is wrong, the camera is wrong. If the field of view is too wide, the pixels are too thinly spread. If the subject is too far away, the detail simply isn't there.

This article explains exactly why the cameras dominating Google search results are under-powered for real security — and what we do differently. We'll break down the three core principles that determine whether a camera can actually protect you, expose the tricks the industry uses to sell wide-angle cameras, and show how these issues play out in real homes, farms, and businesses.

By the end, you'll understand why most consumer cameras fail — and how to choose a system that actually works.

The Three Core Truths of CCTV Performance

Everything in CCTV comes back to three simple, unavoidable truths:

1. **Lens choice controls pixel density**

2. **Field of view controls how pixels are spread**

3. **Distance destroys detail unless the lens is correct**

These three principles shape everything we do. They're the reason our systems work in the real world while consumer systems fail. They're the reason we spend so much time talking about lenses, angles, and mounting height. And they're the reason we don't chase megapixels or gimmicks.

Let's break them down properly — in plain English, with real-world examples.

1. Lens Choice Controls Pixel Density

Pixel density is the number of pixels available per metre of the scene. It's the real measure of detail in CCTV. Not megapixels. Not "4K". Not AI. Pixel density.

If you want to identify a face, read a number plate, or recognise a vehicle, you need enough pixels covering that subject. And the only thing that controls pixel density is the lens.

A 2.8mm lens spreads the pixels across a huge area.
A varifocal camera adjusted to 6mm concentrates them.
And adjusted to 8mm or 12mm lens concentrates them even further.

This is why a 6MP camera with the correct lens will outperform a 12MP camera with the wrong lens every single time. The resolution number on the box is irrelevant if the pixels are spread too thinly.

When customers come to us after trying consumer systems, this is almost always the root cause of the problem. They've bought a "4K" camera with a 2.8mm lens, mounted it above the garage, and expected it to read number plates at the end of the driveway. It can't. It never could. The lens makes it physically impossible.

This is why we design systems around the lens first. Once the lens is correct, everything else falls into place.

2. Field of View Controls How Pixels Are Spread

Field of view (FOV) is the width of the scene the camera captures. A wide FOV looks impressive, but it comes with a cost: the pixels are spread thinly across the image.

This is why wide-angle cameras lose detail so quickly as distance increases.

A typical 2.8mm lens produces a very wide image — often 90° to 110°. At first glance, it looks like excellent coverage. But the moment you try to zoom in on a face or number plate, the detail simply isn't there.

This is why wide-angle cameras fail in:

- Driveways
- Long gardens
- Commercial yards
- Barns and machinery sheds

They're designed for coverage, not clarity.

We see this constantly. A customer shows us footage from a consumer camera and says, "Look, you can see the whole driveway!" And they're right — you can. But you can't see who's walking up it. You can't read the number plate. You can't identify anything beyond a few metres.

Coverage is the illusion.
Detail is the reality.

3. Distance Destroys Detail Unless the Lens Is Correct

Distance is the enemy of identification. As the subject moves further away, the number of pixels covering that subject decreases rapidly. This isn't a gradual decline. It's exponential.

A person standing 2 metres from a wide-angle camera might occupy 300 pixels in height.
At 6 metres, they might occupy 80 pixels.
At 10 metres, they might occupy 40 pixels.
At 15 metres, they might occupy fewer than 20 pixels.

That's not enough for identification. Not even close.

This is why wide-angle cameras fail in real-world environments. The distances involved are simply too great for the pixel density available. No amount of resolution can compensate for the loss of pixels per metre as distance increases.

This is also why we recommend varifocal cameras for different environments. A driveway might need the lens adjusted to 6mm. A vehicle gate might need it adjusted to 8mm or 12mm. A barn interior might have a variety of different priorities e.g. entrance or to cover machinery so several cameras may be required to remove any hiding spots.

When the lens matches the distance, the camera works. When it doesn't, it fails.

Why Online "Top 10 Camera" Lists Keep Recommending the Wrong Products

Now that we've covered the physics, let's talk about the industry — because the industry is the reason so many people end up with the wrong cameras.

Online camera lists exist for one reason: affiliate revenue. When you click a link and buy a camera, the website earns a commission. This shapes everything about the list.

Affiliate-driven content prioritises:

- Products with high sales volume

- Products with mass-market appeal

- Products available on major retail platforms

This automatically excludes the kind of specialist, purpose-built cameras we supply. Our cameras aren't designed for impulse buying. They're designed for performance. They require explanation, context, and proper system design — none of which fit the affiliate-list model.

The result is a cycle where the same wide-angle, under-powered cameras dominate every list simply because they sell well, not because they perform well.

These lists ignore lens choice entirely. They ignore pixel density. They ignore identification distances. They ignore the physics. They focus on megapixels, AI features, and app screenshots — because those are easy to sell.

This is why the cameras in online lists are almost always the wrong choice for real security.

Why Consumer Cameras Are Designed to Fail at Distance

Consumer cameras are designed for convenience, not performance. They prioritise:

- A wide, dramatic image

- A high megapixel number

- A compact, modern appearance

These features look good in marketing photos and on retail shelves, but they do not produce identification-level footage. They are built for general awareness, not for securing driveways, barns, machinery sheds, or commercial yards.

This is why so many people come to us after trying consumer systems. They've bought a "4K" camera, mounted it under the eaves, and expected it to capture detail at 10–15 metres. It can't. It never could. The lens makes it impossible.

When we replace the wide-angle camera with a properly-lensed camera, the difference is immediate. Faces become recognisable. Number plates become readable. Activity becomes clear. The system stops being decorative and starts being protective.

Real-World Examples: Residential, Commercial, and Agricultural

Let's look at how these issues play out in real environments.

Residential: The Driveway That Never Gets Enough Detail

Most homeowners want a camera that can capture:

- Vehicles entering or leaving

- Number plates

- People approaching the front door

A typical driveway is 8–12 metres long. A wide-angle camera loses identification-level clarity long before that. This is why so many homeowners discover that their "4K" camera can't read a number plate parked right in front of their house.

When we design a driveway system, we choose the lens based on the length and shape of the driveway. A varifocal camera lens adjusted 6mm or 8mm often transforms the footage from "nice to look at" to "usable evidence".

Commercial: The Yard That Looks Covered but Isn't Protected

Commercial properties often have large open areas: loading bays, car parks, storage yards, or delivery zones. These spaces create a false sense of security when viewed through a wide-angle camera. The image looks like it covers everything, but the detail is spread so thinly that nothing meaningful can be identified.

When we design commercial systems, we break the area into zones and assign the right camera to each zone. A loading bay might need a 6mm lens. A vehicle gate might need an 8mm or 12mm lens. A storage area might need a varifocal camera.

When the lenses match the environment, the yard becomes a controlled, monitorable space rather than a wide, blurry expanse.

Agricultural: The Barn or Machinery Shed That Needs More Than "Coverage"

Agricultural environments expose the weaknesses of wide-angle cameras more brutally than any other setting. Barns, machinery sheds, and remote outbuildings often have:

- Long internal sight lines

- Large open entrances

- Valuable equipment stored at distance

A wide-angle camera might show the entire interior, but it won't capture the detail needed to identify someone walking 10–15 metres inside.

When we design agricultural systems, we use cameras with narrower lenses positioned to capture entrances, walkways, and high-value areas. This ensures that even in large, open buildings, the footage remains usable rather than decorative.

Why "Coverage" Is a Misleading Concept

Coverage refers to how much of the scene the camera can see. Wide-angle cameras excel at this. They capture large areas, making the footage look impressive at first glance. But coverage alone does not provide security. It only provides awareness.

A wide-angle camera can show:

- A person entering the scene

- A vehicle moving through the frame

- Activity happening in the distance

But it cannot show who the person is or what the vehicle's number plate says. It cannot provide the detail needed for evidence. It cannot support an investigation.

Coverage is the illusion.
Detail is the reality.

Why Mounting Height and Angle Matter Just as Much as the Lens

Even the perfect lens will underperform if the camera is mounted too high, too low, or pointed in the wrong direction. Mounting height determines the angle at which the camera views the subject. Too high, and you end up with the classic "top of the head" problem. Too low, and the camera becomes vulnerable or loses perspective.

Angle is equally important. If the camera is pointed too far down, the field of view collapses into a small patch of ground. If it's pointed too far out, the subject becomes too small in the frame.

When height, angle, and lens work together, the camera becomes a precision tool. When they don't, it becomes a wide-angle decoration.

Why "One Camera to Cover Everything" Never Works

This is one of the biggest misconceptions in CCTV. People often ask us for "one camera to cover the whole driveway" or "one camera to cover the whole barn". But a single camera cannot provide both coverage and identification. It's physically impossible.

A camera designed for coverage must be wide.
A camera designed for identification must be narrow.

You cannot have both in one device.
You need two cameras — one for context, one for detail.

This is why our systems often use multiple cameras with different lenses. Each camera has a job. Each camera is a tool. When you combine them, you get a system that actually works.

Why AI, 4K, and Software Tricks Don't Fix the Optical Problem

Many consumer cameras claim to use AI to "enhance detail" or "improve clarity". But AI cannot create pixels that do not exist. It can only sharpen edges, guess patterns, or interpolate missing information. It cannot increase pixel density. It cannot compensate for a lens that is too wide. It cannot overcome the physics of distance and geometry.

This is why we focus on optical performance first. When the lens, angle, and mounting height are correct, the camera produces usable detail naturally — without relying on digital enhancement.

Why Our Approach Works

Our approach is simple:

- Choose the right lens

- Control the field of view

- Match the camera to the distance

- Mount it at the correct height

- Angle it correctly

- Use multiple cameras when necessary

When you do this, the system works. It produces clear, detailed, usable footage. It captures faces, number plates, and activity. It protects your property rather than simply recording it.

This is why our customers consistently tell us that our systems outperform anything they've tried before. It's not because our cameras are magical. It's because we design them around the physics.

Why Most Cameras Online Are Under-Powered — And How to Choose a System That Actually Works

Most cameras recommended online are under-powered because they are designed for convenience, not performance. They use wide-angle lenses that spread pixels too thinly. They rely on megapixels and AI to distract from the optical limitations. They create a false sense of security by showing a lot while revealing very little.

Real security requires:

- The right lens

- The right field of view

- The right distance

- The right mounting height

- The right angle

When these elements work together, the system delivers clarity, not just coverage. It becomes a tool for protection rather than a gadget for notifications.

This is why we design systems the way we do. It's why we focus on lenses rather than megapixels. It's why we talk about pixel density rather than AI. It's why we spend so much time helping customers choose the right camera for the job.

Because when you understand the physics, you understand the truth:

Wide-angle cameras cannot deliver detail at distance.
The lens is everything.
And the right system is built, not bought.