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New ICAO Obstacle Limitation Surfaces

Webinar 2026

Welcome to the New OLS Webinar

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Due to time constraints, there will not be a Q&A session at the end of the presentation. If you have any questions, please use the chat function in Microsoft Teams or alternatively email **NewOLS@caa.co.uk.**

Agenda

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1. **Background: Why ICAO Updated the OLS**
   - The Legacy OLS Framework
   - Drivers for Change
   - Global developments influencing OLS changes

2. **The New ICAO OLS Framework**
   - Aerodrome Design Group (ADG)
   - Obstacle Free Surfaces (OFS)
   - Obstacle Evaluation Surfaces (OES)

3. **Aeronautical Studies**

4. **What The New OLS means for Aerodromes**

5. **UK Implementation Approach**

6. **Aerodrome Safeguarding Circular: update and next steps**

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Background: Why ICAO Updated the OLS

The Legacy OLS Framework

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Why the Original OLS Needed Updating:

- 1950s Framework – Designed for older aircraft, navigation, and airspace co
- Rigid Geometry – Fixed slopes and dimensions with little flexibility.
- Built for Conventional Procedures – Assumed straight-line approaches, not modern performance-based navigation.
- Poor Alignment with Other Criteria – Limited integration with IFP and CNS safeguarding.
- Overly Conservative – Broad protection areas restricting development more than needed.

Drivers for Change

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Better Alignment with Modern Procedures

- Now integrates smoothly with PBN and current instrument flight procedure design.

More Flexible & Proportionate

- Moves away from rigid, one-size-fits-all geometry toward context-based safeguarding.

Risk-Based Protection

- Focuses safeguarding where it’s operationally needed, reducing unnecessary restrictions.

Clearer Protection Layers

- Improved distinction between OLS, IFP protection, and CNS safeguarding.

Global Developments Influencing OLS Changes

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Growing Air Traffic & Capacity Needs

- Rising movements and expanding airports required more modern, adaptable safeguarding standards.

Urban Expansion Near Airports

- Increasing development around airports demanded OLS criteria that work flexibly in dense, built-up environments.

Advances in Aircraft Performance

- Modern aircraft capabilities outpaced the legacy OLS, prompting a redesign to reflect contemporary operations.

Move to Digital, Data-Driven Safeguarding

- The shift to eTOD, digital obstacle databases and GIS tools required clearer, model-friendly OLS definitions.

Key Differences – Current vs New OLS

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Current	New
One size fits all surfaces, conservative	Performance-based, tailored to aerodrome operations
Traditional fixed surfaces	Introduction of Obstacle Free Surfaces (OFS) and Obstacle Evaluation Surfaces (OES)
Limited flexibility	Greater flexibility for specific procedures and operational needs
Penetration of OLS is generally not permitted	Penetration of OES or adaptation of OFS, and establishment of a specific OES, will require a multi-stakeholder Aeronautical Study what's the opposite to this from the current OLS

The New ICAO OLS Framework

Introduction

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The new ICAO OLS Framework introduces a modernised, two-layer approach to safeguarding airspace around aerodromes. The new system introduces two distinct surface types:

Obstacle Free Surfaces (OFS)

- OFS define the critical airspace that must remain completely free of obstacles. These surfaces provide the essential, non-negotiable safety margins for aircraft during take-off, landing, and manoeuvring.

Obstacle Evaluation Surfaces (OES)

- OES add a risk-based, flexible assessment layer. When an obstacle penetrates an OES, it does not automatically pose a hazard—rather, it triggers an evaluation to determine its actual operational impact.

The dimensions of the new OFS and OES surfaces are no longer fixed; they scale according to aircraft size (Aeroplane Design Group), runway classification and the procedures the aerodrome supports.

Aeroplane Design Group (ADG)

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Why ADG matters

- Under the new ICAO OLS framework, surfaces no longer use a one-size-fits-all approach
- Instead, surface dimensions scale to the largest aircraft the aerodrome is intended to accommodate

What is Aeroplane Design Group (ADG)?

- ADG utilises two criteria related to the aeroplane performance and dimensions
    - Wingspan (Code letter)
    - Approach speed (PANS-OPS)

Role of ADG in the new OLS system

- ADG is a key input to determining:
    - OFS and OES size and extent
    - The level of protection required around the aerodrome
- Larger ADGs result in larger and more extensive surfaces

ADG Classification

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Table 1-2. Aeroplane Design Group
(see 1.8.2)
Applicable as of 21 November 2030

Aeroplane Design Group	Indicated airspeed at threshold		Wingspan
I	Less than 169 km/h (91 kt)	and	Up to but not including 24 m
IIA	Less than 169 km/h (91 kt)	and	24 m up to but not including 36 m
IIB	169 km/h (91 kt) up to but not including 224 km/h (121 kt)	and	Up to but not including 36 m
IIC	224 km/h (121 kt) up to but not including 307 km/h (166 kt)	and	Up to but not including 36 m
III	Less than 307 km/h (166 kt)	and	36 m up to but not including 52 m
IV	Less than 307 km/h (166 kt)	and	52 m up to but not including 65 m
V	Less than 307 km/h (166 kt)	and	65 m up to but not including 80 m

- ADG combines performance and size
- This classification is what allows the new OFS and OES surfaces to scale up or down, rather than applying fixed dimensions across all aerodromes.

Obstacle Free Surfaces (OFS)

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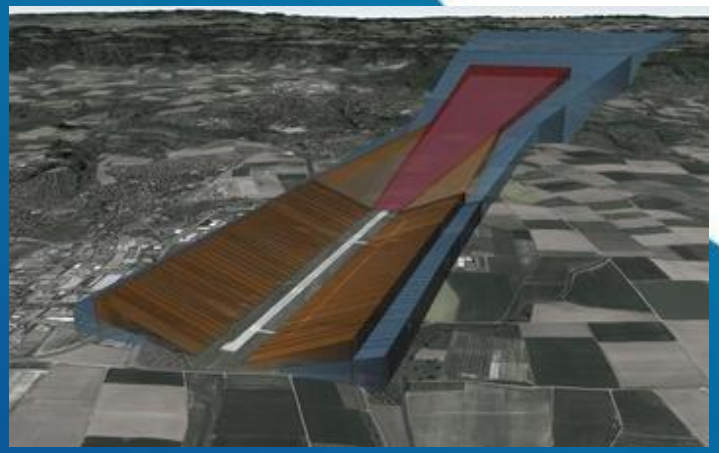
OFS are the *critical* surfaces nearest the runway that must remain free from obstacles. They exist to protect aircraft operations, such as:

- Final approach and flare
- Landing roll or go-around



Key characteristics of OFS

- Strict “no-penetration” policy
- Designed to preserve the full accessibility and future operational capacity of the aerodrome.
- Focus on operations where even small obstacles would present unacceptable safety risks.
- Intended to reflect aircraft behaviors that cannot safely manoeuvre around obstacles (e.g., go-arounds in low visibility or tight runway environment).

Approach Surface (OFS)

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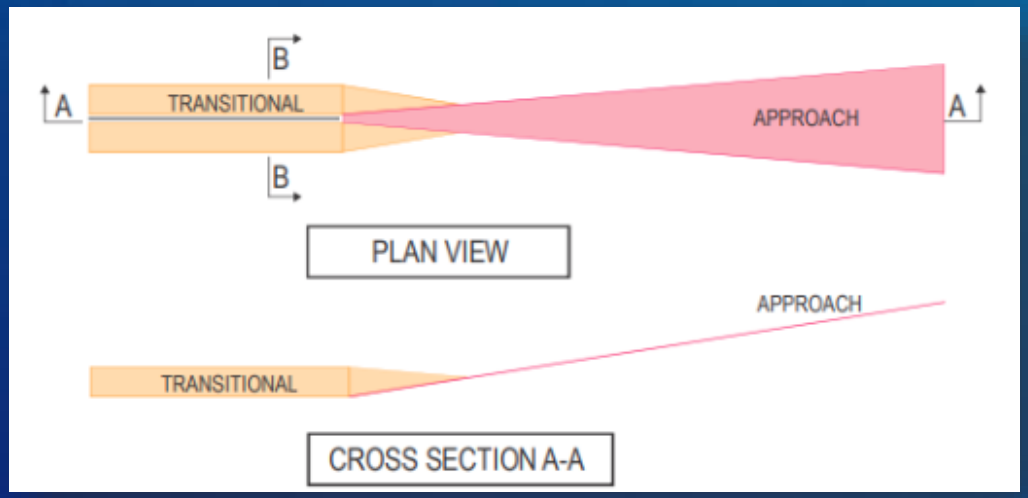
- Begins at a specified distance before the runway threshold, rises outward in a trapezoidal shape.
- Protects aircraft in the visual phase of the approach-to-land manoeuvre when they are low, slow, and least able to manoeuvre.
- A strict no-penetration surface.



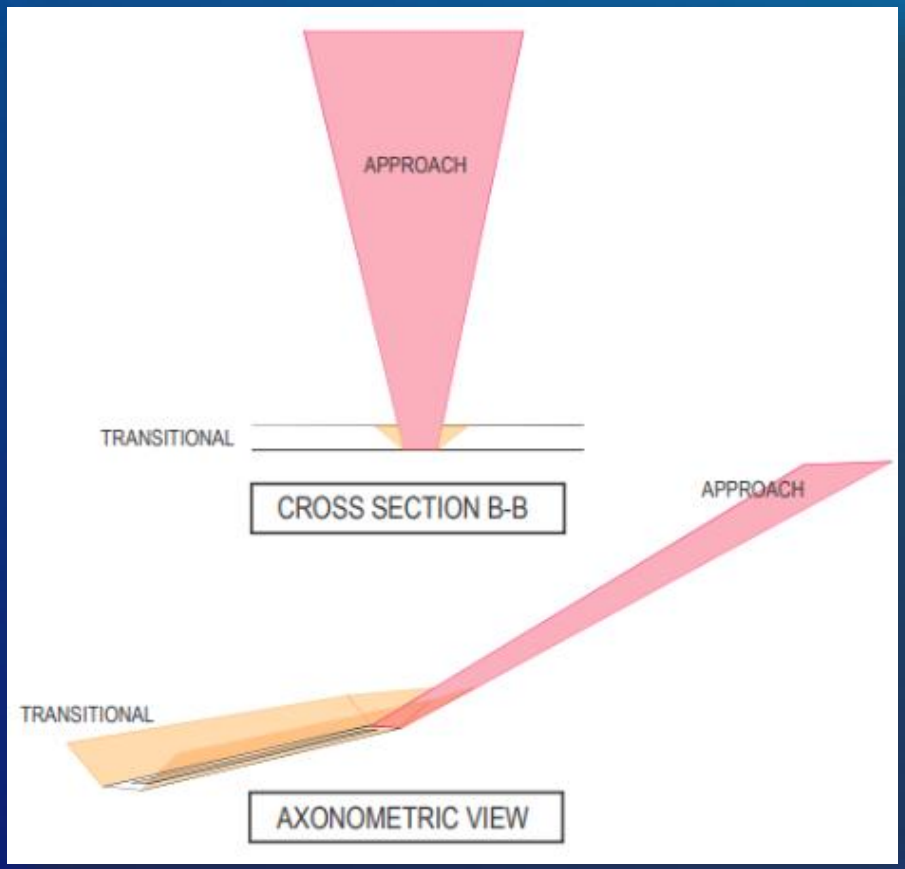
What's changed?

- The Approach Surface continues to exist, but now is categorised as an OFS)
- The purpose is to protect straight-in operations with a high probability of occurrence, including modern PBN/precision approaches.

It is now designed to match runway type, aircraft ADG, and intended procedures, making it more operation-specific and less over-protective.

Transitional Surface (OFS)

- Sloping surfaces extending upwards and outwards from a specified distance from the runway
- Extends the approach surface for approach and go-around manoeuvres.
- Ensures lateral protection around the runway environment.



What's changed?

- Still a no-penetration OFS, but redesigned to more accurately reflect aircraft lateral containment requirements.
- Transitional surfaces now integrate more closely with redesigned approach and inner approach surfaces.

This surface will reduced unnecessary safeguarding where old surfaces used to over-protect the sides of the runway.

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Inner Approach Surface (OFS)

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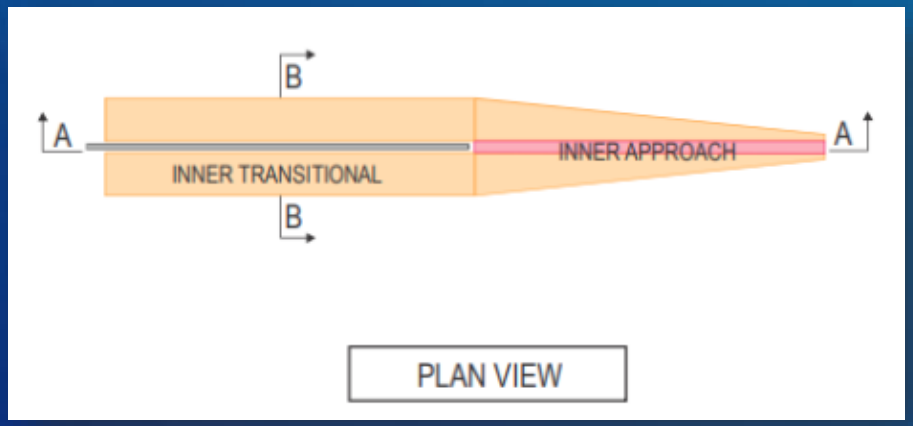
- A short, steeper portion of the approach close to the threshold.
- Provides enhanced protection where aircraft are at their lowest height.



What's changed?

- The inner approach is maintained but now part of a more structured OFS model, protecting the lowest-altitude segment of final approach where avoidance is impossible.

Inner Transitional Surfaces (OFS)

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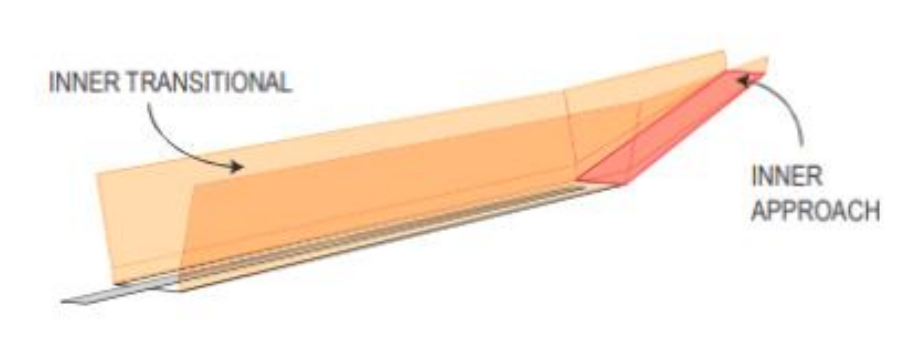
- Close-in vertical/lateral protection surfaces around the runway strip and inner approach.
- Ensures no nearby structures cause sudden visual or physical hazards.



What's changed?

- Still exists as a lateral close-in protection surface, but now more clearly defined as an OFS

This surface is now rebalanced as part of an integrated OFS system designed around modern aircraft performance and flight profiles.

Balked Landing Surface (OFS)

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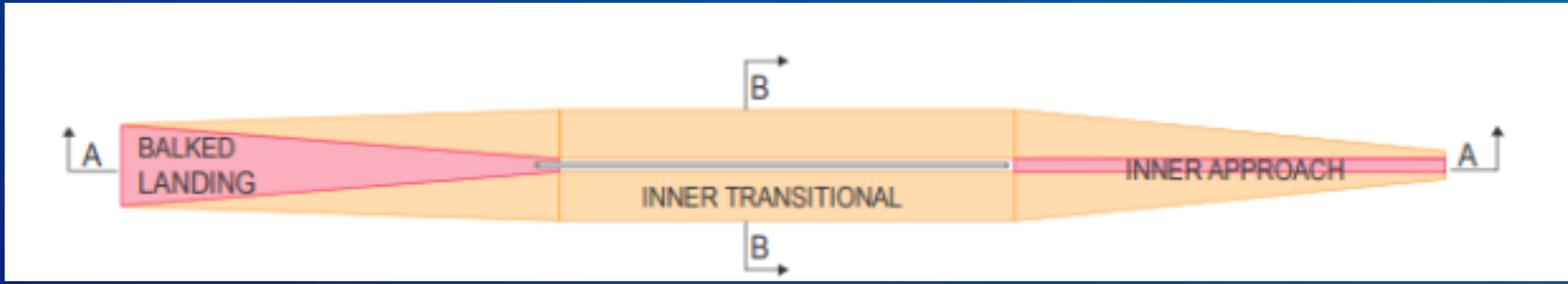
- Protects aircraft executing a go-around after initiating a landing but needing to climb away.
- Provides obstacle-free airspace during a balked (rejected) landing.

What's changed?

- The Balked Landing Surface continues but is now a formal OFS protecting the go-around path.



Obstacle Evaluation Surfaces (OES)

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OES are “trigger surfaces”. A penetration does *not* automatically mean the obstacle is prohibited. Instead, it signals that the development must undergo an aeronautical study to determine:

- Whether the object adversely affects aviation safety, and
- Whether mitigation or procedural adjustments can maintain safety

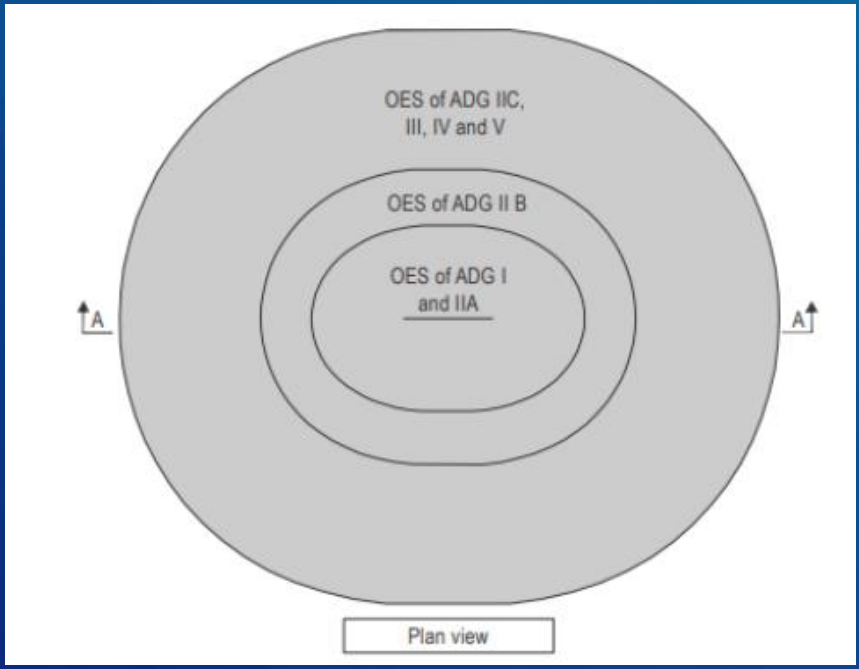
Only standard OES need to be applied when operations require them, they can be adapted/modified.

Key characteristics of OES

- Allow for risk-based decision-making, rather than automatic rejection.
- Protect flight procedures (IFPs), performance-based navigation (PBN) operations, and other manoeuvring areas.
- Enable aerodromes to make context-specific choices based on runway usage, aircraft types, and operational needs.
- Provide flexibility for development without compromising safety, especially where IFP design or mitigations can offset obstacle effects.

Horizontal Surface (OES)

- A broad, relatively flat surface above the aerodrome.
- Provides general protection for airspace around the aerodrome.
- Penetrations must be evaluated for operational impact.



What's changed?

- Previously a simple "upper protection cap," it is now part of the OES, meaning penetrations no longer automatically prohibit development. They instead trigger an aeronautical study.

The new surface is linked to airspace operational needs and can be smaller or larger depending on the aerodrome's operations, whereas before it was fixed.

Surface for Straight-In Instrument Approaches (OES)

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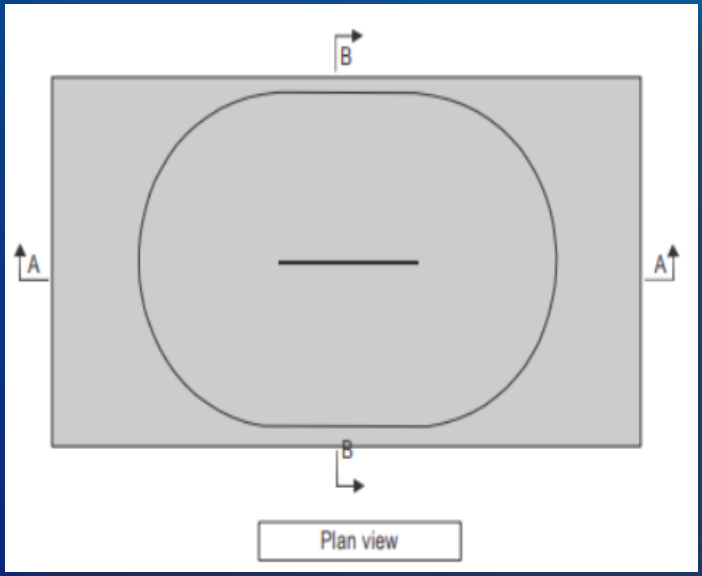
- Protects non-precision and precision instrument approach paths.
- Ensures obstacles do not adversely affect instrument approach procedures.



What's changed?

- **New Surface Concept** - did not exist in the old OLS.
- **Directly Protects Instrument Procedures** - Safeguards actual instrument approaches.
- **Assessment Instead of Prohibition** - Penetrations trigger an aeronautical study to assess impacts on minima and operational safety.
- **Built on PANS-OPS Principles** - Fully aligned with modern procedure design, unlike the legacy OLS.

OES only needs to be considered when there is no horizontal surface and IFPs approaches are utilised.

Surface for Precision Approaches (OES)

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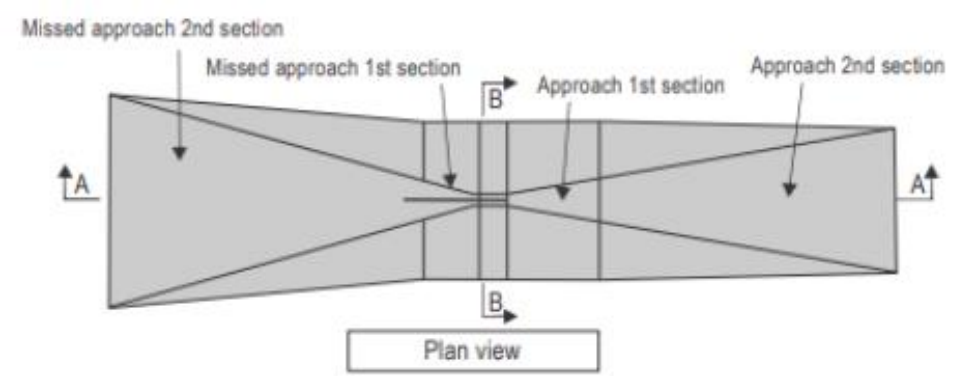
- A specialised OES to safeguard ILS/GLS/SBAS CAT I or higher approaches.
- Includes approach, missed-approach, and transitional components.
- Penetrations require detailed procedure analysis to determine effect on minima.

What's changed?

- New OES surface replacing the legacy "precision approach OLS."
- Includes approach, missed-approach, and transitional components, aligning directly with ILS/GLS/SBAS CAT I+ operations.
- Obstacles are evaluated against impact on procedure minima and navigation performance.



Take-Off Climb Surface (TOCS) (OES)

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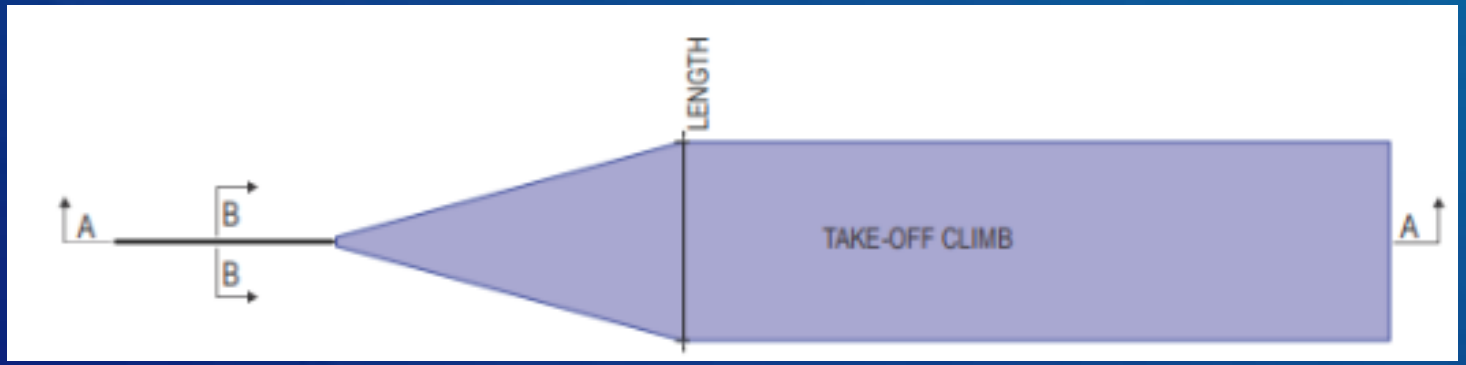
- Formerly a strict no-penetration surface in the legacy OLS.
- Now an OES, meaning obstacles may be allowed if an aeronautical study shows safety and regularity are not compromised.
- This is one of the most significant changes in the new OLS philosophy.

What's changed?

- Penetrations now require aeronautical study rather than automatic prohibition.
- This introduces:
  - Flexibility to allow certain obstacles
  - Ability to manage development through mitigation
  - Better alignment with actual aircraft departure performance



Instrument Departure Surface (OES)

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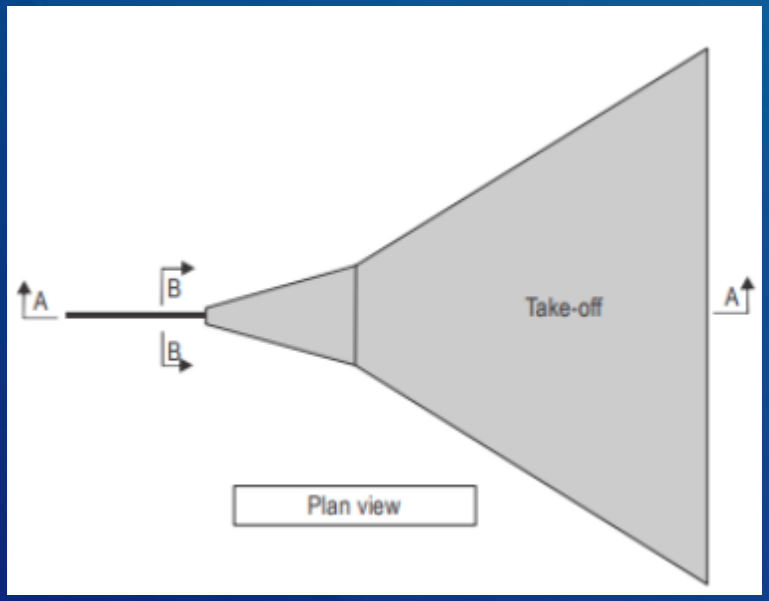
- Protects aircraft climbing after take-off under instrument departure procedures.
- Based on PANS-OPS departure criteria and procedural gradients.
- Allows assessment when obstacles breach the surface.



What's changed?

- Departure protection moved from OLS to OES, meaning penetrations no longer automatically render a development unacceptable.
- Now directly tied to PANS-OPS instrument departure criteria
- Safeguarding now depends on:
  - Required obstacle clearance
  - Procedure gradients
  - Whether operational mitigation can maintain safety

Specific Evaluation Surfaces (OES)

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Standard OES:

- Cover most common type of operations only (eg straight in approaches, common approach minima ect)

What's changed?

Standard OES may be modified:

- To accommodate operations and procedures not covered by standard OES
- To release airspace where standard OES are too conservative.

Tailored OES may be established to also:

- Where the standard or modified OES do not identify all relevant areas
- To balance needs of aviation and environment
- To integrate other aerodrome safeguarding needs (e.g. CNS, lighting, if reasonable and appropriate.

Specific Evaluation Surfaces (OES)

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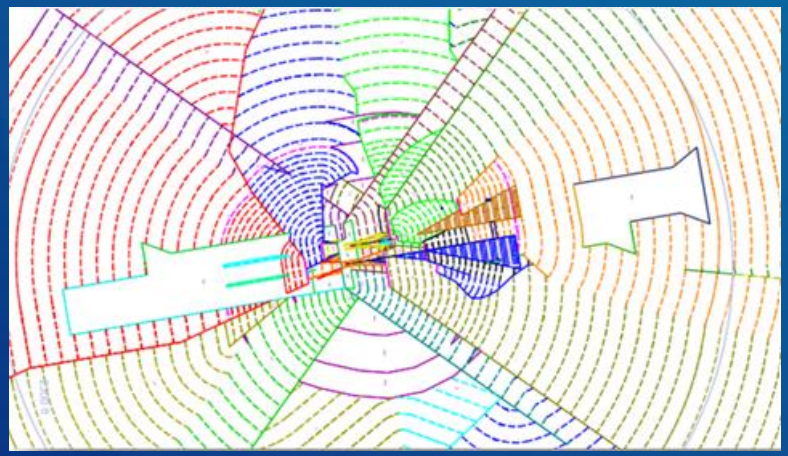
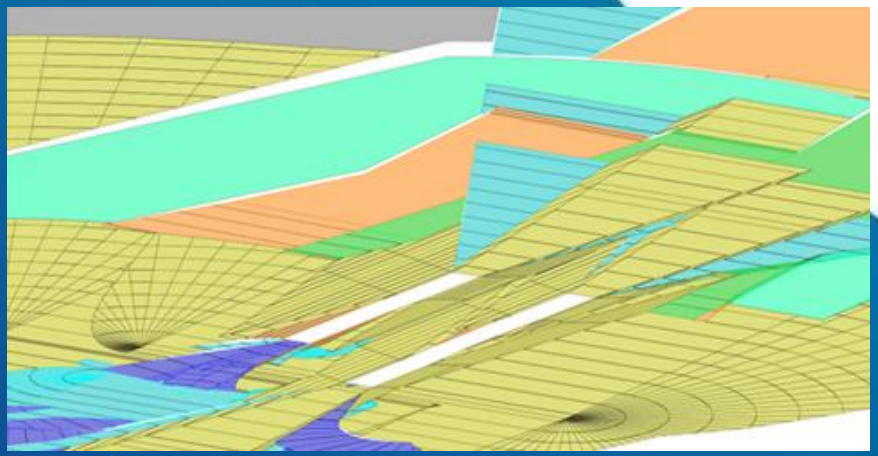
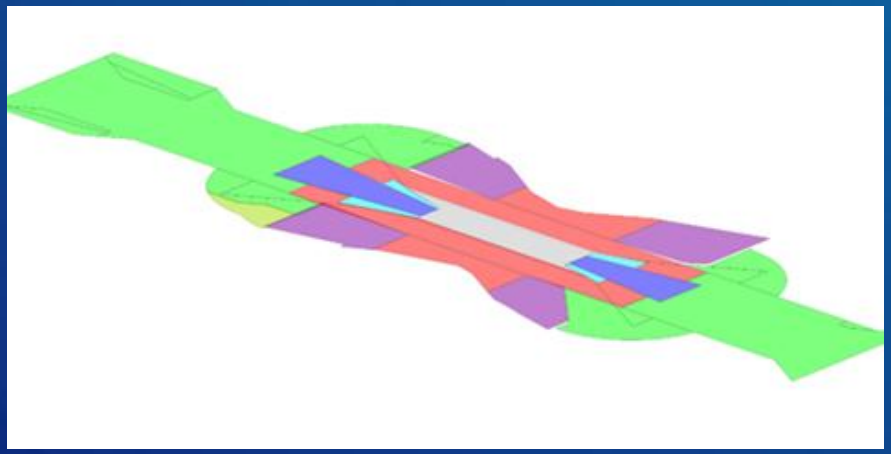
Examples:







Aeronautical Studies

Aeronautical Study

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Definition

An aeronautical study is a structured safety and operational assessment used to determine whether an obstacle that penetrates an Obstacle Evaluation Surface (OES) can be accepted, and if so, under what mitigations (e.g., procedure redesign, operational constraints, lighting/marking).

Purpose

- The primary goal is to ensure that any changes in the airspace environment do not compromise flight safety, operational efficiency, or regulatory compliance
- Identify potential hazards to aircraft operations
- Are proportionate and support informed decision making for airspace management

When is it Required?

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An aeronautical study is typically triggered when a proposed object:

- Penetrates an OES, e.g. Horizontal Surface, Straight-In Instrument Approach surface, Precision Approach surface, Instrument Departure surface, or TOCS
- Is in airspace that supports existing or planned flight procedures (approach, missed approach, departure, circling) where procedure integrity must be safeguarded.

The study should answer two core questions:

1. Safety

- Does the obstacle adversely affect the safety of existing and intended operations?

2. Operational regularity

- Does it significantly affect regularity (e.g., raise minima, remove procedure options, increase missed approach rates, constrain departures)?

Typical Inputs to an Aeronautical Study

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Obstacle information

- Precise coordinates, elevation/height (incl. AGL/AMSL), structure type (fixed/temporary), construction method (cranes, temporary stages).
- Accurate obstacle data is essential for reliable evaluation workflows.

Operational context

- Runway(s) in use, planned runway development, and operating environment.
- Aircraft mix / operational needs that drive the applicable OLS and procedure requirements

Procedure context

- Existing and planned instrument procedures (approach, missed approach, departures) and procedure design constraints that may be impacted by the obstacle.

Surface interaction

- Which OES surface(s) are penetrated and by how much (penetration depth/extent).

Assessment Steps

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Step 1

Classify the infringement

Confirm whether the obstacle affects **OFS** or **OES**.

Step 2

Determine impacted operations

Identify which procedures/flight phases are affected (straight-in, precision, missed approach, instrument departure, circling).

Step 3

Evaluate operational impact

Does the obstacle require changes to procedure design, containment, or minima?

Step 4

Identify mitigations

- Options may include:
- Procedure redesign / constraints
- Operational restrictions (time-limited operations, runway direction limitations)
- Obstacle marking/lighting or limiting height
- Relocation / redesign of the development

Step 5

Document conclusion

Accept / Accept with conditions / Not acceptable, with rationale focused on safety + regularity.

Outputs & Decisions

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A robust aeronautical study should produce:

1. Clear statement of affected surfaces and penetrations (which OES, where, how).
2. Safety/regularity determination explaining why the obstacle is acceptable or not.
3. Mitigation package (if acceptable with conditions), including who implements and how compliance is monitored.
4. Record for stakeholders (aerodrome operator, ANSP/procedure designers, planning authorities), enabling consistent planning decisions and safeguarding defensibility.

Roles & Responsibilities

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Aerodrome Operators

- Implement the new OLS locally, manage safeguarding, and support evidence gathering.

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- Integrate new OLS into national regulation and provide oversight; enable aeronautical study processes.

Flight Procedure Designers / ANSPs

- Assess procedure impacts and develop mitigations or redesigns where required.

Planning authorities / developers

- Provide accurate obstacle data and engage early, recognising OES penetrations require study.

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What The New OLS Means For Aerodromes

New ICAO OLS

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Updated Safeguarding Requirements

- Aerodromes will need to adopt the new OFS and OES structure, replacing the legacy OLS surfaces. Safeguarding maps and local safeguarding processes will require revision to reflect new ICAO definitions

Impact on Planning and Development Control

- Local planning authorities may need updated guidance to reflect the modernised criteria.
- Aerodromes may experience changes in the types and frequency of consultations due to more proportionate safeguarding triggers.

Transition and Change Management

- Existing obstacles and developments may need review under the new criteria.
- Staff training, updated policies, and communication with stakeholders (LPAs, developers, industry) will be essential.

UK Implementation Approach

Implementation

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ICAO Applicability Date

- The new ICAO OLS Framework becomes applicable globally on 21 November 2030 (as stated in the ICAO State Letter).

Phased UK Transition

- The UK will move toward the new OFS/OES structure through a phased implementation aligned with national regulatory updates and project milestones.
- Preparatory work, engagement, and regulatory alignment will continue through Q1 2026, ahead of ICAO's applicability date.

Regulatory Alignment

- Integration of the new OLS into updates of CAP 168, CAP 738, CAP 1732, and CAP 232.
- Ensures UK standards reflect ICAO guidance while supporting UK-specific safeguarding needs.

Stakeholder Engagement

- Ongoing collaboration with aerodromes, DfT, planning authorities, and industry.
- Formal consultation planned as part of the UK adoption process.

Aerodrome Safeguarding Circular: update and next steps

April 2026

Department for Transport

Update → Planning interface → Process → Next steps

The problem we're addressing

⌛ Outdated guidance

2002 guidance (last refreshed 2016) no longer reflects current planning or aviation practices.

🌎 International safety standards have moved on

Guidance needs to keep pace

🏗️ Development Complexity

More complex developments (height, renewables, temporary works) have outgrown existing guidance.

⚖️ Inconsistent application through planning

Variable interpretation creates uncertainty.

The planning law ‘hook’

The Safeguarding Circular is the key planning-facing document

- Aviation safeguarding is primarily delivered through the planning system, with requirements triggered through planning applications and consultations rather than separate aviation consents.
- The Safeguarding Circular provides the practical interface between aviation safety policy and planning decision-making, explaining when consultation is required and how safety considerations should be factored in.

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Roles and ownership

- MHCLG is the formal owner of national planning guidance.
- DfT leads on aviation safeguarding policy and technical content, working with aviation stakeholders and planning colleagues to ensure guidance remains current and workable

What this update focuses on

- Making the planning-aviation interface clearer in practice
- Supporting consistent application by LPAs and consultees
- Ensuring planning-facing guidance reflects current aviation safety standards and development pressures

Policy Intent

Protect aviation safety while supporting sustainable development

Ensure aerodromes can operate safely while enabling growth and development to proceed where risks can be appropriately managed.

Improve clarity and consistency, not restrict growth

The aim is clearer, more consistent planning-facing guidance that improves predictability for industry and local planning authorities, rather than introducing new controls or consenting regimes.

✅ / ❌ What it will / won't do

✅ What the update will do

- Clarify roles, responsibilities, and expectations at the planning–aviation interface, including when safeguarding consultation is required and how advice should be considered
- Support more consistent application of safeguarding guidance across the planning system
- Encourage earlier and clearer engagement between developers, LPAs, and aerodrome operators
- Improve clarity for practitioners, reducing uncertainty and late-stage issues in planning decisions

❌ What the update won't do

- Introduce new planning powers, duties, or a new consent regime
- Change who makes planning decisions, which will remain with the relevant Local Planning Authority or Secretary of State
- Change the statutory framework for safeguarding, or in itself alter which aerodromes are safeguarded as a matter of law
- Override national planning policy or existing legislative requirements

How we get there

Indicative delivery over the next 12 months

Draft

- DfT leading, working with the CAA and relevant government departments
- Early scoping to clarify approach, scope, and practical application
- Cross-government engagement, including MHCLG and Defence

Consult

- Public consultation on clarity, approach, and impacts
- Engagement used to refine guidance and implementation.

Publish

- Guidance finalised post-consultation
- Published as updated planning-facing guidance
- Operates alongside national planning policy

Work is at an early scoping and planning stage, focused on approach, scope, and engagement needs. Opportunities for industry engagement and formal consultation will be set out as the work develops.

Thank You

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Thanks for listening.

Please leave any questions in the chat box or email NewOLS@caa.co.uk