

Drone Survey vs Flight Inspection for Airfield Aids

A dimension-by-dimension comparison of drone survey and aircraft flight inspection for verifying airfield visual aids, and what flips the recommendation.

DIRECT ANSWER

Drone-based survey and aircraft flight inspection both verify airfield aids, but they cover different things. A drone measures visual aid geometry and relative photometry from close range without booking a closure. An aircraft verifies radio navigation aids in the signal environment a pilot actually flies. Most aerodromes need one, some need both.

VERDICT

DRONE-BASED SURVEY

Aerodromes verifying visual aids, where runway availability is the binding constraint and the parameters wanted are geometry, colour, coverage, dimming behaviour and change since the last visit.

AIRCRAFT FLIGHT INSPECTION

Aerodromes with radio navigation aids, where an instrument landing system or a VOR has to be verified in the signal environment an aircraft actually flies, and the visual aids can ride along.

WHAT FLIPS THIS

If an aircraft is already contracted for the radio aids on a periodicity you cannot change, the marginal cost of adding the visual aids to that visit is small, and the drone only wins back the

difference if it also removes runway occupancy you are paying for elsewhere.

Scope, disclosure and method

This page compares two ways of verifying aerodrome aids: a drone-based survey flown between aircraft movements, and a conventional **flight inspection** performed by a crewed aircraft. It covers the European and UK market and it was verified on 4 September 2026.

The disclosure comes before the first claim. TarmacView sells the drone-based survey and does not sell aircraft flight inspection. Everything in the drone column is therefore a first-party claim, and the honest way to read this page is to check the drone column against the sources listed at the end rather than against the confidence of the prose.

The method behind the table is narrow on purpose. Each row states one fact per option with its unit, and where a fact is a vendor claim rather than an independent measurement it says so. Where neither option has published evidence, the cell says that instead of estimating. Prices are the clearest example: neither method has a published rate, and the only public number in this comparison is a contract value that covers a network of aerodromes.

METHOD COMPARISON

Drone survey against aircraft flight inspection

DIMENSION	DRONE-BASED SURVEY	AIRCRAFT FLIGHT INSPECTION
Visual aids covered	Glide slope indicators, approach lighting, edge and threshold arrays, taxiway lighting, markings and the approach obstacle surface	Glide slope indicator setting angles and the visual picture from the approach, at the depth the flight inspection manual specifies

DIMENSION	DRONE-BASED SURVEY	AIRCRAFT FLIGHT INSPECTION
Radio navigation aids	Not covered by this method yet. Radio aid verification by drone is in development	Instrument landing system, VOR, DME and related aids, which is the method's primary purpose
Absolute photometric intensity	Not measured directly. Needs a reference reading on site or a cross-calibration against a certified instrument	Not measured. An inspection aircraft carries no photometer
Relative intensity and colour	Measured as channel ratios across units on one flight, which is independent of exposure	Assessed by the inspector's eye against the expected picture
Positioning reference	RTK GNSS tied to a base station and a geodetic frame, quoted at centimetre level	Aircraft navigation and reference systems, quoted at the accuracy the inspection manual requires
Runway occupancy per set	No closure booked. Flown between movements. Roughly 30 minutes per set is the published vendor claim	About one hour of runway occupation per set is the published comparison figure, as a vendor claim
Weather and light window	Constrained by wind, precipitation and visibility for the small aircraft	Constrained by weather minima for the inspection aircraft and by the procedure being checked
Regulatory basis	Standards name parameters and tolerances rather than instruments. Some authorities have explicitly accepted drone methods for glide slope indicators	Long-established, with suggested periodicities per aid in the ICAO radio navigation aids testing manual and national flight inspection standards
Repeatability between visits	The same autonomous mission is regenerated from the aerodrome profile, so two visits are directly comparable	Repeatable to the extent a flown approach is repeatable, which is a looser reproduction of the same path

DIMENSION	DRONE-BASED SURVEY	AIRCRAFT FLIGHT INSPECTION
Evidence retained	Raw video and positioning log retained, so a disputed value can be recomputed without refllying	The inspection report and the recorded parameters, per the operator's own retention policy
Published price evidence	None. No supplier publishes a rate, checked 2026-09-04	None at unit level. One UK network contract carries an estimated value of 600,000 GBP across a network of regional aerodromes
Who performs it	A licensed drone operator with airfield experience, under the aerodrome's coordination	A civil aviation authority approved flight inspection organisation with a crewed aircraft

One fact per cell with its unit, for the eleven dimensions an aerodrome usually decides on. Vendor claims are labelled as such and unknowns are stated rather than estimated. · Verified 2026-09-04

Dimension by dimension

Visual aids covered

The drone covers more of the visual aid inventory, and that is the strongest thing in its column. It flies the approach for the **glide slope indicators** , images the approach lighting array from the pilot eye position, covers every unit in an edge light row rather than a sample, and can look at the pavement and the obstacle surface on the same sortie. Aircraft flight inspection covers the glide slope indicators, and it does so from the approach path the standard describes. If the parameter list you have to satisfy runs to a dozen items across four systems, the drone answers more of it in one visit.

Radio navigation aids

This dimension decides the case whenever it applies, and it does not go the drone's way. An instrument landing system has to be verified in the signal environment a receiver actually experiences, at the altitudes and distances a real approach flies. No drone method compared here does that. If the aerodrome has an ILS, a VOR or a DME on a fixed periodicity, an aircraft is coming, and the argument moves from whether to have one to what else to give it.

Absolute photometric intensity

Neither option is the right instrument, which is worth saying plainly because both markets tend to gloss it. An airborne camera records counts that depend on lens, exposure, sensor state and distance, so stating a value in candelas requires an external anchor. That anchor is either a reference reading taken on site or a cross-calibration against something carrying a **calibration certificate**, and a supplier claiming its drone is a **calibrated photometer** has skipped a step. An inspection aircraft has no photometer at all. The instrument built for this job is a ground-based photometric system on a vehicle, and it costs a booked runway occupancy to use.

Relative intensity and colour

Here the drone has a real technical advantage and it comes from arithmetic rather than optics. A ratio between colour channels normalises away exposure, so halving the exposure changes every channel together and leaves the ratio untouched. That is why a colour transition angle can be measured from a camera without knowing its absolute response, and why symmetry across four units on one flight is a strong statement. An inspector in an aircraft assesses the same thing by eye against an expected picture, which catches gross faults and does not produce a number.

Positioning reference

The drone's geometric chain is its most defensible part. Positions come from **RTK positioning** referenced to a base station that is itself tied to a geodetic frame, camera intrinsics come from a target-based calibration recorded with a date, and an elevation angle between two known positions is geometry rather than photometry. The aircraft's chain is different rather than weaker, resting on the aircraft's own reference systems at the accuracy its inspection manual demands. The methods are answering the question at different scales, one at centimetres on a fixture and one along a whole approach.

Runway occupancy per set

This is the dimension that decides most commercial cases, and it does not appear on any invoice. A drone survey books no closure and works in the gaps between movements, so its occupancy cost is coordination time. Published supplier material describes roughly thirty minutes per set with a drone, against about one hour of runway occupation per set for the method being replaced. Both figures are vendor claims. At an aerodrome with spare capacity the difference is a scheduling detail. At a congested one it is larger than the entire inspection fee.

Weather and light window

Both methods lose days to weather and they lose different ones. A small uncrewed aircraft is stopped by wind and precipitation at thresholds a business turboprop would not notice, so a drone survey is more exposed to a bad week. An inspection aircraft is constrained by its own weather minima and by the conditions the procedure under test requires. The practical difference is that a drone visit is cheap to reschedule and an aircraft slot usually is not.

Regulatory basis

The standards describe what must be verified and the tolerance it is judged against, and they say much less about the instrument. That is the whole

regulatory argument for drone methods, and it is a good one, but it is not a general permission. Some national authorities have explicitly accepted drone methods for glide slope indicator checks, and at least one has published guidance stating that a flight check of these indicators is not required for calibration purposes at all. Others have said nothing. Ask your authority in writing and ask about the parameter rather than the platform.

Repeatability between visits

The drone wins this one and the reason is that the mission is a file. It is generated from the aerodrome profile and flown autonomously, so the second visit reproduces the first closely enough that a difference of a few minutes of arc is a measurement rather than noise. A flown approach reproduces the same path more loosely, which is fine for the question an aircraft is answering and less useful for trend detection on a fixture. A method that reproduces is what turns a series of visits into a drift record, as **uncertainty** only becomes actionable once it is bounded and repeated.

Evidence retained

What survives the visit decides what can be argued about later. A drone survey retains raw video and the positioning log, so a disputed number can be recomputed against the original data without flying again. Flight inspection retains the inspection report and the recorded parameters under the operator's own policy, which is a formal record and a thinner one for reconstruction purposes. Neither is automatically better. The question to put to any supplier is what is kept, for how long, and whether you get a copy.

Published price evidence

Neither method publishes rates, which is unusual for a market this old and is the reason the **PAPI calibration cost guide** exists. The only public figure in this comparison is a UK contract for aeronautical flight inspection services with an estimated value of 600,000 pounds, awarded to an approved flight inspection

organisation serving a network of regional aerodromes. The contract term is not stated in the notice, so the figure is an order of magnitude for network-scale aircraft verification and nothing more precise.

Who performs it

An aircraft flight inspection is performed by an organisation approved by a civil aviation authority for that purpose, and that approval is part of what is being bought. A drone survey is performed by a licensed operator with airfield experience working under the aerodrome's coordination, and the approvals involved are different ones. Comparing the two on credentials is a category error. Compare them on which approvals your authority requires for the parameter you need verified.

Pricing and total cost

Neither option can be priced from public sources, so the useful comparison is structural rather than numerical.

The drone's cost structure is dominated by travel and by the number of systems on the visit. The marginal cost of adding another system to a crew already on site is small, which is why one visit covering the whole airfield is cheaper than three visits covering thirds of it. The aircraft's cost structure is dominated by flight hours and by the aircraft being where it needs to be, which is why network contracts exist and why individual aerodromes rarely buy a visit on its own.

The number missing from both is runway occupancy, and it is usually the largest one. An hour of a busy runway is worth more than either fee. That is the figure to compute for your own field before comparing anything else, because it can change the ranking on its own.

PAIRED ASSESSMENT

What each method is good and bad at

Drone-based survey

PROS

- No runway closure booked, because the work is flown between aircraft movements
- Covers more of the visual aid inventory in one visit, including pavement and the approach obstacle surface
- Reproduces the same mission on every visit, so change between visits is measurable
- Retains raw video and positioning data, so a disputed value can be recomputed

CONS

- Does not yet verify radio navigation aids, so an aerodrome with an ILS keeps its aircraft for that programme until the drone method is released
- Cannot state absolute photometric intensity without an external calibrated anchor
- Wind and precipitation postpone a drone visit, as they postpone a crewed flight check. The drone flies under low cloud that grounds the aircraft and loses days to wind the aircraft would fly in
- No authority-wide acceptance, so the position of your own regulator has to be established case by case

Aircraft flight inspection

PROS

- Verifies radio navigation aids in the signal environment a pilot actually flies, which nothing else does
- Long-established, with periodicities and standards that authorities already recognise
- Performed by an organisation holding a civil aviation authority approval for the purpose

- Checks the approach as an integrated picture rather than fixture by fixture

CONS

- Occupies the runway for materially longer, which is the dominant cost at a busy aerodrome
- Covers a narrower slice of the visual aid inventory than a survey flown close to the fixtures
- Produces no photometric measurement, since the aircraft carries no photometer
- Reproduces a flown path only loosely, which limits its value for detecting slow drift

Verdict by segment

A regional aerodrome with no radio navigation aids. Take the drone survey.

There is no aircraft visit to ride along on, the aids that matter are visual, and the method covers more of them in one window than anything else available.

A busy aerodrome with an ILS and a congested runway. Take both, and split them by parameter. The aircraft owns the radio aids on its periodicity. The drone owns the visual aids, because the runway time it saves is worth more than the second fee.

An aerodrome with an ILS and spare runway capacity. The incumbent arrangement is defensible. If the aircraft is already checking the glide slope indicators to the depth your programme requires, the drone has to win on parameter coverage and evidence rather than on occupancy, and that is a narrower case.

An aerodrome facing an audit finding on its visual aids record. Take the drone survey first, whatever else is contracted. The finding is about evidence, and the method that retains raw data and reproduces between visits is the one that closes it.

The condition that flips any of these is a change in what has to be verified. Add a radio aid and the aircraft becomes necessary. Remove the runway pressure and the occupancy argument weakens. Both are worth re-checking annually rather than assumed, which is why this page carries a review date of 4 December 2026.

Sources and verification record

Verified on 4 September 2026. The parameter sets and tolerances referenced come from the ICAO aerodrome design manual for visual aids and from the national flight inspection standards named in the reference list. The periodicity framing comes from the ICAO manual on testing of radio navigation aids, which sets suggested intervals that each State modifies. The duration figures are published vendor claims and are labelled as such in the table rather than presented as measurements. The contract value is a public procurement record. The description of what a drone measurement can and cannot support is TarmacView's own published account of its method, which is a first-party source and is disclosed as one.

If your aerodrome sits in the segment where the drone survey is the answer, the [PAPI inspection service](#) page sets out what a visit covers, and [TarmacView](#) will scope one against your runway count.

Frequently Asked Questions

Can a drone legally replace a flight inspection?

The question is usually asked about the platform and answered about the parameter. Standards for aerodrome design and for visual aids set out what has to be verified and the tolerances it is judged against, and they are largely silent on the instrument that does the verifying. Some national authorities have explicitly accepted drone methods for glide slope indicator checks, and at least one civil aviation authority states that a flight check of these indicators is not required for calibration purposes at all. What binds you is your own approved maintenance programme and your authority's position, and both are worth getting in writing before a procurement.

Which method is more accurate?

They are accurate about different things, which makes a single comparison meaningless. A drone measures an elevation angle between two surveyed positions, which is a geometry problem, and can state a bound on it in minutes of arc. An aircraft measures the signal a receiver actually sees along a real approach path, which is the only way to answer questions about a radio aid in its real environment. Asking which is more accurate is like asking whether a tape measure is more accurate than a thermometer.

What about photometric intensity in candelas?

Neither method is the natural instrument. An airborne camera records counts rather than candelas, so absolute intensity needs an external anchor, either a reference reading taken on site or a cross-calibration against an instrument that carries a certificate. An inspection aircraft is not a photometer either. The instrument built for that job is a ground-based photometric system, which is a third option and a booked runway occupancy.

How much runway time does each method need?

A drone survey is flown between aircraft movements with no closure booked, so the occupancy is coordination overhead rather than a block of unavailable runway. Published supplier material describes roughly thirty minutes per glide slope indicator set by drone, against about one hour of runway occupation per set for the method it replaced. These are vendor figures rather than independent measurements. The gap matters most at a congested aerodrome and least at a quiet one.

Do we need both?

Many aerodromes do, and for a simple reason. If the field has an instrument landing system, something has to verify it in the air, and that is an aircraft. If the field also has visual aids that drift, something has to verify those, and the aircraft visit may or may not cover them at the depth your programme requires. The decision is not which method wins. It is which method owns which part of the programme.

Is the drone cheaper?

On the fee, almost always. On total cost, the answer depends on whether an aircraft is coming anyway. Neither method has a published price, so the comparison has to be made against quotations rather than against a rate card. The one public evidence point in this guide is a UK network contract for aeronautical flight inspection with an estimated value of 600,000 pounds across a network of regional aerodromes, which sets an order of magnitude and nothing finer.

References

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