

Area 2

SARPS₍₁₎

- Provides data around the aerodrome or heliport.
- Extends to 45km or the TMA boundary:
 - Whichever is smaller.
 - The ICAO requirement applies to airfields published in the Regional Air Navigation plans:
 - States may wish to consider a National policy for all other airfields.
- To be provided for all aerodromes / heliports.

SARPS₍₂₎

- Terrain must be collected in accordance with the Area 2 numerical requirements for:
 - The area covered by a 10km radius from the ARP;
 - For the remainder of the area, if it penetrates the horizontal plane 120m above the lowest runway elevation.
- For areas where the 120m plane is not penetrated or flight operations are prohibited “due to very high terrain or other local restrictions and/or regulations”, terrain shall be collected with Area 1 numerical requirements.

SARPS₍₃₎

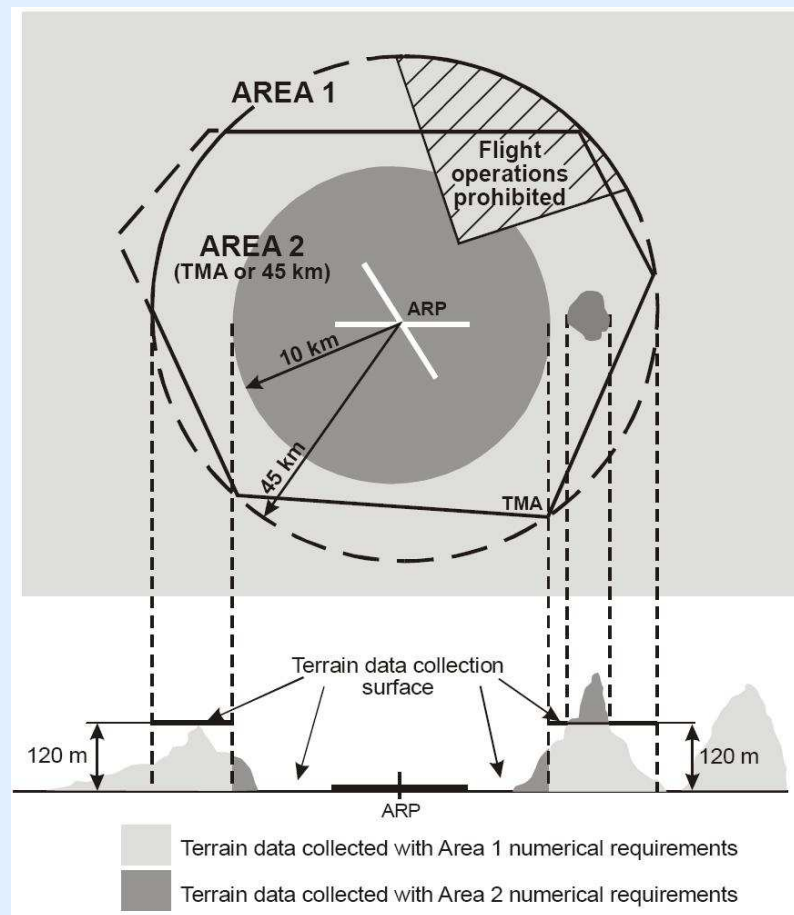
- Obstacles must be collected in accordance with the Area 2 numerical requirements if they:
 - Penetrate a conical surface whose origin is at the edges of the 180m wide rectangular area and at the nearest runway elevation measured along the runway centre line, extending at 1.2 per cent slope to a distance of 10km, or
 - Have an elevation which exceeds 120 m above the lowest runway elevation and they exist outside the region above.

SARPS₍₄₎

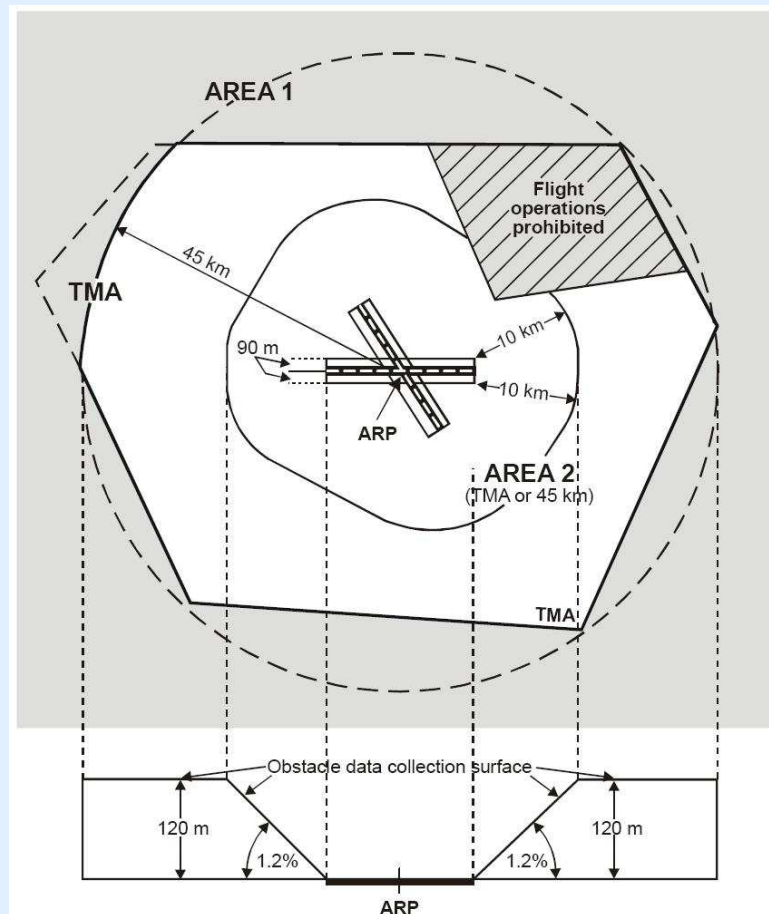
- Area 2 Numerical Requirements:

Terrain	Obstacles
1 arc second / 30m post spacing;	
3m vertical accuracy;	3m vertical accuracy;
0.1m vertical resolution;	0.1m vertical resolution;
5m horizontal accuracy;	5m horizontal accuracy;
90% confidence level;	90% confidence level;
1 x 10 ⁻⁵ integrity level (Essential);	1 x 10 ⁻⁵ integrity level (Essential);
To be maintained as required.	To be maintained as required.

Area 2 – Terrain Graphical Portrayal



Area 2 – Obstacle Graphical Portrayal



Findings of Research₍₁₎

- The cost of implementing Area 2, as specified, was assessed.
- A range of values was determined by States.
- Figures ranged from €500K - €640K per aerodrome.
 - *Note: other assessments indicated costs in excess of U\$1m (Austria, Japan, Russia etc)*
- Considered to be too expensive for the aviation community to carry:
 - In excess of €1bn for Europe alone.

Findings of Research₍₂₎

- This large cost results from the size of Area 2:
 - Approx 6300km².
- Given the size, bulk data collection considered necessary:
 - LiDAR and stereo photogrammetry, etc.
- Data collection is expensive but data processing is even bigger cost:
 - Approximately 40% v 60% split.

Findings of Research₍₃₎

- The TOD WG concluded that the provision of high-resolution data would be beneficial:
 - Especially when next-generation tools become available.
- This data is, however, needed only where flight operations are planned:
 - Both in normal and contingency operations.
- No justification was found for the large area of Area 2.

Findings of Research₍₄₎

- Problems have also been identified with the number and size of obstacles.
- If terrain rises, very small structures may penetrate the 1.2% surface:
 - Is a can of drink an obstacle?
- Also, given the size of the area, many obstacles may exist:
 - One example aerodrome in Europe has 47,000 obstacles in the first 10km alone;
 - Unmanageable?

Findings of Research₍₅₎

- Finally, it was concluded that the provision of full Area 2 data for all aerodromes was not necessary:
 - E.g. Small CAT B aerodromes?
 - Do heliports need data to 45km?
 - A National policy is needed to address all aerodromes:
 - Not just those of the Regional Air Navigation Plan.

Proposals for Change₍₁₎

- Area 2 is divided into 4 sub-areas:
 - Areas 2a, 2b, 2c and 2d.
- Area 2a is a rectangular area around the runway:
 - Extending to 255 m each side of the runway centreline, and
 - the length of the runway strip plus any clearway(s) that exist:
 - Covers the Annex 10 surfaces.

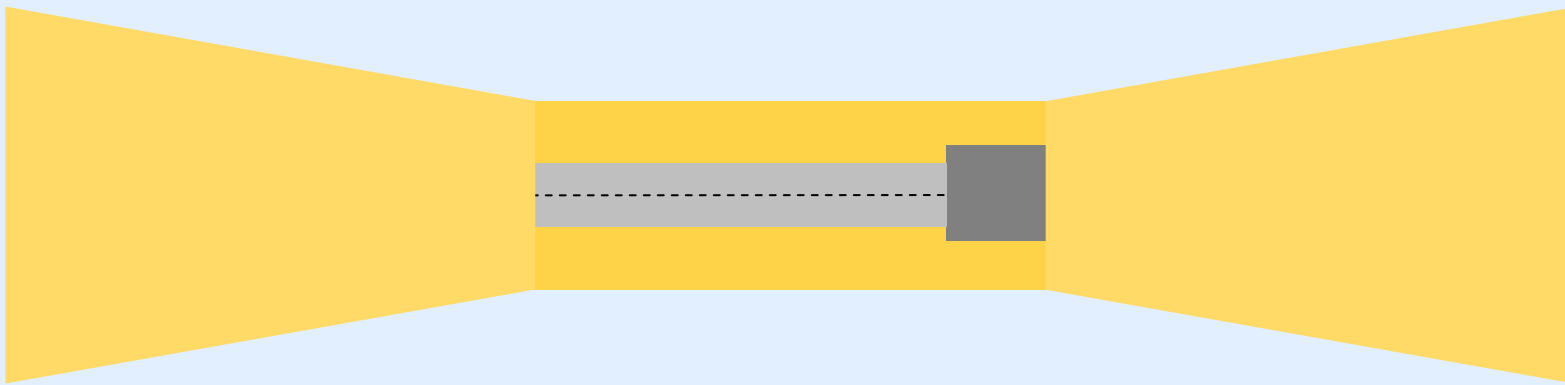
Area 2a



Proposals for Change₍₂₎

- Area 2b is a surface with a 1.2% slope extending from the outer ends of Area 2a with a length of 10 km and a splay of 15% to each side.

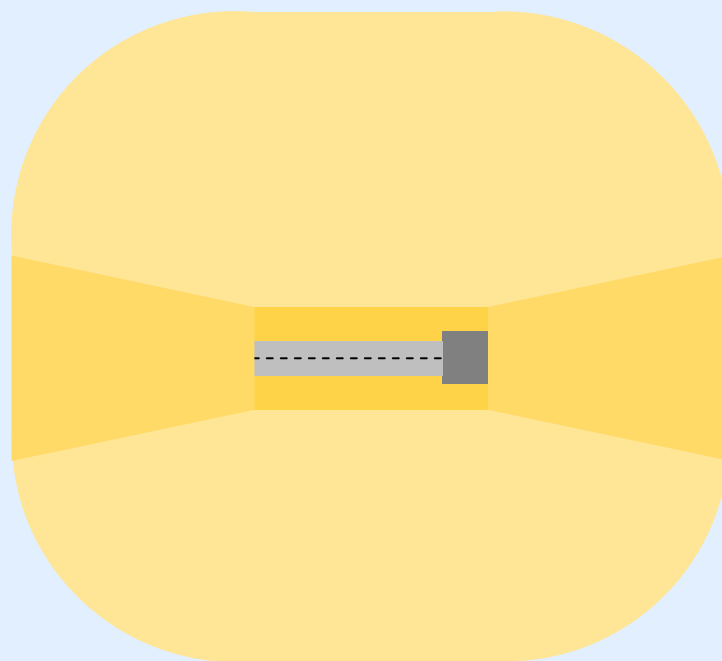
Area 2b



Proposals for Change₍₃₎

- Area 2c is described as an Area outside Area 2a and Area 2b to a distance of 10 km from the edge of Area 2a.

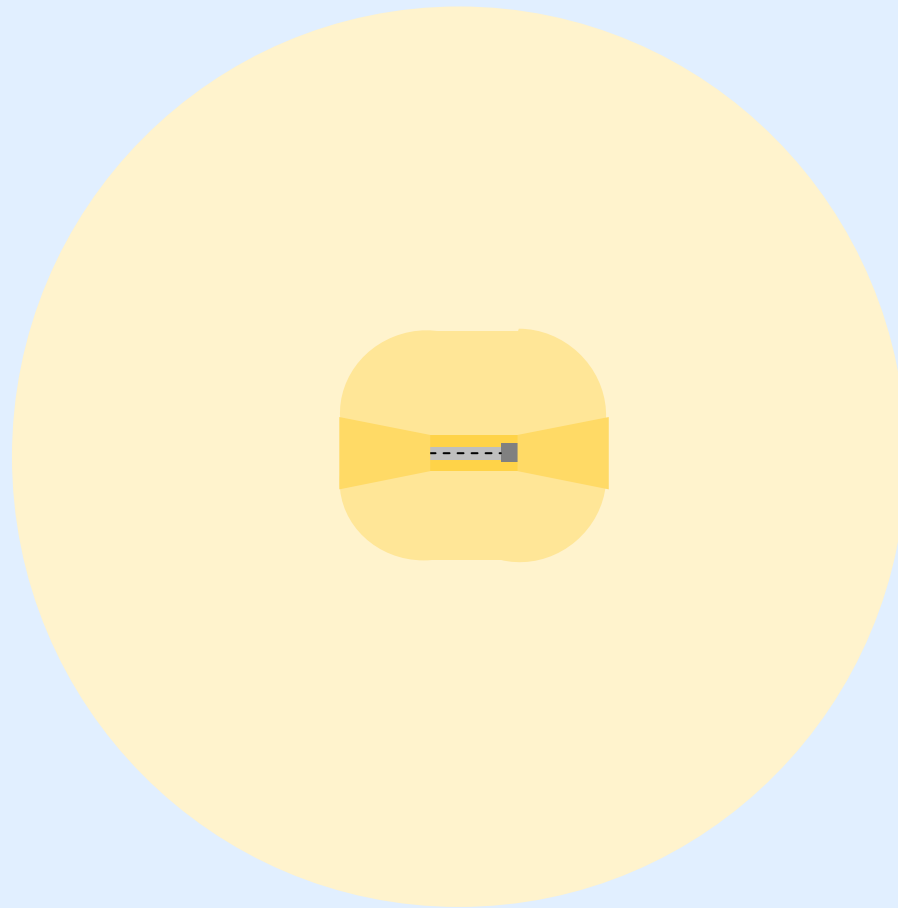
Area 2c



Proposals for Change₍₄₎

- Area 2d is the remainder of Area 2 outside the Areas 2a, 2b and 2c:
 - To a distance of 45 km from the ARP, or the TMA boundary, whichever is smaller.

Area 2d



Proposals for Change₍₅₎

- Each of these 4 Areas has different data collection requirements, as follows:
- In Area 2a, any obstacle whose height is 3m above ground level or higher is collected:
 - Flat data collection surface (ground).
- In Area 2b, any obstacle whose height is 3m above ground level or higher and which penetrates the surface is collected:
 - 1.2% collection surface.

Proposals for Change₍₆₎

- For Area 2c, obstacles are collected and recorded if their height is 15m or more above ground level.
- However, in any portion of Area 2c where the State considers it to be beneficial, this minimum height may be reduced:
 - e.g. for operational or safety reasons;
 - Turning procedures.

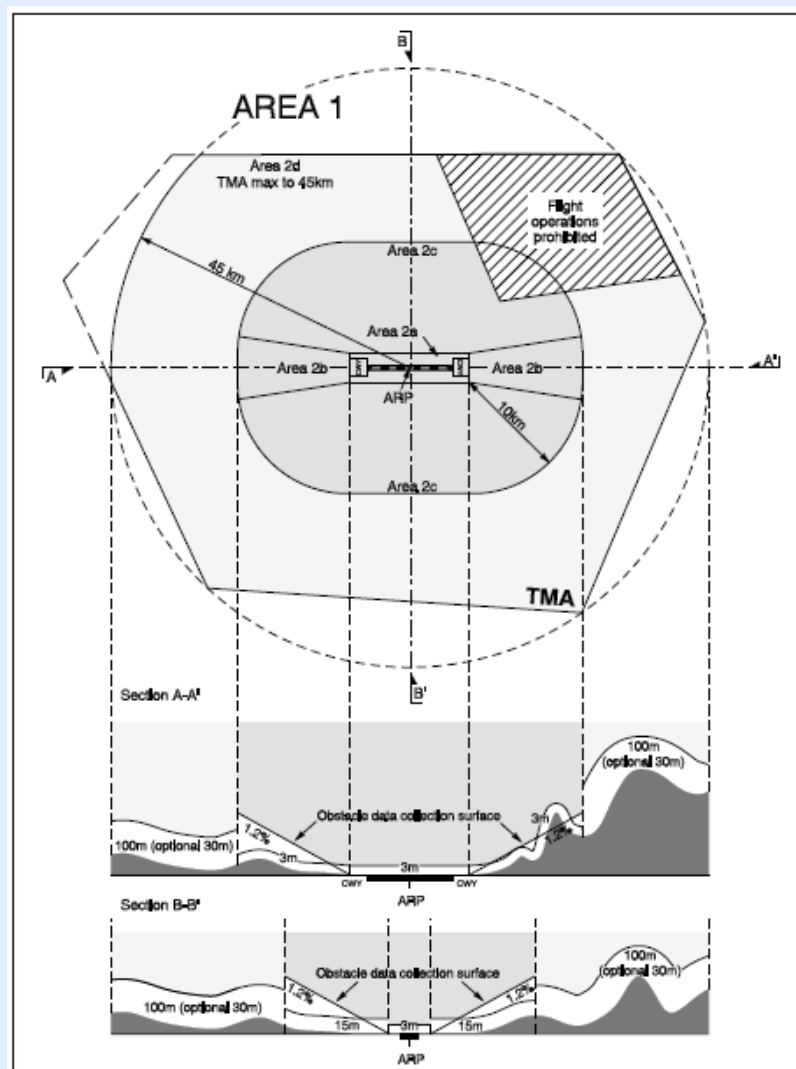
Proposals for Change₍₇₎

- In Area 2d, obstacles whose height exceeds 100m above ground level are collected and recorded:
 - I.e. those obstacles that qualify for Area, but
 - They are collected using the Area 2 numerical requirements:
 - Improved accuracy.
- However, if the State considers that there are areas in which it is beneficial, obstacles whose height exceeds 30m above ground level are collected and recorded:
 - e.g. for operational or safety reasons;
 - Rising terrain means that procedures beyond 10km are still “close” to the ground.

Proposals for Change₍₈₎

- Finally, it is proposed that the State establishes a policy for which aerodromes/heliports Area 2 data is provided:
 - Open and transparent;
 - Ensures that data is provided where it is needed;
 - Recall that the ICAO requirement applies to airfields published in the Regional Air Navigation plans.
- The intentions of these proposals are:
 - To provide high-resolution data where it is needed;
 - To avoid collecting expensive data where there is no operational benefit.

Proposals for Change – Graphical Portrayal



Benefits of Change Proposals

- The proposals offer a number of benefits:
 - Provide high-resolution data where operationally needed;
 - Avoid providing high-cost data where there is no justifiable benefit;
 - Support the data needs of current ICAO SARPS:
 - Annex 10, PANS-OPS etc.
 - Offers a vast reduction in the amount of data to be collected and processed:
 - Around a 90% reduction.
 - Is considered to be safe, affordable and practicable.
- Subject to public consultation.