

NEW ICAO APPROACH TO SAFEGUARDING OBSTACLE LIMITATION SURFACES (OLS) AND ITS IMPLICATIONS FOR UK AIRPORTS AND LOCAL AUTHORITIES

Introduction

ICAO's revised **Annex 14 obstacle limitation surface framework** puts aside the *old obstacle-safeguarding model*, that it considers had become too blunt, outdated, and poorly aligned with how aircraft actually operate today, and requires a move to **Obstacle Free Surfaces (OFS)** and **Obstacle Evaluation Surfaces (OES)**

ICAO's core rationale can be summarised as follows:

1. **The legacy OLS concept is old and no longer well matched to modern operations.** ICAO material notes that the Annex 14 Chapter 4 OLS provisions were developed before the 1970s and were “not addressing capabilities of the modern aircraft operations.” ([ICAO](#))
2. **“One size fits all” no longer works.** ICAO's 2025 Assembly paper says the existing common OLS standards no longer adequately addresses the different aircraft types and operations conducted at aerodromes, and consequently that it may not be reasonable to enforce them uniformly at all aerodromes. ([ICAO](#))
3. **Aircraft, avionics and instrument procedures have changed.** ICAO's OLS Task Force explicitly considered advances in navigation equipment, aircraft avionics and modern instrument flight procedures. ([ICAO](#)) A related ICAO presentation lists the drivers as modern aircraft performance, improved flight procedures and technology, and the need for a more efficient obstacle/terrain assessment. ([ICAO](#))
4. **The new system is meant to be more performance-based and operation-specific.** ICAO's quick reference guide says *Amendment 18 introduces a performance-based approach, with OFS and OES, adaptable to the type of operations at the aerodrome and aligned with the new Aeroplane Design Group categorization.*
5. **ICAO wants to protect the airspace that is actually needed, not unnecessarily sterilize land.** The 2025 ICAO Assembly paper says the revised approach aims to *safeguard operations more effectively while freeing up airspace not required for aircraft operations for non-aviation uses such as land development.* ([ICAO](#))
6. **Obstacle assessment is becoming more evidence based.** ICAO says the review used flight-track data to determine containment surfaces needed to safeguard runway operations, then split surfaces into OFS—critical near-runway surfaces that should be kept obstacle-free—and OES, which protect flight procedures and operations and trigger assessment. ([ICAO](#))
7. **The rules distinguish between “must be clear” and “must be assessed.”** Annex 14's revised Chapter 4 states that OLS will consist of OFS and OES; *OFS preserve aerodrome accessibility and operational safety, while obstacles penetrating OES may be permitted only after aeronautical study shows they do not adversely affect safety or significantly affect operational regularity.*

Bottom line: ICAO is moving from a largely geometric, conservative, legacy safeguarding model to a more risk-based and performance-based model. The change is driven by modern aircraft capability, PBN/instrument procedure evolution, better flight-track data, pressure from urban/land-use development, and the need for clearer aeronautical studies that assess

the actual operational impact of obstacles rather than treating every surface penetration the same.

Why move away from common, conservative and established rules?

ICAO concluded that the old conservatism was not always ‘safety-efficient’.

The legacy OLS were largely fixed-dimension surfaces, applicable broadly across aerodromes. ICAO’s amendment material says the old OLS were first introduced in the 1950s and provided fixed dimensions applicable to all aerodromes. (slcaa.gov.sl) ICAO’s quantitative studies using aircraft track data found that some existing OLS dimensions were “over-conservative”; for example, the inner edge width of the approach surface for instrument runways was considerably larger than observed aircraft deviations at threshold. ICAO also identified gaps between Annex 14 aerodrome-protection surfaces and PANS-OPS flight-procedure design surfaces. (slcaa.gov.sl)

That mattered because a very conservative geometric rule can be both **over-inclusive** and **under-targeted**: it can sterilise airspace or land that is not materially needed for the intended operation, while not necessarily aligning neatly with the actual procedure-specific obstacle risks that matter for modern operations.

Who has been driving it?

The pressure for change came through **ICAO’s Member States**, not directly from developers or airports alone. The trigger was the **Twelfth Air Navigation Conference in 2012** and the **38th ICAO Assembly in 2013**, which called for a comprehensive review of OLS criteria. ICAO then established the **Obstacle Limitation Surfaces Task Force**, under the **Aerodrome Design and Operations Panel**, to review and update the rules. (slcaa.gov.sl)

The 2013 Assembly discussion appears to have been prompted in part by **India**, which asked ICAO to review Annex 14 OLS criteria in light of current aircraft navigation and performance capability; the Technical Commission agreed that the Council should initiate work on the subject. ([ICAO](http://icao.org))

The actual technical work was then carried out by the ICAO OLS Task Force. ICAO says it included experts from States and international organisations, with members including Australia, Austria, Brazil, China, Canada, France, Germany, Italy, Japan, Korea, Spain, the United States and the United Kingdom, plus ACI, EASA, IATA, IFALPA and ICCAIA. ([ICAO](http://icao.org)) So the “drivers” included regulators, airport interests, airlines, pilots, aircraft manufacturers and safety/procedure specialists.

Is this driven by aviation industry demands for greater flexibility

Partly, but not only. Airports, airlines and manufacturers were involved through ACI, IATA and ICCAIA, and the new system plainly gives aerodromes and States more flexibility. ICAO says the revised surfaces allow States to adopt surfaces based on the type of operations at each aerodrome and that the revised SARPs “require less airspace” while still ensuring aviation and air navigation safety. ([ICAO](http://icao.org))

But the ICAO documents also argue against a simple “industry deregulation” explanation. ICAO’s impact assessment says the new approach may, depending on the aerodrome and Aeroplane Design Group, result in a **more stringent template** than the existing one. The new framework is therefore not simply “less restrictive everywhere”; it is intended to be more tailored.

Will it help airport estate development, renewables, or nearby urban densities?

Land-use pressure is explicitly acknowledged as one reason behind the changes.

ICAO’s 2025 Assembly paper says the Task Force was assigned to review the existing SARPs because they dated from the 1950s and also “to address the growing pressure faced by States to intensify land developments around their aerodromes.” ([ICAO](#)) The same paper says the review aimed to free up airspace not required for aircraft operations for non-aviation uses such as land development. ([ICAO](#))

So the policy bargain is explicit: protect the airspace that is genuinely needed for current and intended operations, but stop sterilising airspace that the evidence suggests is not needed.

Renewables are not usually named in the ICAO rationale as the headline driver, but wind turbines, cranes, tall buildings and infrastructure development are exactly the types of obstacles that national planning systems must assess around aerodromes. The ICAO language is broad enough to include those pressures.

What about optimised routes, noise, or capacity?

More indirectly. ICAO’s stated rationale is not primarily “let airports design quieter or higher-capacity departure routes.” The documents frame the issue around **modern instrument procedures, aircraft capabilities, flight tracks, obstacle assessment and land-use proportionality**. ICAO says the review considered navigation equipment, aircraft avionics and modern instrument flight procedures. ([ICAO](#))

However, the new OES concept is tied to the **actual flight procedures and operations** at the runway. ICAO says OES protect the flight procedures and operations conducted at the runway, and the new surfaces are selected based on runway type, Aeroplane Design Group and instrument flight procedures. ([ICAO](#)) That means route design, procedure design, operating mode and obstacle safeguarding become more connected than under the old geometric model. Noise and capacity may benefit in some local cases, but they do not appear to be the central official reason.

Summary

The change is not really from **safe conservative rules** to **looser risk assessment**. It is from:

“Assume this whole geometric volume must be protected in broadly the same way everywhere”

to:

“Keep the critical near-runway and high-consequence volumes obstacle-free, then use formal assessment for wider areas where the operational impact is variable.”

That distinction is important. ICAO says **Obstacle Free Surfaces** apply near the runway where obstacle impacts would be unacceptable, and those volumes are to be kept free from obstacles. (slcaa.gov.sl) The more assessment-based part is the **Obstacle Evaluation Surface**, where ICAO says operations may vary significantly from one aerodrome to another, the impact of an obstacle may be highly variable, and applying hard OFS-type protection over wider areas would be “costly” and “over-conservative.” (slcaa.gov.sl)

Secretariat’s View

At the heart of the change seems to be the concept of **“Safety efficiency” (i.e. achieving the intended safety protection with fewer unnecessary constraints on operations, land, airspace or development)**. In other words, a rule is “safety-efficient” if it protects the genuinely safety-critical volume of airspace, but does not sterilise land or airspace that is not materially needed for the operation being protected.

ICAO itself usually separates the ideas: it talks about **safety impact, financial impact, environmental impact and efficiency impact**, not “safety efficiency” as one combined concept. In the Amendment 18 impact assessment, ICAO says the OLS change has a positive safety impact because OFS and OES together mean the “airspace of concern” is covered by one surface or the other; it separately says there may be efficiency benefits through reduced go-arounds and improved runway throughput.

The best explanation for what is a substantive change in approach to a safety critical issue which falls firmly within the orbit of LA responsibilities and interest is that ICAO has responded to **three converging pressures**:

1. **Technical obsolescence:** aircraft performance, avionics, PBN and instrument procedure design had moved on, while the OLS framework was still rooted in mid-20th-century assumptions.
2. **Planning and development conflict:** States were facing increasing pressure to permit development around aerodromes, and the old surfaces were seen as sterilising more land/airspace than could always be justified.
3. **Regulatory defensibility:** a blanket conservative rule is easy to administer, but harder to defend when challenged by sophisticated developers, infrastructure agencies or airport master planners. A data-based, procedure-linked assessment framework is more contestable, but also more explainable.

The real risk is that a “risk-based” system becomes, in practice, a **permission-based system**: if a developer can produce enough modelling, enough expert reports, and enough mitigation language, taller or closer development may be accepted where a simple conservative surface would previously have said “no.”

The risk is that this creates more discretion, and discretion can be used well or badly. The safety outcome will depend heavily on the quality and independence of each State’s approach (in the UK’s case this rests with CAA/DfT/MHCLG) to aeronautical studies, obstacle data, procedure-design capability and planning governance. **ICAO itself recognises that**

implementation will require resources, guidance and a “paradigm shift” by States.
([ICAO](#))

That does not make risk assessment inherently unsafe. Aviation already uses risk-based safety management. But the approach is dangerous if it is used to replace hard safety buffers in places where low-probability, high-consequence events dominate: overruns, undershoots, engine-out after take-off, veer-offs, unstable approaches, belly landings, bird-strike emergencies, mis-flown approaches, wrong-mode automation, ATC conflict, and loss-of-thrust events.

To address these concerns:

OFS should remain conservative and hard-edged.

Near-runway and runway-end environments should not become negotiable planning space.

OES can be assessment-based, but the assessment must include abnormal and emergency cases.

It should not be based only on average flight tracks, nominal procedures or “most aircraft are here most of the time.”

OLS/OES is not a substitute for Public Safety Zones.

Obstacle clearance protects aircraft from hitting things. Public-safety land-use controls protect people on the ground from aircraft accidents. They are related but not interchangeable.

Implications for Local Authorities

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Developer challenge will almost certainly increase.

In the UK, aerodromes are statutory consultees for safeguarded aerodromes, LPAs must consult them using safeguarding maps, and the aerodrome may request amendments or planning conditions. ([GOV.UK](#)) The CAA also says developers may be asked to fund IFP assessments where a development may affect instrument flight procedures. ([Civil Aviation Authority](#)) A more assessment-based regime gives developers more room to commission contrary expert evidence and challenge assumptions in planning appeals or inquiries.

Overall, the new ICAO approach is defensible only if implemented with strong regulatory guardrails. Without those, it could shift risk and liability from a clear conservative rule to aerodromes, consultants, local planning authorities and ultimately communities under flight paths.

ICAO adoption is not the same as unavoidable domestic implementation in one particular form. States are expected to implement ICAO Standards and Recommended Practices, but the UK can still decide **how**to implement them, whether to retain stricter

national safeguards, and whether to file a difference if it does not intend to comply exactly. The UK Government has acknowledged in aviation rulemaking that ICAO-derived provisions still require domestic implementation choices, and that the UK can file a difference where it does not intend to comply with an agreed international standard. ([Legislation.gov.uk](http://legislation.gov.uk))

Implicitly, therefore, there will be a significant additional burden on LA's who own airports and LAs affected by the safeguarding redesign. It is also likely there will be far more challenges to OLS from developers seeking to exploit the new rules to promote commercial and residential development. This raises the question of how LAs are to be remunerated for the additional administrative burden being imposed upon them.

Issues to Raise with CAA/DfT

For SASIG member purposes, discussions with CAA should focus around **implementation safeguards**, not opposition to ICAO Amendment 18.

Useful questions to put to them include:

1. **Will the UK consult publicly on the policy choice to adopt the new OFS/OES framework, or only on technical drafting?**

The CAA's own rulemaking process says aviation policy development should consider safety issues, technological progress, accident investigation findings, and wider policy impacts. ([Civil Aviation Authority](http://CAA.gov.uk)) So there is a strong argument that this should not be treated as a purely technical transposition exercise.

2. **Will the UK retain any more conservative national safeguarding criteria where local third-party risk, runway-end development, terrain, dense populations or complex operations justify it?**

ICAO's revised SARPs are applicable from **21 November 2030**, and the UK CAA's own OLS update indicated a UK rulemaking task running through **Q4 2026**, so there is still an implementation window. ([ICAO](http://ICAO.org))

3. **Will the CAA publish a UK-specific impact assessment?**

The ICAO material states that the revised OLS are intended to ensure only required surfaces are adopted and to make them performance-based and adaptable to operations. ([ICAO](http://ICAO.org)) But that does not answer the UK-specific question: what happens at Heathrow, Gatwick, Manchester, Birmingham, Edinburgh, Bristol, London City, smaller licensed aerodromes, and aerodromes surrounded by dense urban development?

4. **Will the CAA distinguish obstacle safeguarding from third-party risk?**

This is crucial. A building can be below an obstacle surface and still be an unacceptable concentration of people near a runway end. The current safeguarding system is about protecting aircraft operations; public-safety-zone policy is about limiting ground casualties. Those should not be allowed to collapse into one "surface penetration" analysis.

5. **Who carries liability if an aeronautical study accepts an encroachment that later proves unsafe or operationally restrictive?**

Under a more discretionary, risk-assessment-based regime, responsibility shifts onto aerodromes, consultants, LPAs, and ultimately the regulator's oversight system. That deserves explicit treatment.

6. Will developers be able to challenge aerodrome safeguarding assessments with their own aeronautical studies?

In practice, yes, that risk increases. The current UK safeguarding framework already relies on aerodromes being consulted on planning applications within safeguarding maps, and the CAA notes that developers may be asked to fund instrument flight procedure assessments where development may affect procedures. ([Civil Aviation Authority](#)) A more assessment-based regime creates more room for competing expert evidence.

There is a pattern in technical regulation where a policy choice is effectively settled internationally, then domestically presented as “implementation.” But in this case the domestic questions are real: the UK can adopt ICAO’s framework while still deciding how conservative to be, what national differences to retain, what evidence to require, what public consultation to run, and how to protect third parties on the ground.

The best challenge is probably:

The CAA should not implement Amendment 18 merely as technical harmonisation. It should publish a UK-specific safety, planning, third-party-risk, environmental and liability assessment, consult affected communities and planning authorities, and explain whether the UK will retain stricter national protections where ICAO’s new performance-based surfaces would otherwise permit closer or taller development near runway ends and flight paths.