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Ten Questions Before Transition

What a police force should be able to answer before committing to ESN transition

In 2002 a police force signed Ready for Service on a national digital radio service that had passed every contractual coverage and performance test. Three months into transition an officer attempting an arrest was assaulted, pressed her emergency button, did not get the response she needed, and went to hospital. The rollout was stopped and the force reverted to analogue.

Nobody had lied and nothing had been skipped. “It passed the tests” and “it is safe to use” were two different statements, and only one of them had ever been measured. These ten questions exist so that the second one gets measured too.

Where things stand

Position as at 22 September 2026.

At BAPCO 2026 the ESN programme set out its target timeline to user organisations, and asked them to get ready. The dates below are the programme’s own published targets, as presented at that event in April 2026.

Milestone	Target	What the programme lists alongside it
Full Voice Service Ready	Q2 2028	Integration and testing; ICCS solutions; devices
Start of mass transition	Q4 2028	User organisation readiness; control room updates
Transition complete	mid-2030	User organisation change; vehicle fit-out; CELs

Two observations follow. First, Q4 2028 to mid-2030 is roughly twenty months to move around 107 emergency services and 300,000 frontline users; Airwave took more than five years for 43 police forces. Second, Full Voice Service Ready is defined in supplier delivery terms — a minimum of two control rooms integrated, one handheld reference device and one fixed vehicle device proven, one handheld certified for production. That is a reasonable milestone for a supplier. It is not a statement that any individual force is ready, and that gap belongs to the force. The questions below are written to close it.

A third observation belongs alongside them, and it has arrived since this paper was first written.

Those are the programme’s briefing dates. They are not the only dates in the public record, and they are not the ones the department has used in writing. In a written answer in February 2026 the Home Office told Parliament that the target date for transition to be completed is 31 December 2029, after which Airwave will be safely shut down. The Accounting Officer memorandum of March 2026 states that ESN will reach Full Voice Service Ready by March 2028 — not Q2 — and records that the approved Programme Business Case carries two years of funding to March 2028, which is to that milestone rather than beyond it. And the Summary Business Case of 27 July 2026, published on 4 August, sets out a three-release delivery approach and gives no completion date at all:

Airwave, it says, remains in place under extended arrangements until safe shutdown. Its recommended option funds the mobile services contract through to 2031.

None of that is hidden, and none of it means the programme's targets are wrong. It means that a force planning against a single date is planning against somebody's choice about which published date to believe. For a medium term financial plan the useful question is not which of them is right. It is what the exposure looks like under each — and particularly after 2029, when the Competition and Markets Authority's charge control on Airwave ends and the price of the network you are transitioning away from is no longer capped.

Coverage and performance

Most of what follows turns on one distinction, so it is worth stating once. Coverage is not a property of a network. It is a property of a contract: a signal level, a defined place, a type of device used in a defined way, and the proportion of measurements that must meet the level. Change any one of those four and the same network passes or fails on the same street. The questions below are written to establish which four your force is actually being offered.

1. What is the contracted coverage definition — and is it a vehicle promise or a handheld promise?

On Airwave this was answered explicitly, and answered twice. The core coverage funded nationally under the Home Office contract was specified separately for a vehicle-mounted radio and for a handheld used at street level. The two carried different signal thresholds — around 16 dB apart — and each carried its own contracted probability of service that had to be achieved at or above its threshold. The vehicle obligation was assessed against an agreed national road dataset. The handheld obligation was assessed inside polygons drawn around populated areas, from major cities down to small towns. Where a force wanted better than the national baseline it could specify and fund enhancement areas of +5 dB or +15 dB from its own budget, outside the core contract.

ESN as originally contracted did not mirror that structure. The contractual coverage commitment was vehicle and major-road based, against an agreed set of roads. There was no equivalent handheld, street-level obligation drawn around populated areas; handheld usability beyond the road commitment rested on the general commercial network. That asymmetry is visible in the public record. The National Audit Office reported in 2019 that “the contracts for both ESN and Airwave define coverage with respect to roads, although ESN uses a less detailed database, but coverage will need to be tested off-road”, and that the coverage testing then under way was “mostly limited to testing coverage along roads”. By 2023 the NAO was describing the EE obligation in the same terms: coverage along 218,780 km of roads, 12 nautical miles out to sea, and 71 named locations.

The network contract has since been replaced — the Mobile Services Agreement awarded to EE Ltd and BT plc in November 2024, £1.85 bn over 7.25 years. When this paper was first written, the coverage service levels beneath that award could not be read from outside the programme. They now can. The redacted agreement is in the public domain, and its coverage schedules answer the question at the head of this section directly.

They answer it in a way that repays careful reading.

Vehicle Coverage is committed at a 96% probability of access on Major Roads and 87% on Minor Roads, at defined minimum data rates, with per-County exception pools. Handheld Coverage is committed at 87% — but only at the Special Coverage Locations listed in Annex E, which are 19 road tunnels, 9 rail tunnels and 43 railway stations: 71 places, nationally. Marine and air-to-ground obligations sit at 87%. A separate clause requires access in locations equating to 98% of the population of Great Britain, verified using Ofcom's 2012 4G Coverage Obligation methodology — which, as the technical note below sets out, is not an emergency service level and was never designed to be one.

Then look at what is measured, which is a different question again. Schedule 2.2, the performance schedule, carries two coverage KPIs: MS Vehicle Coverage Availability, and MS Enhanced Availability for Vehicle Coverage.

The word “handheld” does not appear in Schedule 2.2 at all. Schedule 6.3 sets out an agreed test methodology for Vehicle Coverage only, with a right for the Authority to request one for the other coverage classes.

So, on the published contract: the core commitment is a vehicle promise; a handheld promise exists at 71 named locations; and the performance regime measures the first and not the second.

That is not a scandal and it is not a criticism of anyone. Vehicle-based coverage obligations are how this network was specified, tendered and priced, and everyone involved knows it. But it is the most consequential fact in this paper for a police force, and it changes what Questions 2 and 7 are for. If your officers work on foot, in streets that are not among those 71 locations, the contracted commitment reaching them is a population-percentage clause borrowed from a commercial 4G licence condition, and no part of the performance regime is measuring what they experience.

Ask anyway, and ask in writing — not because the answer is unknown, but because the answer that matters is local. Which of your locations sit inside Annex E. What your force is being offered beyond the national baseline, and who funds it. And what will actually be measured in your area, by whom, against what.

Why this one matters more than the others

In 2006 an independent survey for a south-west force tested a coastal town twice in one week. Measured from a vehicle the service passed; measured from a handportable worn on the body, in the same streets, it failed. Nearby, only 59% of handheld samples met a service level contractually required to be met by 87% — and there was effectively no handheld service along almost a kilometre of a road the coverage specification classified as covered.

Nothing had been misrepresented. The road obligation and the handheld obligation were different promises, and only one of them was being measured.

Technical note — and why the words mean less on ESN than they did on Airwave

Airwave core coverage was contracted at approximately -103 dBm for vehicle use and -87 dBm for a handheld at street level, each with its own required probability of service; handheld coverage was assessed within Enumeration District polygons covering specified populated areas, vehicle coverage against an agreed road dataset. Force-funded $+5$ dB and $+15$ dB uplift areas sat outside that national baseline — which is one reason the Airwave service your officers use today is not the Airwave service that was originally contracted.

On Airwave the vehicle/handheld distinction also reflected the radios themselves: TETRA handportables transmit at roughly 1–3 W, TETRA vehicle sets at roughly 3–10 W. On ESN that is no longer true. Vehicle and handheld ESN devices use the same LTE chipsets at the same transmit power, of the order of 0.2 W. The practical advantage of an ESN vehicle installation is an externally mounted roof antenna, not transmit power, and the deficit falls on the uplink — usually the limiting direction at the edge of coverage. “Vehicle” and “handheld” cannot be assumed to carry the meaning on ESN that they carried on Airwave, in either the engineering or the contract.

The agreement’s own Annex G reference configurations make the asymmetry concrete. A Vehicle User Device is modelled at $+2.3$ dBi on a dual antenna, less 1 dB connector loss, at 1.4 m. A Handheld User Device is modelled at -11 dBi, including body and cable loss, at lapel height. The difference between those two reference points is 12.3 dB — a figure derived by arithmetic from the two stated configurations, not one the agreement itself states.

One further point of precision, because it is often stated loosely: there is no general Ofcom obligation on mobile operators to provide usable coverage to 98% of the UK population. The nearest equivalent was a licence condition on a different operator — indoor data coverage to 98% of UK premises by the end of 2017 — alongside a 90% landmass voice obligation on all four operators and, later, the Shared Rural Network landmass targets. None of these are emergency service levels, none are enforceable by a police force, and none of them promise a working handheld talkgroup call in your force area.

2. Who measures coverage here, by what method, and do we see the data — or only the compliance statement?

A compliance statement is a statement against the contracted definition, which is why Question 1 has to be answered first. If the definition is road-based, then “compliant” and “usable by an officer on foot” are two different claims, and only one of them has been made. Without the underlying data a force has only its opinion to set against the supplier’s, and the answer that comes back is usually that no fault was found — frequently true against the tests being run, and beside the point. Faults such as a handset holding on to a distant site, wrong neighbour information, or sites broadcasting parameters that do not match their configuration never appear in a signal-bar check. They appear when someone walks the ground with a calibrated terminal, generates real group calls and logs every event.

Ask for six things, and ask now, while asking is administrative rather than a dispute: the signal threshold and probability of service being applied in your area; the geography the obligation is assessed against, and whether it includes the streets your officers patrol; the device used to measure, and how it was carried; whether measurement was from a vehicle, on foot, or both; the sampling density; and the raw event-level results for your area rather than a summary. Where a measure is only a network-side counter, ask what it would have recorded for the officer in Question five. Scale is a fair question too — the NAO recorded that an early ESN coverage test exercise had to be cut from 1,000 handsets to 100 because security accreditation was not in place.

3. What is contracted in-building and below ground, what is merely assumed — and who pays for remediation?

Custody suites, hospitals, shopping centres, multi-storey car parks, tunnels, basements — and, once Question 1 is answered honestly, possibly some ordinary streets as well. On Airwave many of these were solved after the fact, frequently from force budgets rather than the national contract. The position on ESN is not obviously better: the National Police Chiefs’ Council told the Public Accounts Committee in 2023 that the ESN 4G signal does not penetrate buildings as successfully as Airwave, and the Home Office told the same Committee that an original list of some 22,000 locations had been reduced to around 15,000 once duplicates were removed, of which somewhere between 2,000 and 4,000 might need interventions. The NAO has separately reported that the Home Office “cannot fully quantify the current gap between coverage provided by Airwave and ESN”.

The commercial consequence is the part to establish before transition rather than after. Where a place is inside the contracted definition and the service fails there, that is a supplier failure with a remedy attached. Where a place was never inside the contracted definition, nothing has failed, there is no remedy, and the cost of putting it right falls on somebody — most likely the force, or the building’s owner. The author was told by the programme’s own coverage team in the late 2010s that a principal thoroughfare in central London, with a mainline terminus at one end and government departments along it, was not inside the contracted ESN coverage footprint. That account is second-hand, was never documented, and may well have been overtaken. The question it provokes has not been: for each location that matters to your force, which side of that line does it sit on, and whose budget is behind it?

Those figures are from March 2023 and nothing has been published since. The number surveyed has never been published. Neither has the number remediated. A force asking how many of its own locations are on that list, and what has been done about them, is asking for something that does not exist in the public domain — which is a finding in itself, and a reasonable thing to put in writing.

The Summary Business Case of July 2026 sharpens the commercial question rather than settling it. It names air-to-ground, Extended Area Service and London Underground coverage enhancements as core programme costs, and names devices and WAN links as non-core — that is, locally borne. In-building remediation and Critical Operational Locations appear in neither list. The 2024 mobile services transparency notice, meanwhile, places in-fill coverage at key critical operational locations inside that contract’s scope. Two published documents, and no clear answer to whose budget carries a custody suite with no signal.

4. What is the group call performance commitment under load?

Call setup time, maximum talkgroup size, group call setup success rate, and behaviour when a large number of users in one cell all press at once. The daily experience of a radio is the group call, and it is the measure most likely to degrade in exactly the conditions that matter: a large talkgroup, a single cell, everybody transmitting. Establish the committed figures, whether they are contractual or merely stated, and what has been demonstrated at scale rather than in a laboratory. A demonstration proves it works; a Saturday night in a city centre proves it works when everyone needs it at the same moment.

5. What happens end to end when an officer presses the emergency button — and how has that been tested at the edge of coverage and under congestion?

Ask for the test evidence, not the design intent. Ask specifically what happens when the device is at the edge of coverage, when the cell is congested, when the officer is indoors or below ground, and when the device is on a commercial site rather than a dedicated one. Ask what the control room sees, how long it takes, and what happens if the first attempt fails. This is the question that ends careers and injures officers when it is left unasked.

6. What are the fallback and degraded modes, and what is the direct-mode equivalent of TETRA DMO?

Officers rely on being able to talk to each other when there is no network at all. Establish what exists, on which devices, at what range, whether it interoperates with the devices your neighbouring forces and the other services will carry, and whether it will be available to your force at the point you transition rather than at some later release. A capability on a roadmap is not a capability your officers have.

What these six questions are for

Questions 1 to 6 establish what has been promised. They do not, on their own, tell you whether the service is good enough to put officers on. That needs a second thing: an acceptance standard your force has agreed in advance — expressed operationally, so a commander can act on it — against which a measurement taken in your area, on the devices your officers will actually carry, in the places they actually work, can either pass or fail.

“At least as good as Airwave” is the assurance forces have been given repeatedly. It is not an acceptance criterion until somebody writes down what would have to be measured to demonstrate it, and against which Airwave. That is Questions 7 and 8 — and it is why the six above are worth asking in 2026 rather than in 2029.

Readiness and acceptance

7. Who set the acceptance criteria, would our commanders recognise them as meaningful — and are they contractually binding?

In 2002 acceptance had been measured in engineering terms that nobody at command level could interpret, which is why a service that had passed could still be judged unsafe by the people using it. The criteria were subsequently renegotiated into a small number of indicators a commander could act on, and that renegotiation is what allowed the national re-launch.

The third part is the one that gets missed. After that re-launch the operational metrics — call setup success, call completion, call setup time — were agreed and signed up to by every party including the service provider, but never agreed to be contractually binding. The force had a number everybody accepted was right, and no means

of enforcing it. Establish in writing which of your criteria are contractual and which are merely agreed: the difference only becomes visible at the moment it matters.

8. What does “at least as good as Airwave” mean in writing — and as good as which Airwave?

The service as originally contracted at the start of the century, or the one your officers use today after twenty-five years of refinement and coverage enhancement, much of it paid for from force budgets outside the core contract? Get the comparator written down: everything else is measured against it.

Commitment and reversion

9. What exactly does our signature commit us to, commercially and operationally — and what does it trigger for everyone else?

In 2002 Ready for Service signature started supplier revenue and satisfied a political need to be seen to be delivering. Both were legitimate interests, and neither was the force's interest. Know what your signature does for other people, not only what it does for you, and know who is relying on it landing by a particular date.

10. If confidence fails after we have started, what is the route back, how long does it take, and has anyone tested it?

The force in 2002 could stop because the analogue system was still standing. Establish when your Airwave estate is planned to be decommissioned relative to your own transition, how quickly you could revert, who is authorised to make that call, and whether the reversion has ever actually been rehearsed. A plan nobody has tested is not a plan.

How to use these

Put them in writing — to the programme, and to your control room and device suppliers — and keep the answers. A question asked in writing in 2026 is worth considerably more than a complaint made in 2029. Where an answer is not yet available, that is itself a legitimate finding: it tells you what to track.

Why the record matters more than it did in 2002

A decision to commit a force to transition is examined afterwards if it goes wrong, and the examination has better tools than it had twenty years ago.

The Corporate Manslaughter and Corporate Homicide Act 2007 replaced a test that had made prosecuting an organisation the size of a police force all but impossible. The offence is committed by the organisation, not by any individual — an individual cannot be convicted of it — but what is examined is whether the way activities were managed or organised by senior management was a substantial element in the breach. Conviction carries a fine, which falls on the police fund, and a publicity order requiring the force to publicise it.

Personal exposure exists by separate routes: gross negligence manslaughter at common law, and section 37 of the Health and Safety at Work etc. Act 1974, where an offence is attributable to the consent, connivance or neglect of a senior officer. Under the Police (Health and Safety) Act 1997 the chief officer is treated as the employer of officers for health and safety purposes, with liability resting on the Office of Chief Constable unless the breach resulted from that officer's personal consent, connivance or neglect.

None of the above is legal advice, and a force's own legal and health and safety advisers are the people to take it to. It is set out here for one practical reason.

In a corporate manslaughter case, an Article 2 inquest, an IOPC investigation or a coroner's Prevention of Future Deaths report, the question asked is always the same: what was known, what was asked, and

what was done with the answer. Ten questions asked in writing, and the answers received, are the difference between a decision that can be shown to have been taken properly and one that cannot.

If it would help

Critical Insights works with user organisations on coverage and performance assurance, operational readiness, and acceptance criteria senior users can trust. Andrew Fleet spent five years inside the Home Office ESN programme, three years on current-generation MCX with Airbus, and the first half of the 2000s on the Airwave rollout across more than twenty UK police forces. There is no obligation attached to this document — if it is useful on its own, that is a good outcome.

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Compiled from published material — including the ESN programme's own BAPCO 2026 update — and from the author's own experience and analysis. It contains no confidential information belonging to any former client or employer.

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