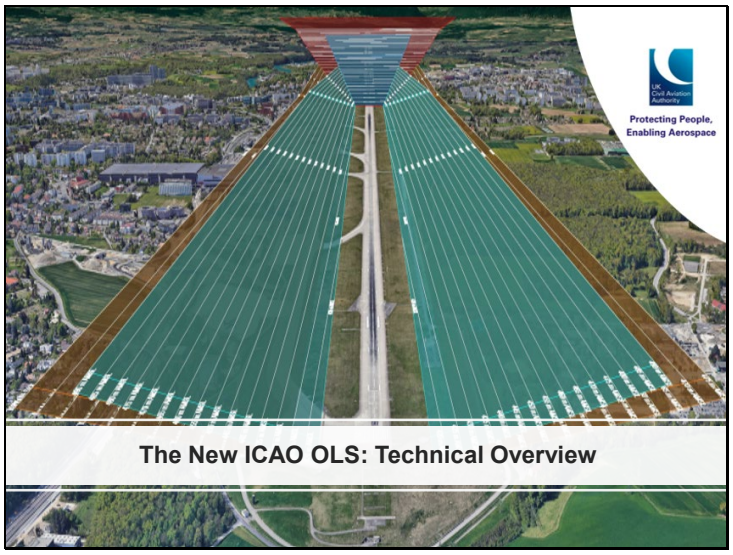
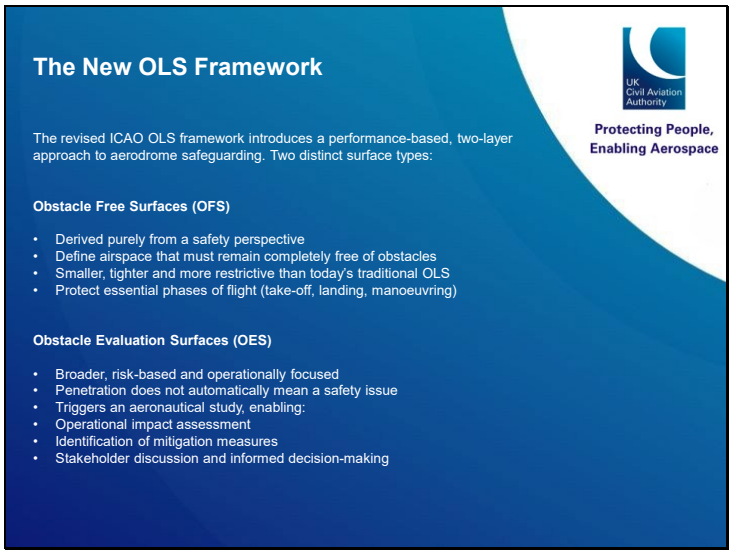
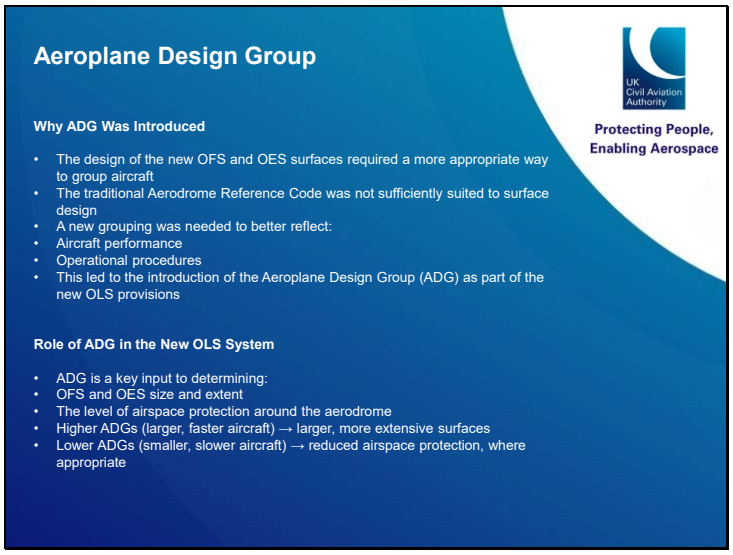
Slide 1


Protecting People,
Enabling Aerospace
The New ICAO OLS: Technical Overview

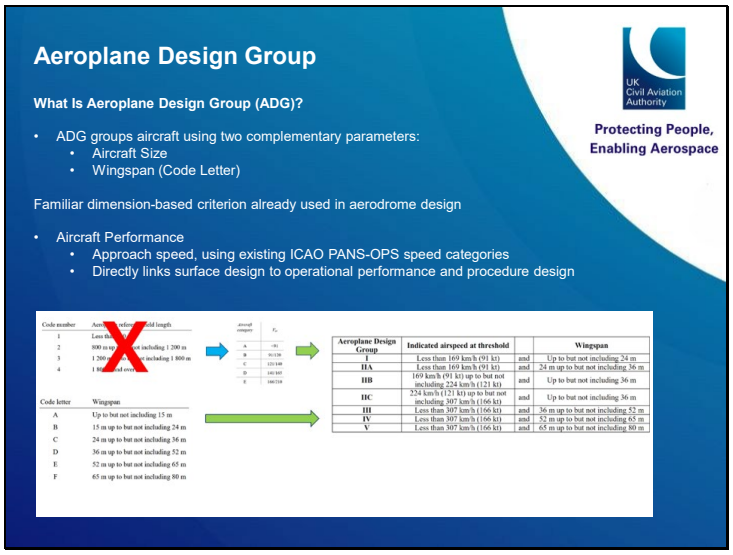
Slide 2


The New OLS Framework
UK Civil Aviation Authority
Protecting People, Enabling Aerospace
The revised ICAO OLS framework introduces a performance-based, two-layer approach to aerodrome safeguarding. Two distinct surface types:
Obstacle Free Surfaces (OFS)
Derived purely from a safety perspective
Define airspace that must remain completely free of obstacles
Smaller, tighter and more restrictive than today's traditional OLS
Protect essential phases of flight (take-off, landing, manoeuvring)
Obstacle Evaluation Surfaces (OES)
Broader, risk-based and operationally focused
Penetration does not automatically mean a safety issue
Triggers an aeronautical study, enabling:
Operational impact assessment
Identification of mitigation measures
Stakeholder discussion and informed decision-making

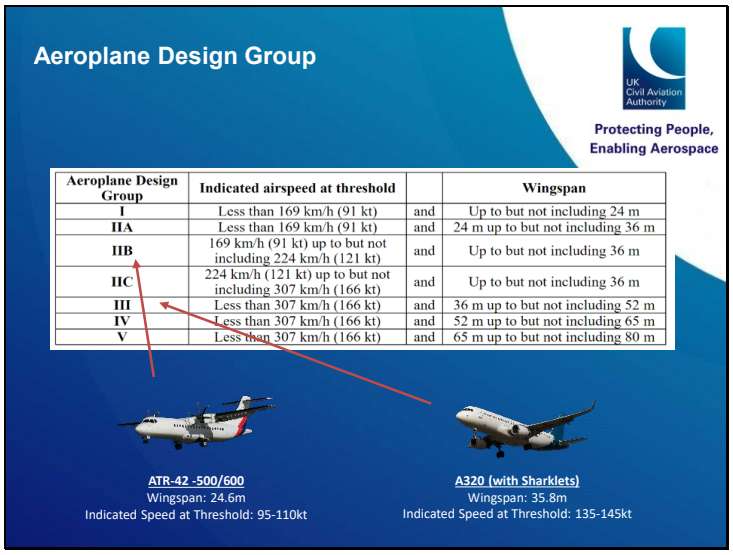
Slide 3


Aeroplane Design Group
UK Civil Aviation Authority
Protecting People, Enabling Aerospace
Why ADG Was Introduced
• The design of the new OFS and OES surfaces required a more appropriate way to group aircraft
• The traditional Aerodrome Reference Code was not sufficiently suited to surface design
• A new grouping was needed to better reflect:
• Aircraft performance
• Operational procedures
• This led to the introduction of the Aeroplane Design Group (ADG) as part of the new OLS provisions
Role of ADG in the New OLS System
• ADG is a key input to determining:
• OFS and OES size and extent
• The level of airspace protection around the aerodrome
• Higher ADGs (larger, faster aircraft) → larger, more extensive surfaces
• Lower ADGs (smaller, slower aircraft) → reduced airspace protection, where appropriate

Slide 4

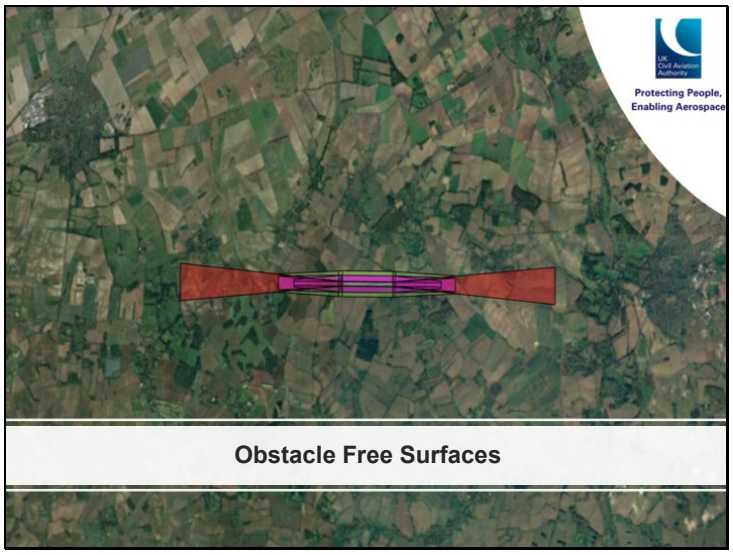

Aeroplane Design Group
What Is Aeroplane Design Group (ADG)?
ADG groups aircraft using two complementary parameters:
Aircraft Size
Wingspan (Code Letter)
Familiar dimension-based criterion already used in aerodrome design
Aircraft Performance
Approach speed, using existing ICAO PANS-OPS speed categories
Directly links surface design to operational performance and procedure design
UK Civil Aviation Authority
Protecting People, Enabling Aerospace
Code letter
Wingspan
A
Up to but not including 15 m
B
15 m up to but not including 24 m
C
24 m up to but not including 36 m
D
36 m up to but not including 52 m
E
52 m up to but not including 65 m
F
65 m up to but not including 80 m
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

Slide 5

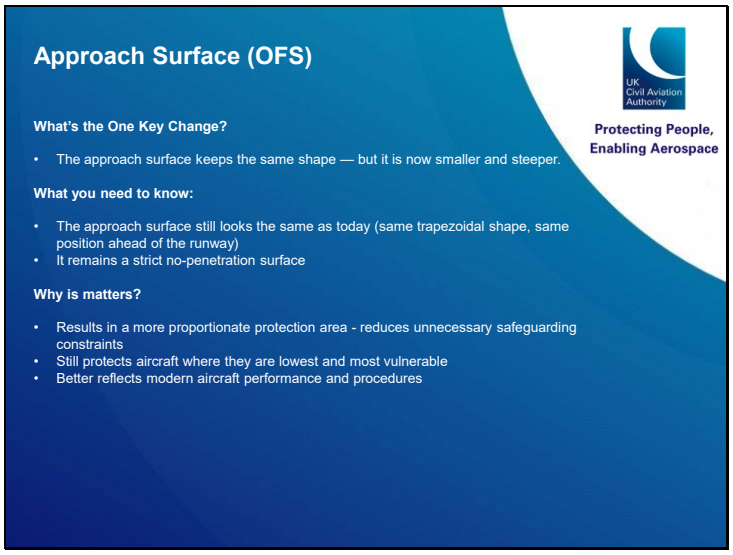


Aeroplane Design Group	Indicated airspeed at threshold		Wingspan
I	Less than 169 km/h (91 kt)	and	Up to but not including 24 m
IIA	Less than 169 km/h (91 kt)	and	24 m up to but not including 36 m
IIB	169 km/h (91 kt) up to but not including 224 km/h (121 kt)	and	Up to but not including 36 m
IIC	224 km/h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

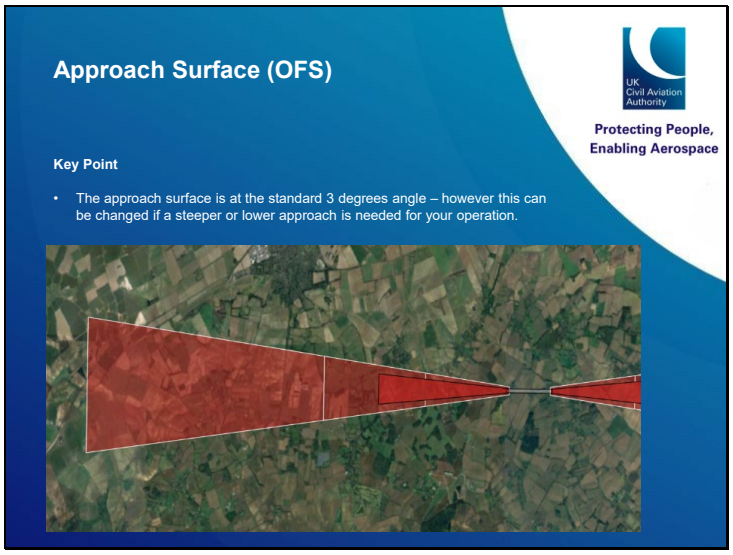
Slide 6


Protecting People,
Enabling Aerospace
Obstacle Free Surfaces

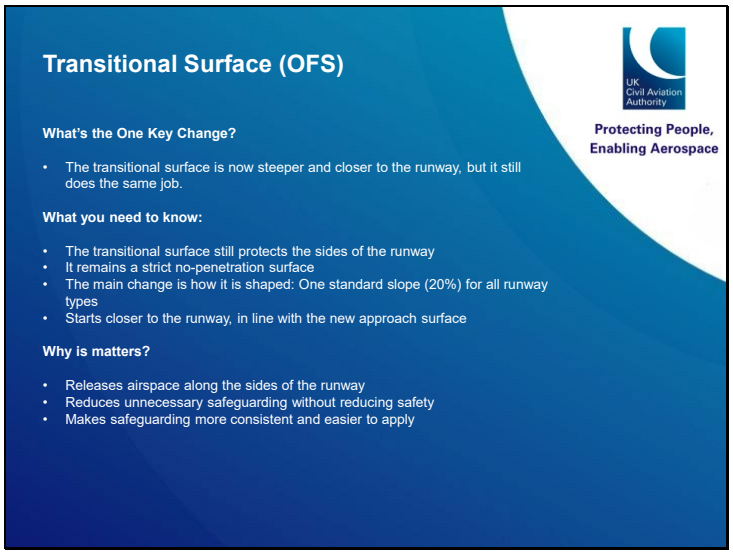
Slide 7


Approach Surface (OFS)
UK Civil Aviation Authority
Protecting People, Enabling Aerospace
What's the One Key Change?
• The approach surface keeps the same shape — but it is now smaller and steeper.
What you need to know:
• The approach surface still looks the same as today (same trapezoidal shape, same position ahead of the runway)
• It remains a strict no-penetration surface
Why is matters?
• Results in a more proportionate protection area - reduces unnecessary safeguarding constraints
• Still protects aircraft where they are lowest and most vulnerable
• Better reflects modern aircraft performance and procedures

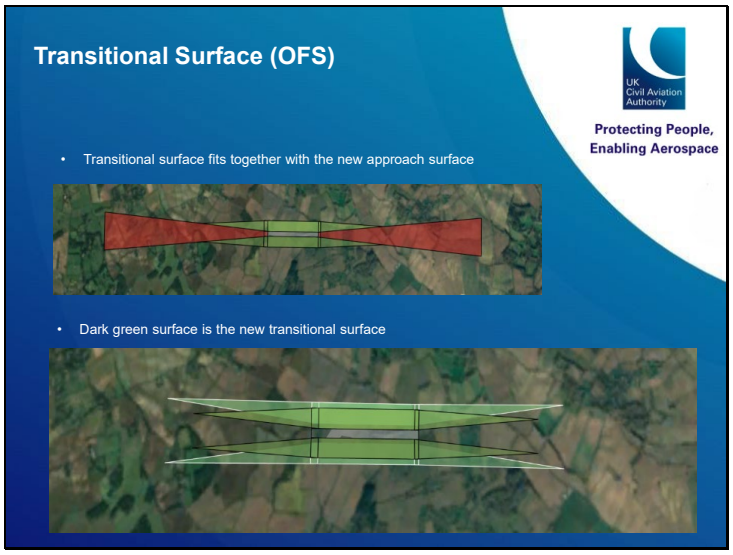
Slide 8


Approach Surface (OFS)
UK Civil Aviation Authority
Protecting People, Enabling Aerospace
Key Point
• The approach surface is at the standard 3 degrees angle – however this can be changed if a steeper or lower approach is needed for your operation.

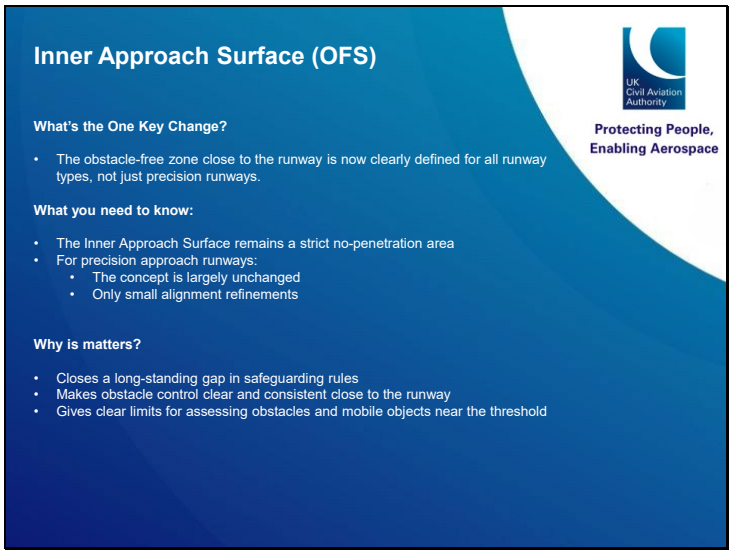
Slide 9


Transitional Surface (OFS)
UK Civil Aviation Authority
Protecting People, Enabling Aerospace
What's the One Key Change?
• The transitional surface is now steeper and closer to the runway, but it still does the same job.
What you need to know:
• The transitional surface still protects the sides of the runway
• It remains a strict no-penetration surface
• The main change is how it is shaped: One standard slope (20%) for all runway types
• Starts closer to the runway, in line with the new approach surface
Why is matters?
• Releases airspace along the sides of the runway
• Reduces unnecessary safeguarding without reducing safety
• Makes safeguarding more consistent and easier to apply

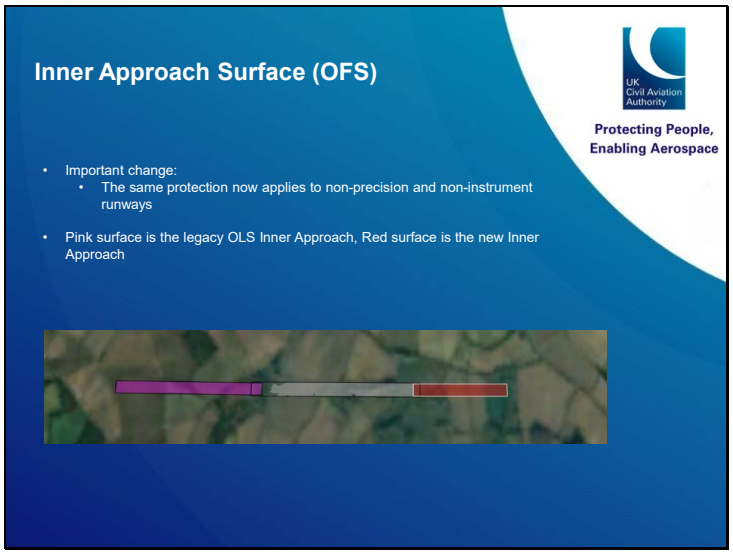
Slide 10


Transitional Surface (OFS)
UK Civil Aviation Authority
Protecting People, Enabling Aerospace
• Transitional surface fits together with the new approach surface
• Dark green surface is the new transitional surface

Slide 11


Inner Approach Surface (OFS)
UK Civil Aviation Authority
Protecting People, Enabling Aerospace
What's the One Key Change?
• The obstacle-free zone close to the runway is now clearly defined for all runway types, not just precision runways.
What you need to know:
• The Inner Approach Surface remains a strict no-penetration area
• For precision approach runways:
• The concept is largely unchanged
• Only small alignment refinements
Why is matters?
• Closes a long-standing gap in safeguarding rules
• Makes obstacle control clear and consistent close to the runway
• Gives clear limits for assessing obstacles and mobile objects near the threshold

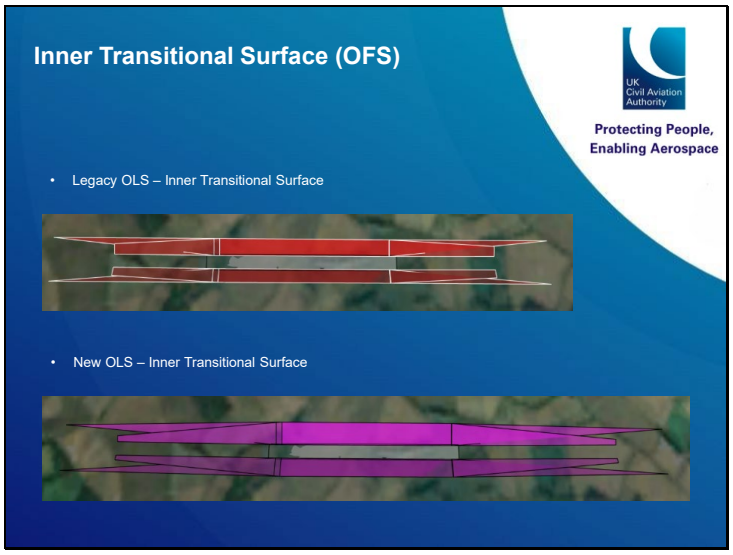
Slide 12


Inner Approach Surface (OFS)
UK Civil Aviation Authority
Protecting People, Enabling Aerospace
Important change:
The same protection now applies to non-precision and non-instrument runways
Pink surface is the legacy OLS Inner Approach, Red surface is the new Inner Approach

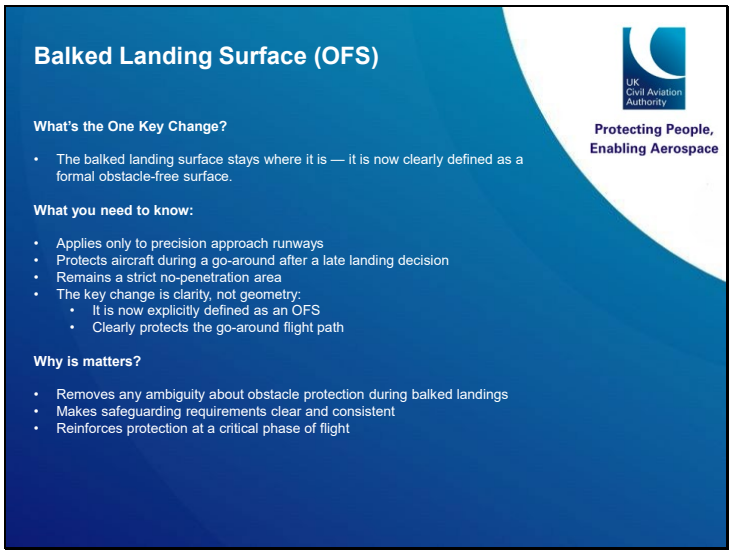
Slide 13


Inner Transitional Surface (OFS)
What's the One Key Change?
• For some runway types, the inner transitional surface now has a vertical step — but this does not affect runway operations.
What you need to know:
• The Inner Transitional Surface remains part of the Obstacle Free Zone
• It is still a strict no-penetration area
• For non-precision and non-instrument runways:
• The surface starts vertically, then slopes away
• This shape is intentional
Why is matters?
• The design ensures:
• Existing runway holding points stay exactly where they are
• No change to how the runway operates
• Provides clear obstacle control close to the runway without operational impact
UK Civil Aviation Authority
Protecting People, Enabling Aerospace

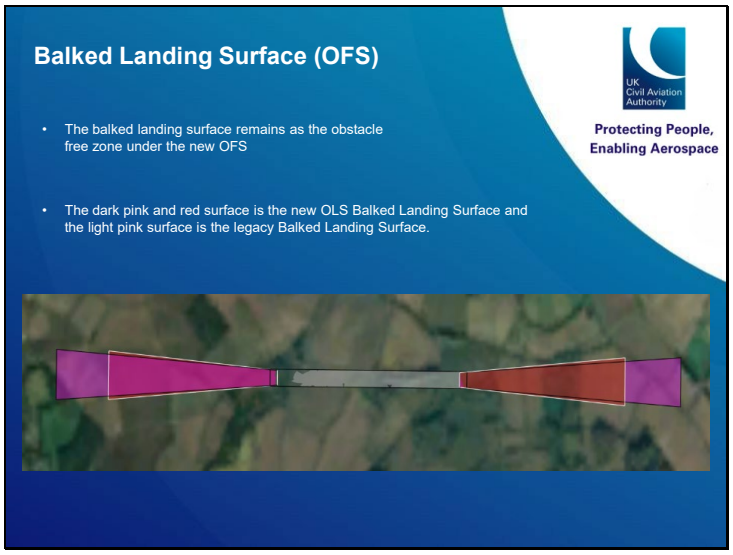
Slide 14


Inner Transitional Surface (OFS)
UK Civil Aviation Authority
Protecting People, Enabling Aerospace
• Legacy OLS – Inner Transitional Surface
• New OLS – Inner Transitional Surface

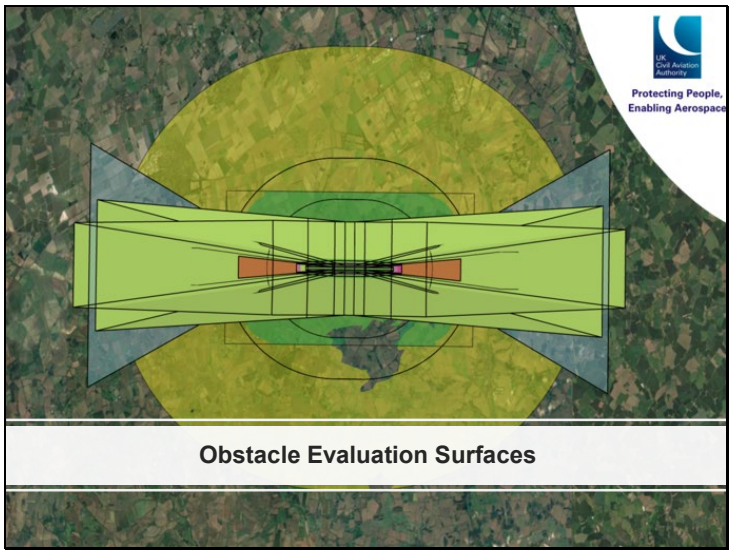
Slide 15


Balked Landing Surface (OFS)
UK Civil Aviation Authority
Protecting People, Enabling Aerospace
What's the One Key Change?
• The balked landing surface stays where it is — it is now clearly defined as a formal obstacle-free surface.
What you need to know:
• Applies only to precision approach runways
• Protects aircraft during a go-around after a late landing decision
• Remains a strict no-penetration area
• The key change is clarity, not geometry:
• It is now explicitly defined as an OFS
• Clearly protects the go-around flight path
Why is matters?
• Removes any ambiguity about obstacle protection during balked landings
• Makes safeguarding requirements clear and consistent
• Reinforces protection at a critical phase of flight

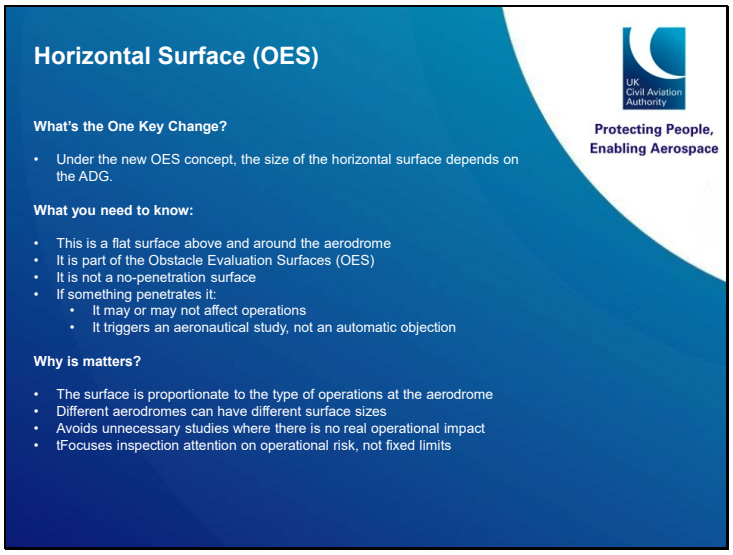
Slide 16


Balked Landing Surface (OFS)
UK Civil Aviation Authority
Protecting People, Enabling Aerospace
• The balked landing surface remains as the obstacle free zone under the new OFS
• The dark pink and red surface is the new OLS Balked Landing Surface and the light pink surface is the legacy Balked Landing Surface.

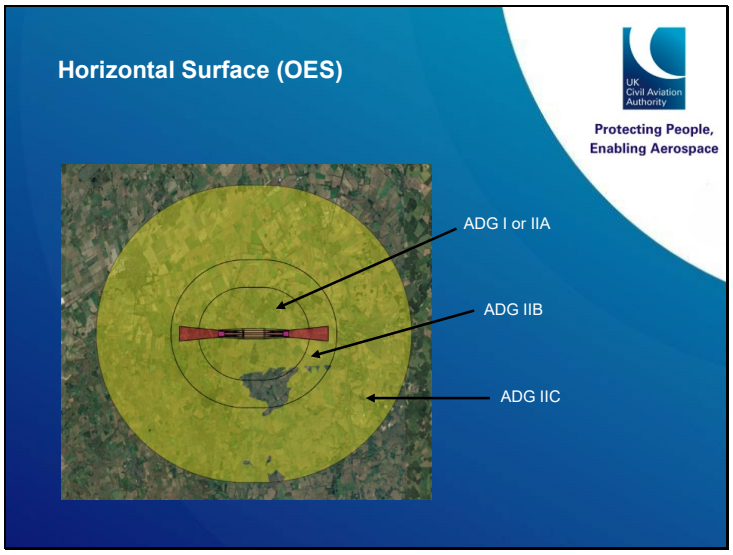
Slide 17


UK Civil Aviation Authority
Protecting People, Enabling Aerospace
Obstacle Evaluation Surfaces

Slide 18


Horizontal Surface (OES)
UK Civil Aviation Authority
Protecting People, Enabling Aerospace
What's the One Key Change?
• Under the new OES concept, the size of the horizontal surface depends on the ADG.
What you need to know:
• This is a flat surface above and around the aerodrome
• It is part of the Obstacle Evaluation Surfaces (OES)
• It is not a no-penetration surface
• If something penetrates it:
• It may or may not affect operations
• It triggers an aeronautical study, not an automatic objection
Why is matters?
• The surface is proportionate to the type of operations at the aerodrome
• Different aerodromes can have different surface sizes
• Avoids unnecessary studies where there is no real operational impact
• tFocuses inspection attention on operational risk, not fixed limits

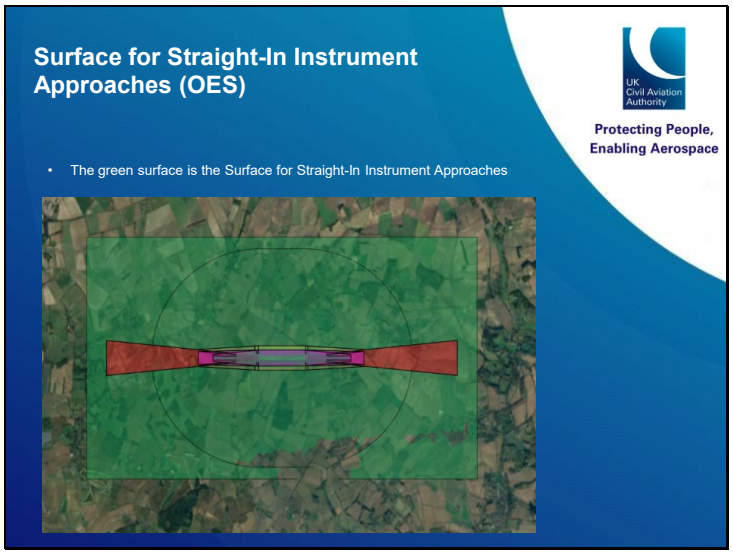
Slide 19


Horizontal Surface (OES)
UK Civil Aviation Authority
Protecting People, Enabling Aerospace
ADG I or IIA
ADG IIB
ADG IIC

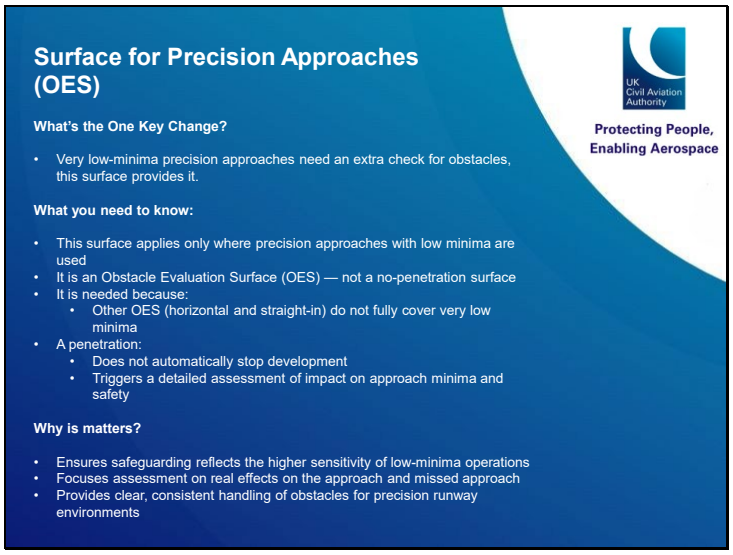
Slide 20


Surface for Straight-In Instrument Approaches (OES)
UK Civil Aviation Authority
Protecting People, Enabling Aerospace
What's the One Key Change?
• New surface concept - helps check whether obstacles could affect straight-in instrument approaches: it does not automatically prohibit development.
When this Surface is Relevant:
• There is no visual manoeuvring or circling
• Instrument approaches are the primary operation
• Provides reasonable protection for typical instrument approaches
• Helps identify obstacles that might increase minima or affect procedure design
Why is matters?
• Focuses safeguarding on real operational impact
• Avoids unnecessary restrictions where procedures are unaffected
• Supports a proportionate, procedure-based approach to obstacle assessment

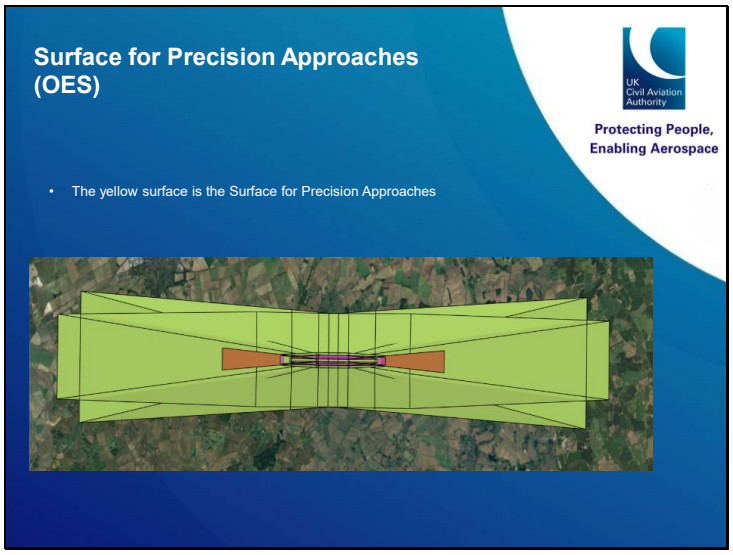
Slide 21


Surface for Straight-In Instrument Approaches (OES)
UK Civil Aviation Authority
Protecting People, Enabling Aerospace
• The green surface is the Surface for Straight-In Instrument Approaches

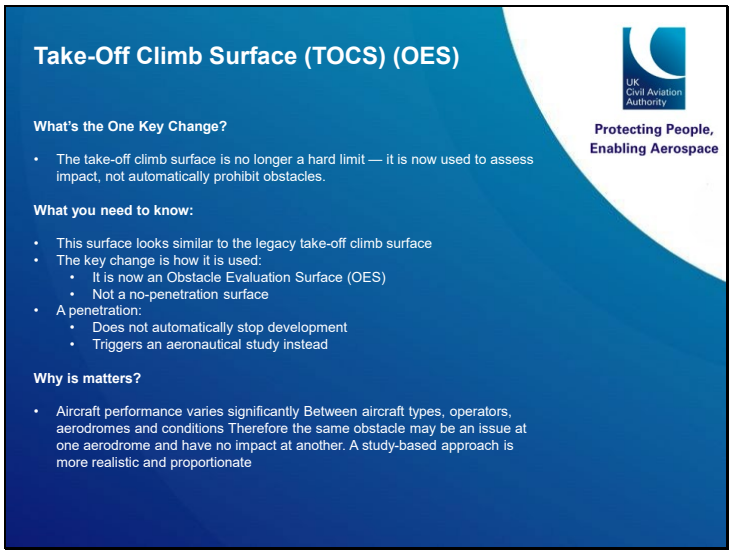
Slide 22


Surface for Precision Approaches (OES)
What's the One Key Change?
• Very low-minima precision approaches need an extra check for obstacles, this surface provides it.
What you need to know:
• This surface applies only where precision approaches with low minima are used
• It is an Obstacle Evaluation Surface (OES) — not a no-penetration surface
• It is needed because:
• Other OES (horizontal and straight-in) do not fully cover very low minima
• A penetration:
• Does not automatically stop development
• Triggers a detailed assessment of impact on approach minima and safety
Why is matters?
• Ensures safeguarding reflects the higher sensitivity of low-minima operations
• Focuses assessment on real effects on the approach and missed approach
• Provides clear, consistent handling of obstacles for precision runway environments
UK Civil Aviation Authority
Protecting People, Enabling Aerospace

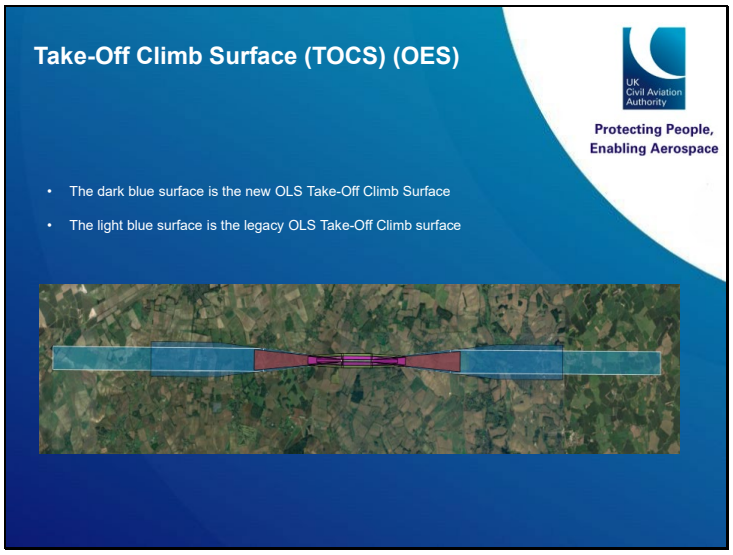
Slide 23


Surface for Precision Approaches (OES)
UK Civil Aviation Authority
Protecting People, Enabling Aerospace
• The yellow surface is the Surface for Precision Approaches

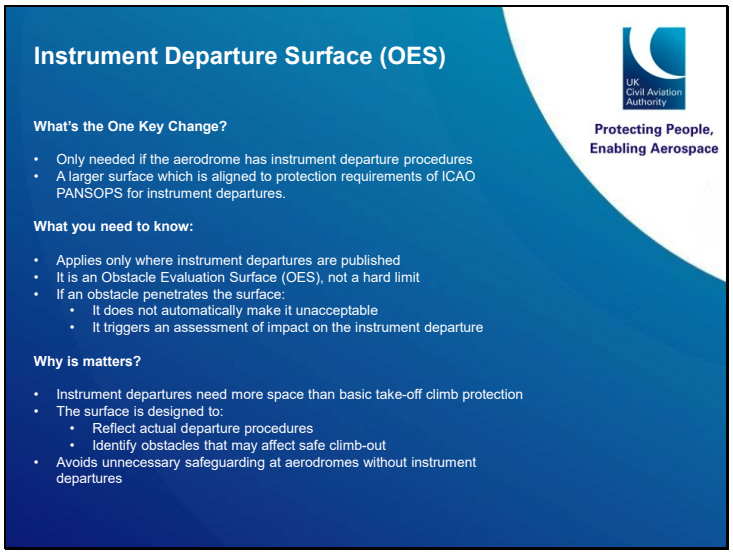
Slide 24


Take-Off Climb Surface (TOCS) (OES)
UK Civil Aviation Authority
Protecting People, Enabling Aerospace
What's the One Key Change?
• The take-off climb surface is no longer a hard limit — it is now used to assess impact, not automatically prohibit obstacles.
What you need to know:
• This surface looks similar to the legacy take-off climb surface
• The key change is how it is used:
• It is now an Obstacle Evaluation Surface (OES)
• Not a no-penetration surface
• A penetration:
• Does not automatically stop development
• Triggers an aeronautical study instead
Why is matters?
• Aircraft performance varies significantly Between aircraft types, operators, aerodromes and conditions Therefore the same obstacle may be an issue at one aerodrome and have no impact at another. A study-based approach is more realistic and proportionate

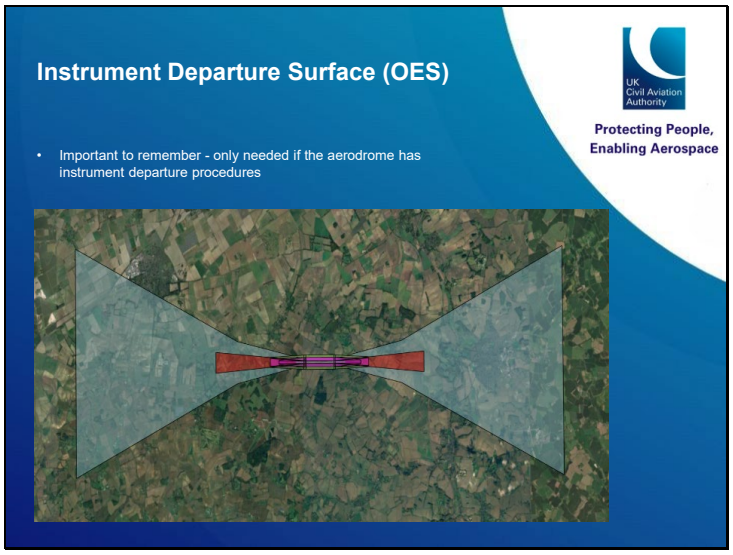
Slide 25


Take-Off Climb Surface (TOCS) (OES)
UK Civil Aviation Authority
Protecting People, Enabling Aerospace
• The dark blue surface is the new OLS Take-Off Climb Surface
• The light blue surface is the legacy OLS Take-Off Climb surface

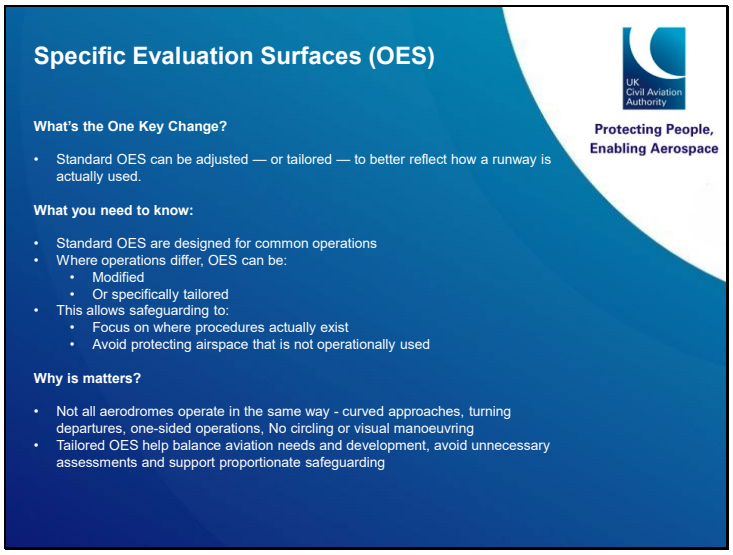
Slide 26


Instrument Departure Surface (OES)
UK Civil Aviation Authority
Protecting People, Enabling Aerospace
What's the One Key Change?
Only needed if the aerodrome has instrument departure procedures
A larger surface which is aligned to protection requirements of ICAO PANSOPS for instrument departures.
What you need to know:
Applies only where instrument departures are published
It is an Obstacle Evaluation Surface (OES), not a hard limit
If an obstacle penetrates the surface:
It does not automatically make it unacceptable
It triggers an assessment of impact on the instrument departure
Why is matters?
Instrument departures need more space than basic take-off climb protection
The surface is designed to:
Reflect actual departure procedures
Identify obstacles that may affect safe climb-out
Avoids unnecessary safeguarding at aerodromes without instrument departures

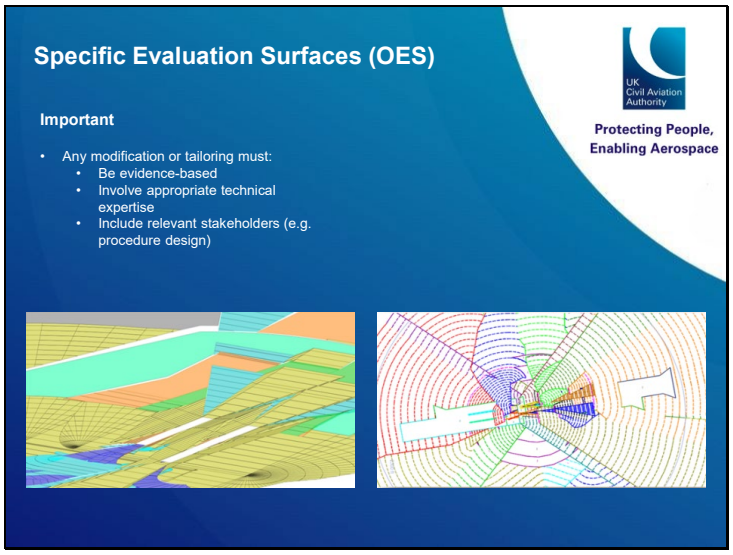
Slide 27


Instrument Departure Surface (OES)
UK Civil Aviation Authority
Protecting People, Enabling Aerospace
• Important to remember - only needed if the aerodrome has instrument departure procedures

Slide 28


Specific Evaluation Surfaces (OES)
UK Civil Aviation Authority
Protecting People, Enabling Aerospace
What's the One Key Change?
• Standard OES can be adjusted — or tailored — to better reflect how a runway is actually used.
What you need to know:
• Standard OES are designed for common operations
• Where operations differ, OES can be:
• Modified
• Or specifically tailored
• This allows safeguarding to:
• Focus on where procedures actually exist
• Avoid protecting airspace that is not operationally used
Why is matters?
• Not all aerodromes operate in the same way - curved approaches, turning departures, one-sided operations, No circling or visual manoeuvring
• Tailored OES help balance aviation needs and development, avoid unnecessary assessments and support proportionate safeguarding

Slide 29


Specific Evaluation Surfaces (OES)
Important
Any modification or tailoring must:
Be evidence-based
Involve appropriate technical expertise
Include relevant stakeholders (e.g. procedure design)
UK Civil Aviation Authority
Protecting People, Enabling Aerospace

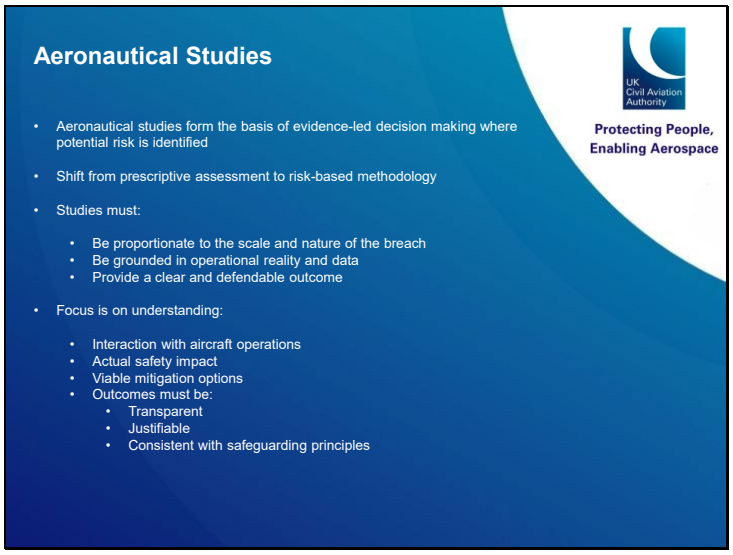
Slide 30


Have Questions?
Scan the QR code to submit your questions on Slido.
UK Civil Aviation Authority
Protecting People, Enabling Aerospace
Reminder
We'll address all questions during the Q&A session at the end of the workshop.

Slide 31


UK Civil Aviation Authority
Protecting People, Enabling Aerospace
Aeronautical Studies: Methodology & Expectations

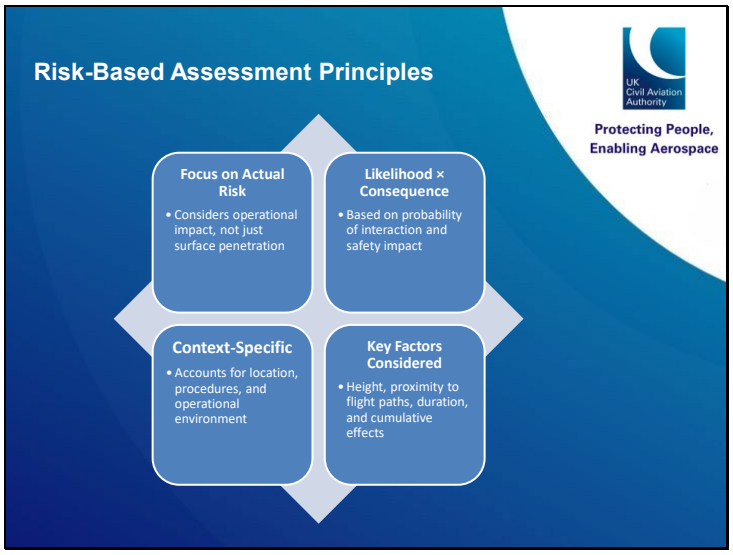
Slide 32


Aeronautical Studies
UK Civil Aviation Authority
Protecting People, Enabling Aerospace
• Aeronautical studies form the basis of evidence-led decision making where potential risk is identified
• Shift from prescriptive assessment to risk-based methodology
• Studies must:
• Be proportionate to the scale and nature of the breach
• Be grounded in operational reality and data
• Provide a clear and defendable outcome
• Focus is on understanding:
• Interaction with aircraft operations
• Actual safety impact
• Viable mitigation options
• Outcomes must be:
• Transparent
• Justifiable
• Consistent with safeguarding principles

Slide 33


Aeronautical Study Must Include
Clear Description of the Proposal
Height, location, extent, and duration of the obstacle
Assessment of Operational Context
Proximity to runway(s) and flight procedures
Interaction with arrival, departure, or circuit paths
Risk-Based Analysis
Evaluation of likelihood and consequence
Identification of any operational impact
Use of Data and Evidence
Flight path information
Terrain and obstacle data
Modelling and technical inputs
Consideration of Mitigations
Design changes (e.g. height reduction)
Operational procedures or restrictions
Lighting or marking where appropriate
Clear Conclusion and Recommendation
Acceptable
Acceptable with mitigation
Not acceptable
UK Civil Aviation Authority
Protecting People, Enabling Aerospace

Slide 34


Risk-Based Assessment Principles
UK Civil Aviation Authority
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Focus on Actual Risk
• Considers operational impact, not just surface penetration
Likelihood × Consequence
• Based on probability of interaction and safety impact
Context-Specific
• Accounts for location, procedures, and operational environment
Key Factors Considered
• Height, proximity to flight paths, duration, and cumulative effects

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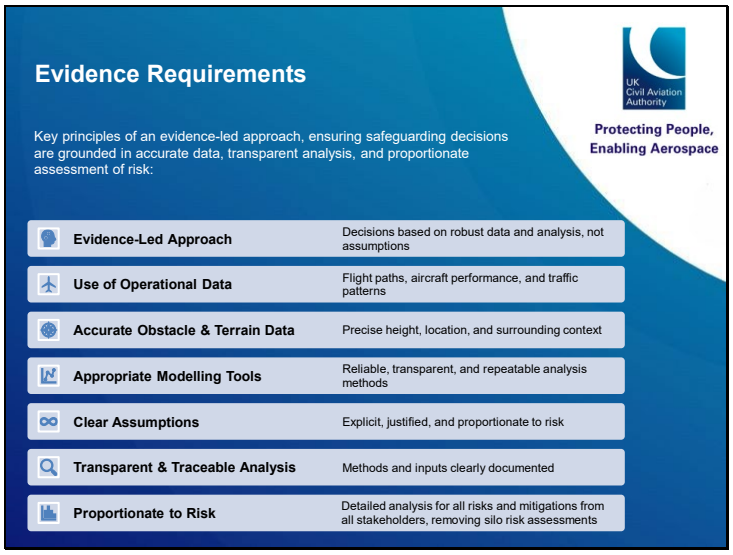
Evidence Requirements
Key principles of an evidence-led approach, ensuring safeguarding decisions are grounded in accurate data, transparent analysis, and proportionate assessment of risk:
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Evidence-Led Approach
Decisions based on robust data and analysis, not assumptions
Use of Operational Data
Flight paths, aircraft performance, and traffic patterns
Accurate Obstacle & Terrain Data
Precise height, location, and surrounding context
Appropriate Modelling Tools
Reliable, transparent, and repeatable analysis methods
Clear Assumptions
Explicit, justified, and proportionate to risk
Transparent & Traceable Analysis
Methods and inputs clearly documented
Proportionate to Risk
Detailed analysis for all risks and mitigations from all stakeholders, removing silo risk assessments

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Have Questions?
Scan the QR code to submit your questions on Slido.
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Reminder
We'll address all questions during the Q&A session at the end of the workshop.

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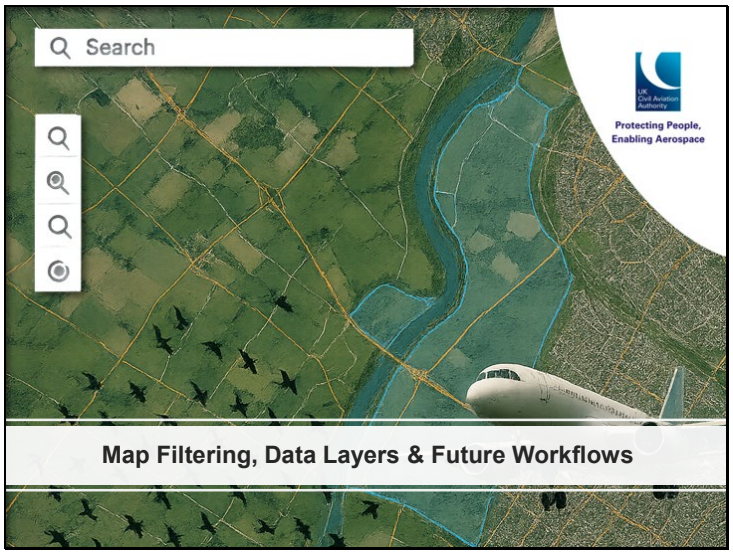
Search
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Map Filtering, Data Layers & Future Workflows

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Interactive Poll - How map filtering supports proportional safeguarding
We're exploring how map design and filtering can support more proportionate, usable safeguarding decisions.
Focus areas:
• Data accessibility
• Map design (e.g. colour grids vs contours)
• Civil vs military integration
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Q&A, Discussion & Next Steps

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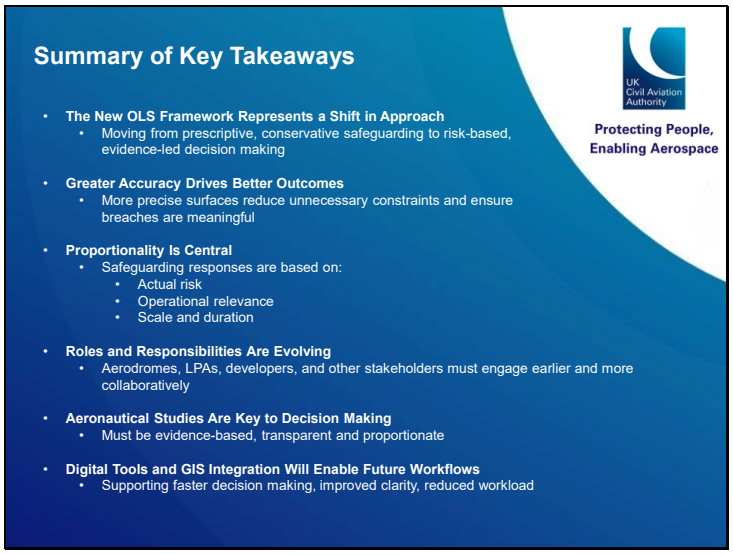
Summary of Key Takeaways
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The New OLS Framework Represents a Shift in Approach
Moving from prescriptive, conservative safeguarding to risk-based, evidence-led decision making
Greater Accuracy Drives Better Outcomes
More precise surfaces reduce unnecessary constraints and ensure breaches are meaningful
Proportionality Is Central
Safeguarding responses are based on:
Actual risk
Operational relevance
Scale and duration
Roles and Responsibilities Are Evolving
Aerodromes, LPAs, developers, and other stakeholders must engage earlier and more collaboratively
Aeronautical Studies Are Key to Decision Making
Must be evidence-based, transparent and proportionate
Digital Tools and GIS Integration Will Enable Future Workflows
Supporting faster decision making, improved clarity, reduced workload

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Next steps for stakeholders
1. Understand the New Framework
• Familiarise with the updated ICAO OLS Annex 14
• Recognise the shift to risk-based, proportionate safeguarding
2. Strengthen Collaboration
• Engage early between:
• Aerodromes
• LPAs
• Developers and other stakeholders
• Promote open and consistent communication
3. Prepare for Future Mapping and GIS Integration
• Review current systems and workflows
• Explore opportunities to use:
• GIS tools
• Filtered OLS surfaces
• Digital safeguarding platforms
4. Engage with Guidance and Implementation
• Monitor updates to UK Reg 139/2014/CAP738/CAP168 and the DfT Circular
• Participate in consultation and industry engagement
• Apply emerging best practice
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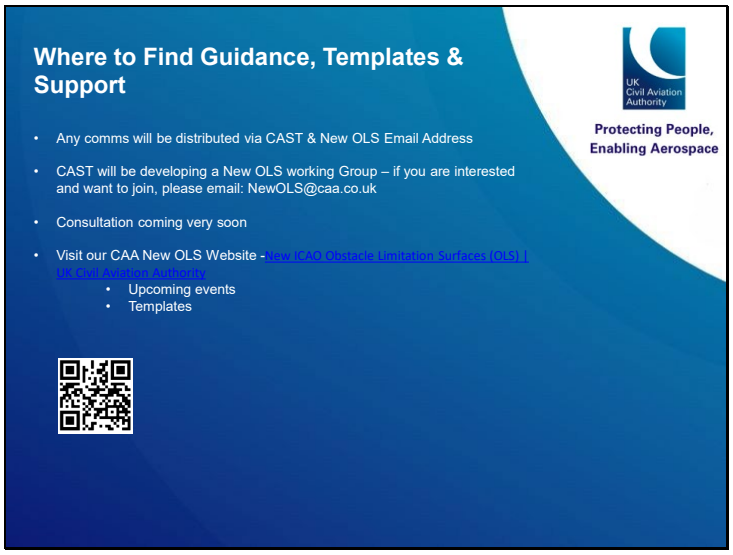
Where to Find Guidance, Templates & Support
Any comms will be distributed via CAST & New OLS Email Address
CAST will be developing a New OLS working Group – if you are interested and want to join, please email: NewOLS@caa.co.uk
Consultation coming very soon
Visit our CAA New OLS Website - New ICAO Obstacle Limitation Surfaces (OLS) | UK Civil Aviation Authority
Upcoming events
Templates
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