



INTERNATIONAL CIVIL AVIATION ORGANIZATION
A United Nations Specialized Agency

Point in Space Procedure Design Course

APAC FPP – Beijing, China

(11-15 May 2026)



Tentative Schedule



Date	09:00-10:00	Coffee Break	10:20-11:50	Lunch Break	13:20-14:30	Coffee Break	14:50-16:40
11/05/2026 Mon.	IFR Procedure Introduction M		Cat H IFP Specific Criteria (Departure and Approach) L		IFR PinS Approach Concept M		Criteria for IFR PinS Approach Segments L
12/05/2026 Tue.	PinS Approach Visual Segment (Direct-VS) L		PinS Approach Visual Segment (Manoeuvring-VS) M		PinS Approach Proceed VFR L		Exercise for PinS Approach(Direct-VS) M
13/05/2026 Wed.	Criteria for IFR PinS Departure Segments M		PinS Departure Visual Segment (Direct-VS) L		PinS Departure Visual Segment (Manoeuvring-VS) M		Exercise for CATH Departure L
14/05/2026 Thur.	Exercise for PinS Departure(Manoeuvring-VS) L		PinS RNP APCH for LPV Minima M		Charting and Practice Sharing L		Progress Test
15/05/2026 Fri.	Evaluation		Evaluation				



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Let's **F**ocus/**P**ropose/**P**lan
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INTERNATIONAL CIVIL AVIATION ORGANIZATION
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PinS Approach Visual Segment (Manoeuvring-VS)

ICAO APAC FPP Beijing

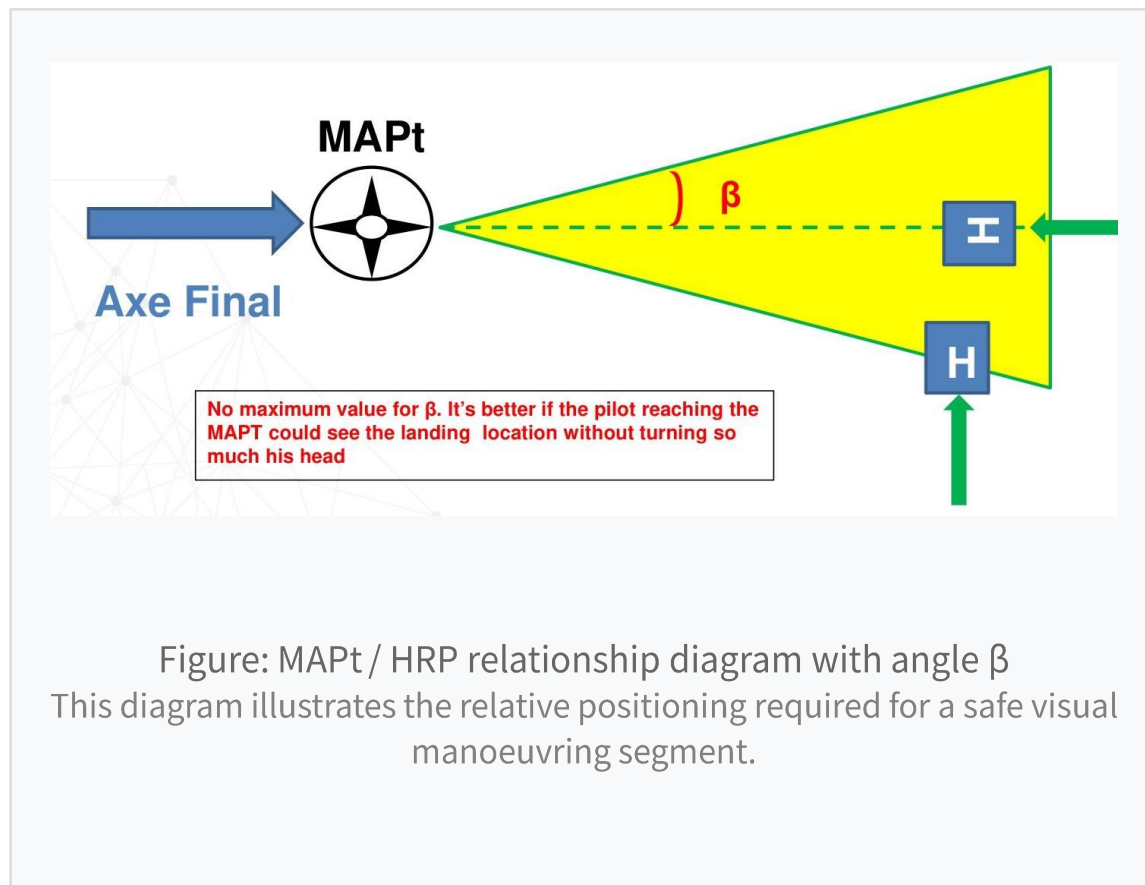


Manoeuvring – VS (Proceed visually)



- A PinS “proceed visually manoeuvring- Visual Segment (VS)” is used when the FATO axis cannot be aligned within 30° of the FAS
- From MAPT (PinS), pilot proceed visually to the landing location in a different way than directly
- The OCH for a PinS procedure followed by a manoeuvring visual segment shall not be less than 90 m (295 ft) above the heliport/landing location elevation

Manoeuvring – VS (Proceed visually)



Only a **minimum distance** is established between the MAPt and the HRP. This value is determined by the aircraft's maximum indicated airspeed (IAS) in the final approach segment of the instrument procedure.

IAS 70 Kt

Minimum Distance: **0.54**

NM

IAS 90 Kt

Minimum Distance: **0.85**

NM



Note: There is no maximum value for angle β . However, the ideal condition is that the pilot can see the landing location upon reaching the MAPt without having to make an excessive head turn.

Manoeuvring – VS : Protection



What is a "Manoeuvre Area"?

A “manoeuvre area” is the airspace where the pilot is expected to manoeuvre from the MAPt to the point of final alignment on the landing path. If multiple approach directions exist, it is the union of all individual manoeuvre areas.

It is formally defined as the area enclosed by lines originating at the MAPt and connecting to a “base turn area” aligned symmetrically around the approach surface centre line.

Trajectories Considered for Definition

- 1. Direct Track & Base Turn:**The pilot flies directly from the MAPt to the heliport/landing point at the OCA/H, then performs a base turn to descend and align with the approach surface centre line.
- 2. Divergent Manoeuvre:**The pilot departs from the direct 'MAPt-HRP' axis after the MAPt, manoeuvring laterally to align with the final approach surface centre line.

Manoeuvring – VS : Protection

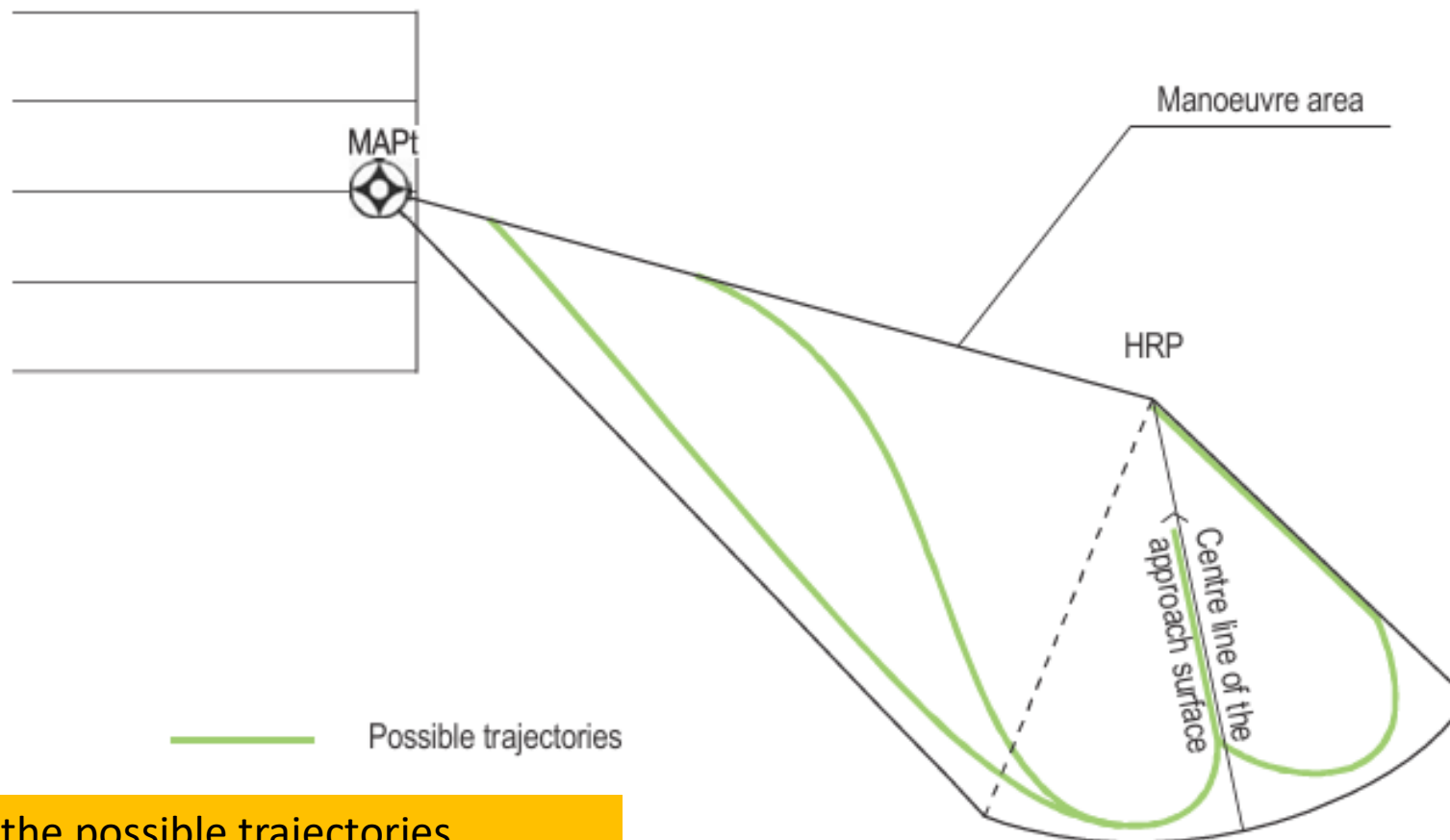


Figure IV-2-10. Representation of the possible trajectories defining the “Manoeuvring area”

Manoeuvring – VS : Protection

Protection of visual segment is based on:

1. Turn Limitation:The required turn at the MAPt (Missed Approach Point) in order to stay in the “manoeuvre area” cannot be more than **30°**.

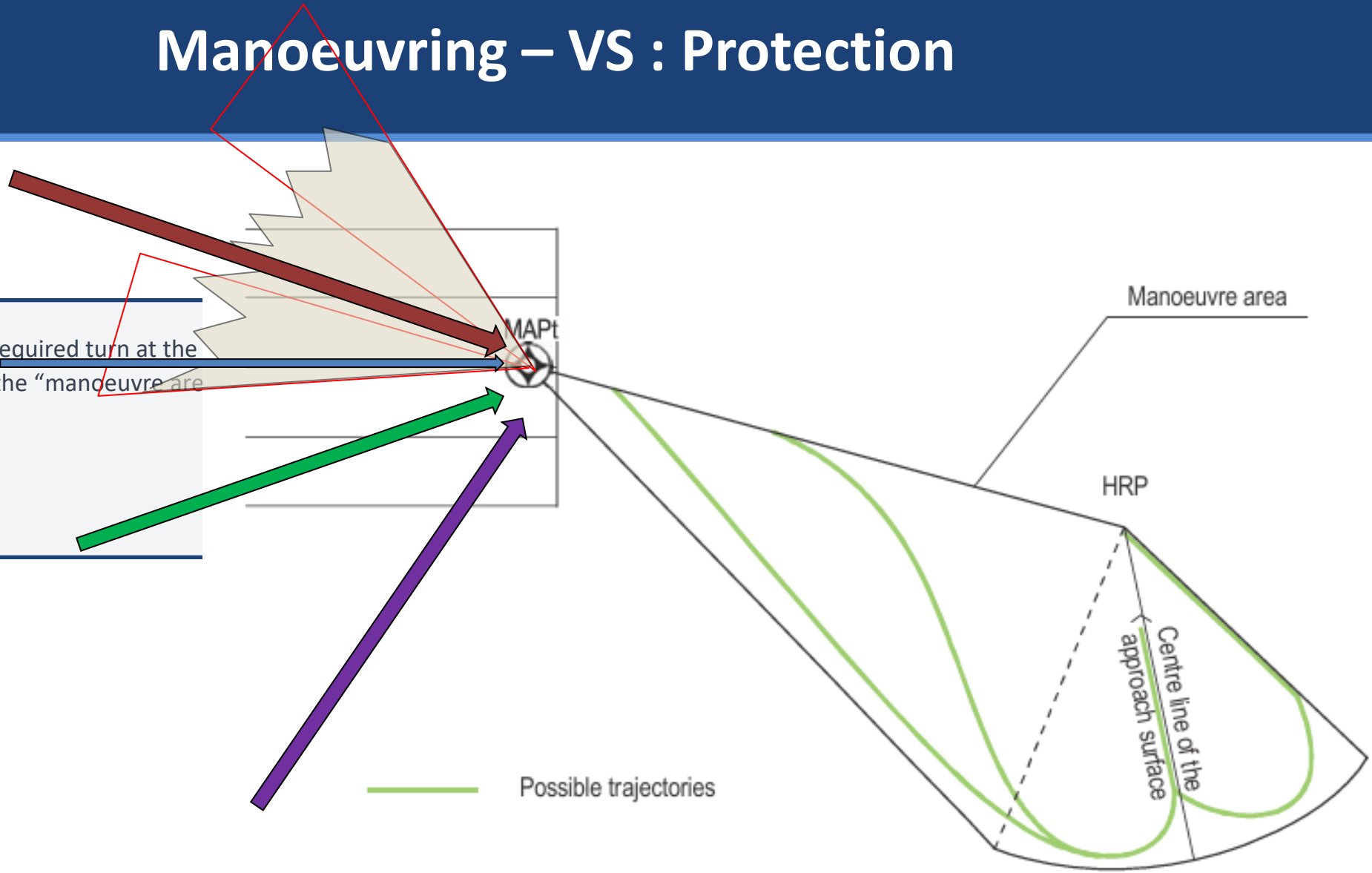
2. Speed Limitation:Maintain a speed of **50 KIAS (Knots Indicated Airspeed)** or lower in the visual part of the flight procedure.

3. Descent Authority:After the MAPt, the pilot may descend to either **OCH/2 or 90 m (295 ft)** above the landing elevation (whichever is greater), accounting for obstacles on the chart.

4. Minimum Altitude Rule:The pilot **shall not descend below** the higher of OCH/2 or 90m above the landing elevation **before** being aligned on the center line of the approach surface.

Manoeuvring – VS : Protection

1. Turn Limitation: The required turn at the (Point) in order to stay in the "manoeuvre area"



Manoeuvring – VS : Protection

Manoeuvring-VS is protected by a level obstacle clearance surface (OCS), the obstacle limitation surfaces (sloping OCS and level OIS) and the safety area (SA) associated with the FATO.

Level OCS

- A level surface at an altitude of $OCA - 250$ ft.
- Aligned symmetrically on the course between the Helicopter Reference Point (HRP) and the Missed Approach Point (MAPt).

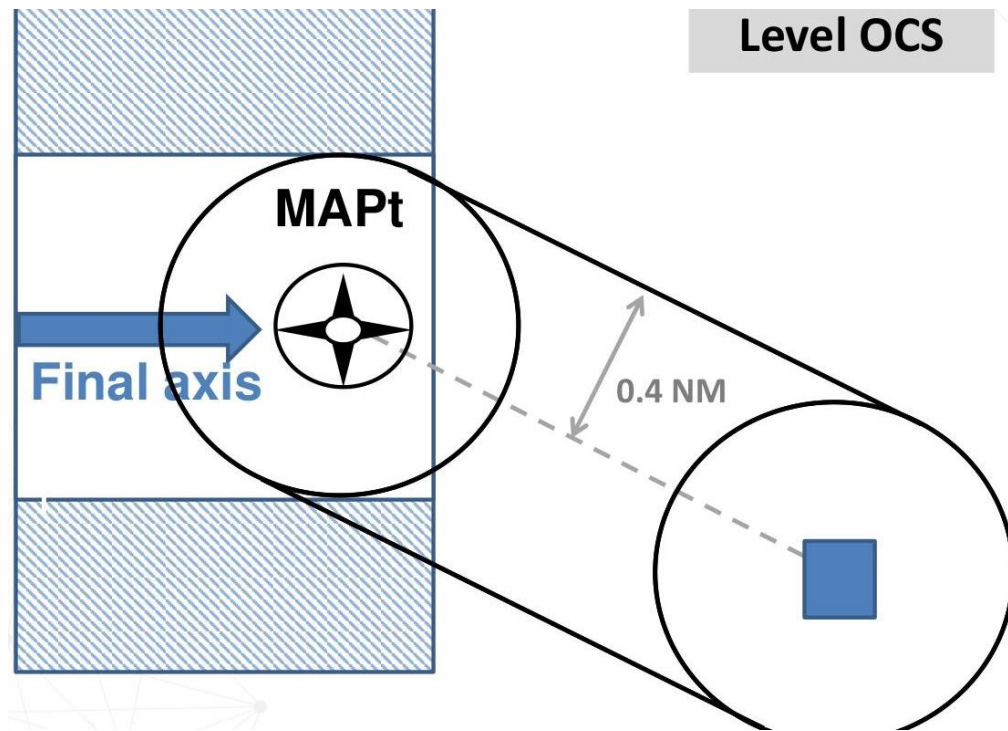
Sloping OCS

- Aligned symmetrically on the centre line of the approach surface.
- Outer edges splay from their origins at the edge of the Safety Area (SA), symmetrically around the approach surface centre line.

OIS (Obstacle Identification Surface)

- A level surface at a height of $(OCH/2 - 150)$ ft) OR 150 ft above heliport elevation (whichever is greater).
- Defined by the “Manoeuvre area” plus an additional safety buffer.

Manoeuvring - VS : OCS

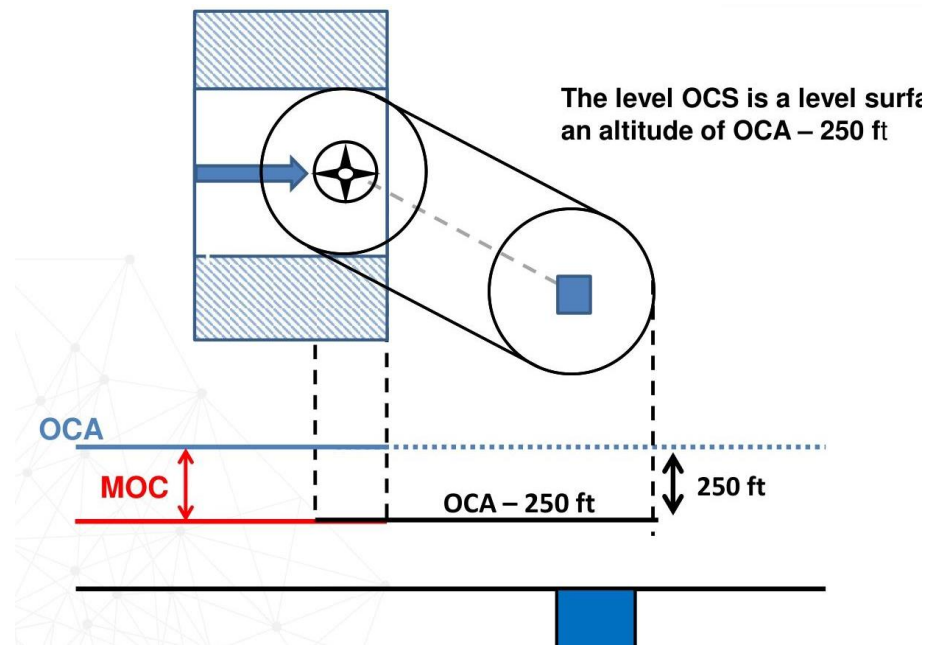


Level OCS Overview

This diagram illustrates the Level Obstacle Clearance Surface (OCS) area. It is a defined rectangular zone that extends from the MAPt (Missed Approach Point) towards the heliport.

The width of this surface is established by a **0.4 nautical mile buffer** on either side of the direct connecting line between the MAPt and the HRP (Heliport Reference Point).

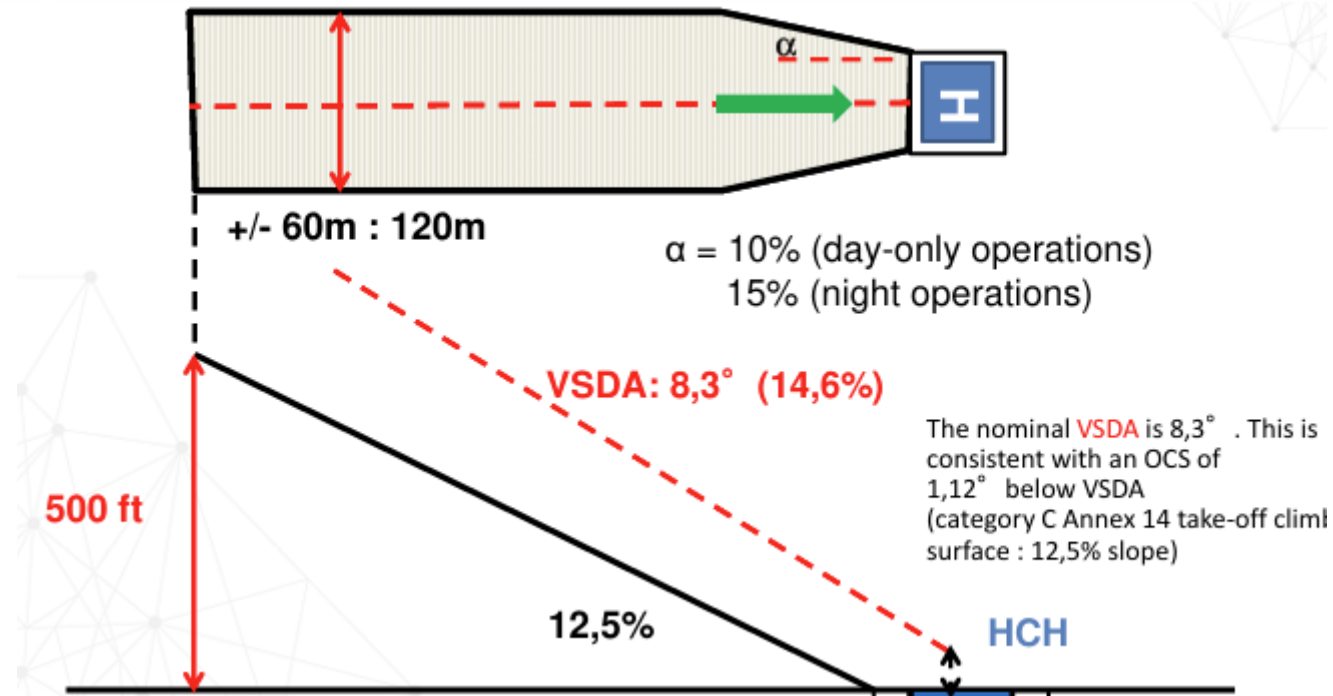
Manoeuvring - VS : OCS



Level OCS

The **Level OCS** is a level surface at an altitude of **OCA - 250 ft.**

Manoeuvring - VS : OCS **Sloping OCS**



Sloping OCS

If more than one approach surface has to be considered, a sloping OCS is designed for each.

Note: A higher VSDA may be chosen in coordination with operators.

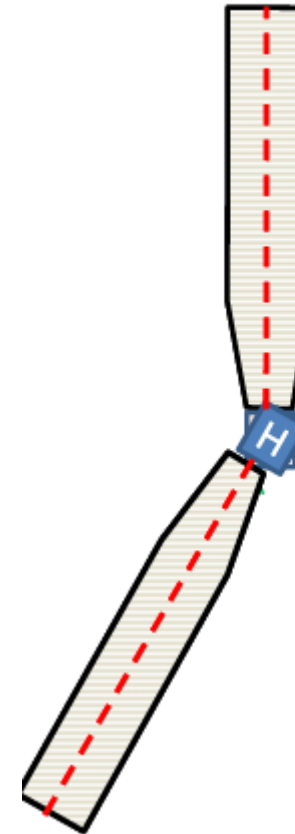
Manoeuvring - VS : OCS

more than one approach surface

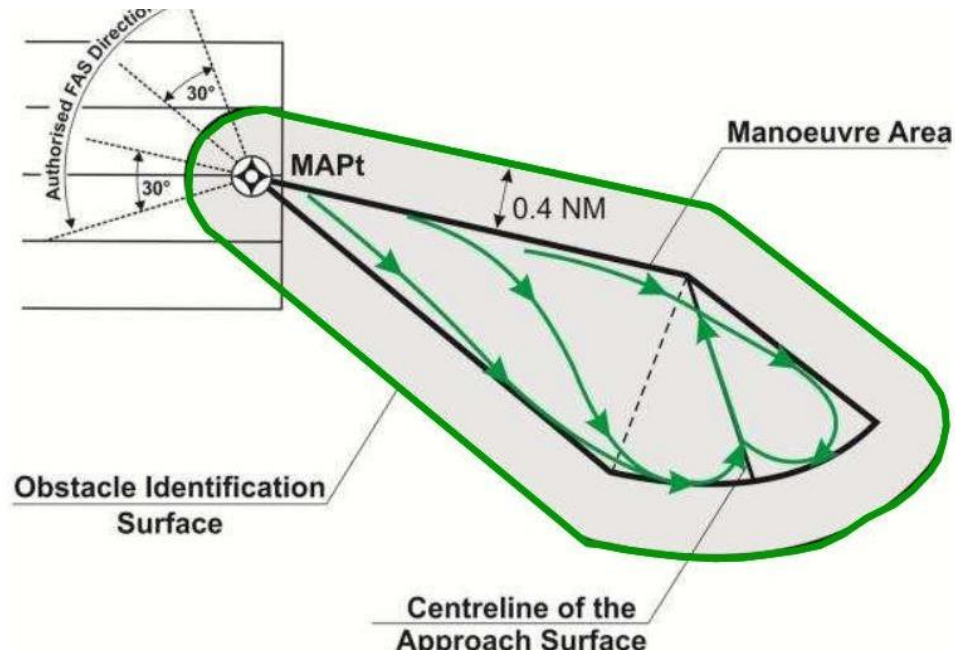
Sloping OCS

Table 4-1. Dimensions and slopes of obstacle limitation surfaces for all visual FATOs

Surface and dimensions	Slope design categories		
	A	B	C
Approach and take-off climb surface:			
Length of inner edge	Width of safety area	Width of safety area	Width of safety area
Location of inner edge	Safety area boundary (Clearway boundary if provided)	Safety area boundary	Safety area boundary
Divergence: (1st and 2nd section)			
Day use only	10%	10%	10%
Night use	15%	15%	15%
First section:			
Length	3 386 m	245 m	1 220 m
Slope	4.5% (1:22.2)	8% (1:12.5)	12.5% (1:8)



Manoeuvring - VS : OIS (manoeuvre area + buffer zone)

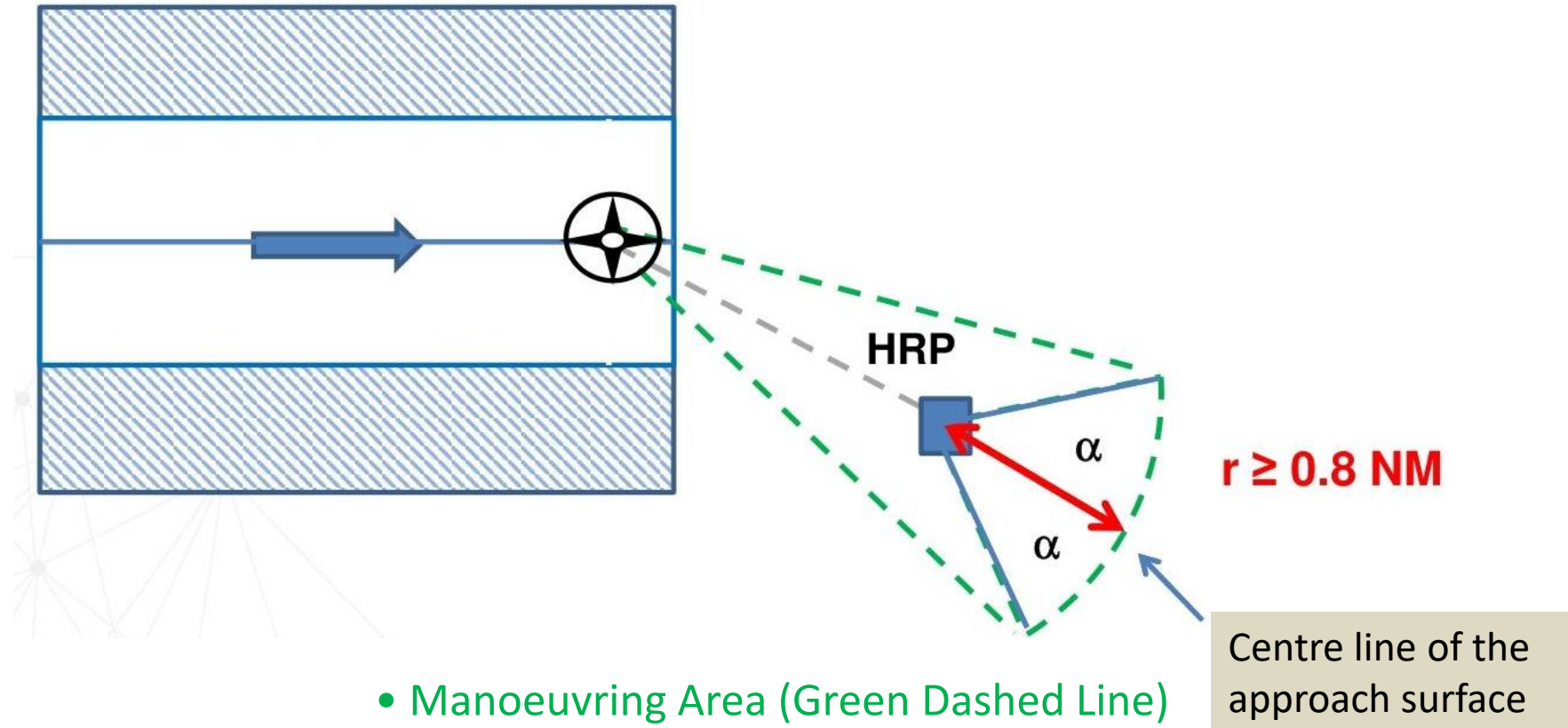


Shape of the area is based on:

- The pilot flies directly from the MAPt to the heliport/landing location and then performs a 'base turn' to descend and align on the centre line of the approach surface.
- The pilot starts from the MAPt but diverges from the "MAPt-HRP" axis in order to manoeuvre to align on the centre line of the approach surface.
- A speed of **50 KIAS** or lower in the visual part of flight.
- The required turn at the MAPt in order to stay in the "manoeuvre area" cannot be more than **30 degrees**.

Note: The pilot may descend after the MAPt in the visual segment of the procedure to OCH/2 or 90 m (295 ft) above the heliport/landing location elevation, whichever is greater, taking account of the obstacles identified on the chart. To descend below this height, the pilot has to be aligned on the centre line of the approach surface.

Manoeuvring - VS



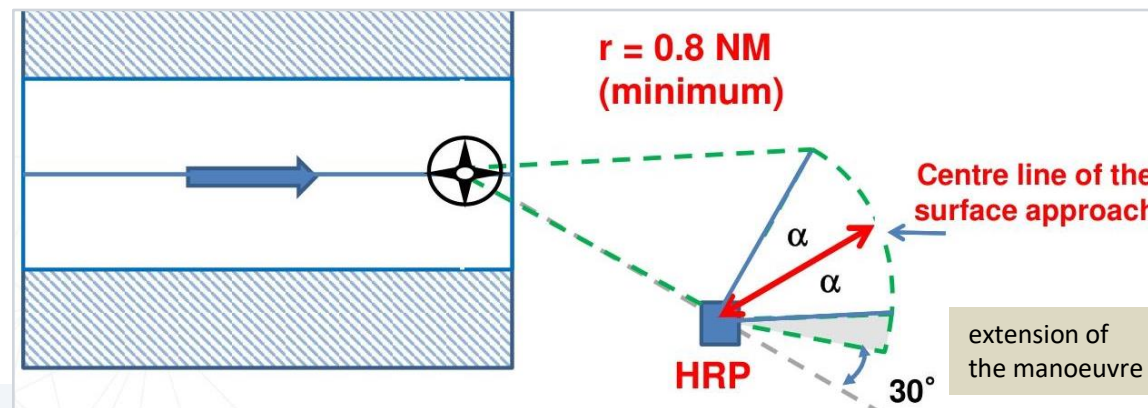
Manoeuvring - VS

Manoeuvre Area Definition

If more than one approach direction has to be considered, the final “manoeuvre area” is the combination of all the individual “manoeuvre areas”.

r: Radius from HRP of the ‘base turn area’

α: Angle from centre line of the surface approach



OCH (ft)	300	400	500	600	700	800	900	1000	>1000
r (NM)	0.8	0.8	0.8	0.8	0.9	1.0	1.1	1.2	+0.1/NM
α (°)	50	50	50	50	45	40	35	30	Constant 30°

Important Note:

- The turn area may be extended operationally using wider angles on either/both sides of the approach centerline.
- For OCH > 600 ft above landing elevation, radius 'r' increases linearly by **0.1 NM** for each additional **30 mof** height.
- The turn over the HRP is greater than 30° : extension of the manoeuvre area

Manoeuvring - VS: OIS

What is the OIS?

The Obstacle Identification Surface (OIS) is a **level surface** at a height determined by the **maximum** of these two values:

1. $(OCH / 2) - 150$ ft
2. 150 ft above the heliport/landing location elevation

Key Requirement: Any obstacle that penetrates the OIS **shall be charted** on the approach chart.

Formula: OIS = Manoeuvre area + Buffer (0.4 NM)

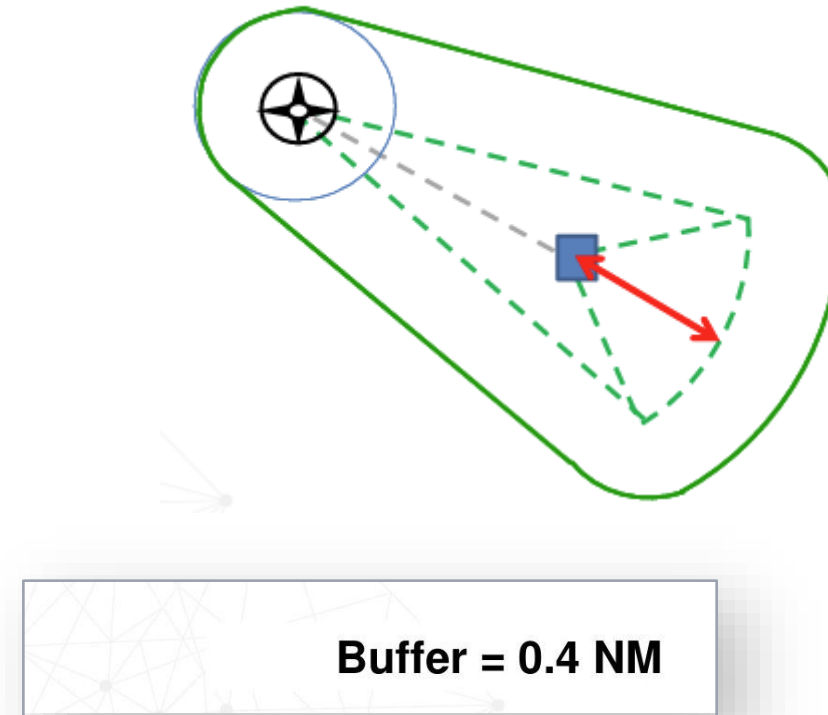
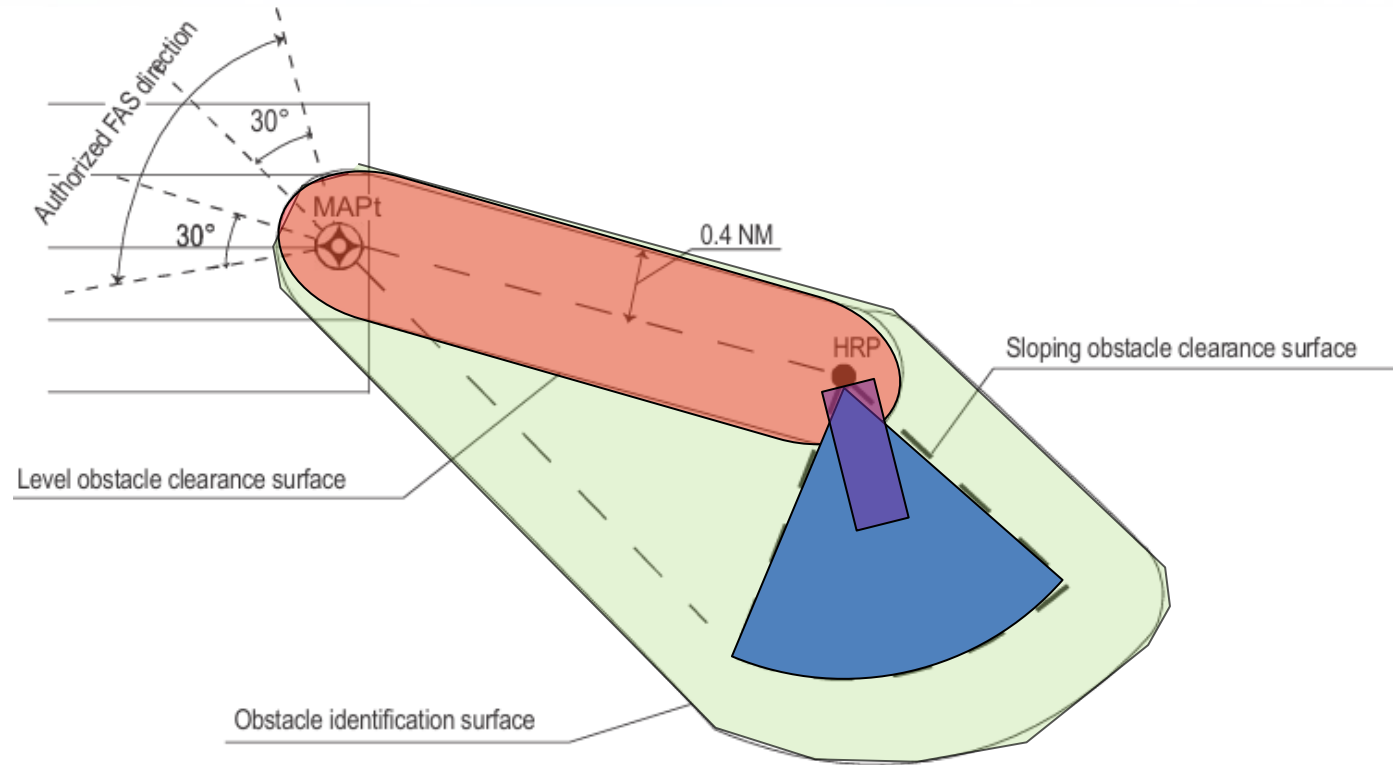


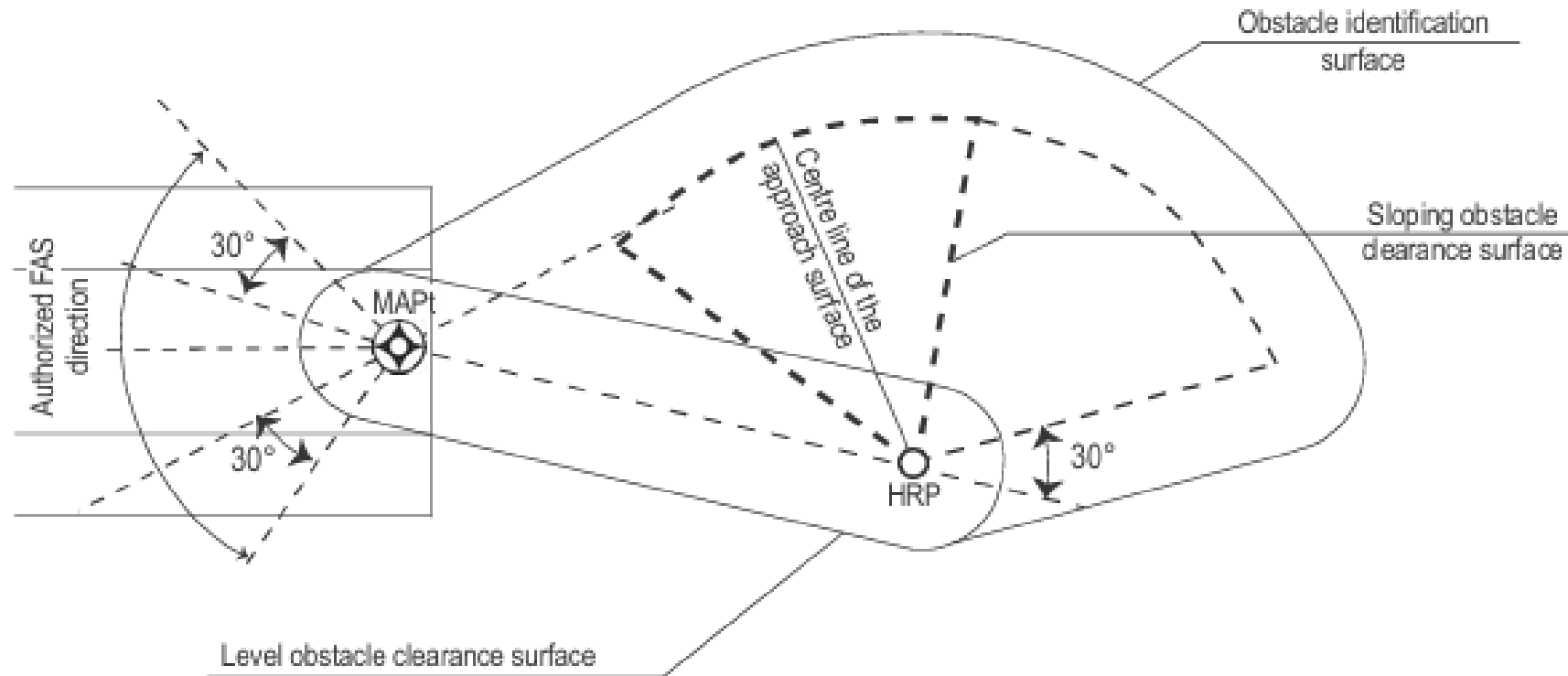
Figure: OIS includes the manoeuvre area and a 0.4 NM buffer zone

Manoeuvring - VS



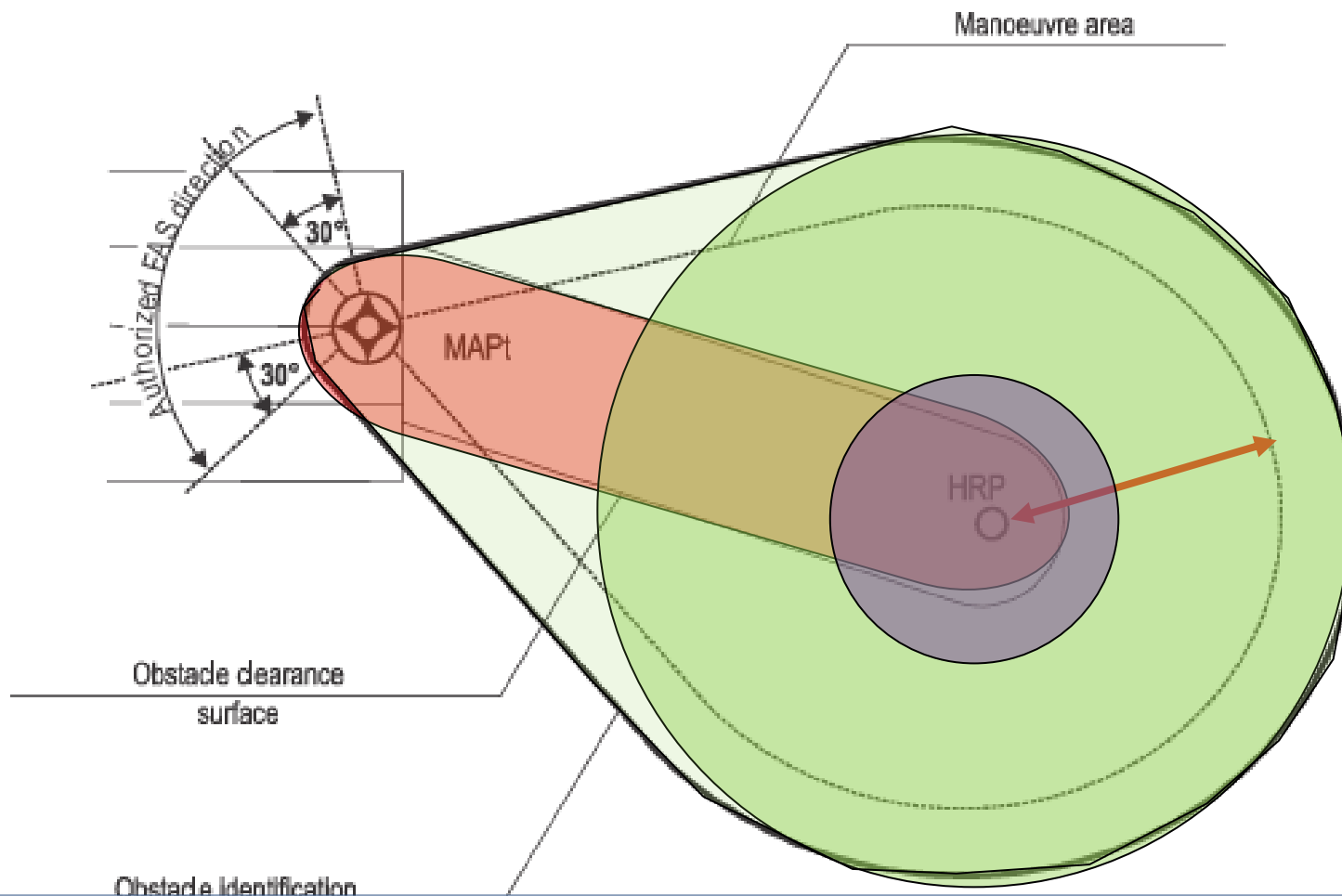
Level OIS and level OCS & Sloping OCS

Manoeuvring - VS



Level OIS and level OCS & Sloping OCS

Manoeuvring – VS omni-directional approach surface



Level OIS and level OCS & Sloping OCS



Obstacle Penetration Rules

No obstacles shall penetrate the level OCS or the sloping OCS.

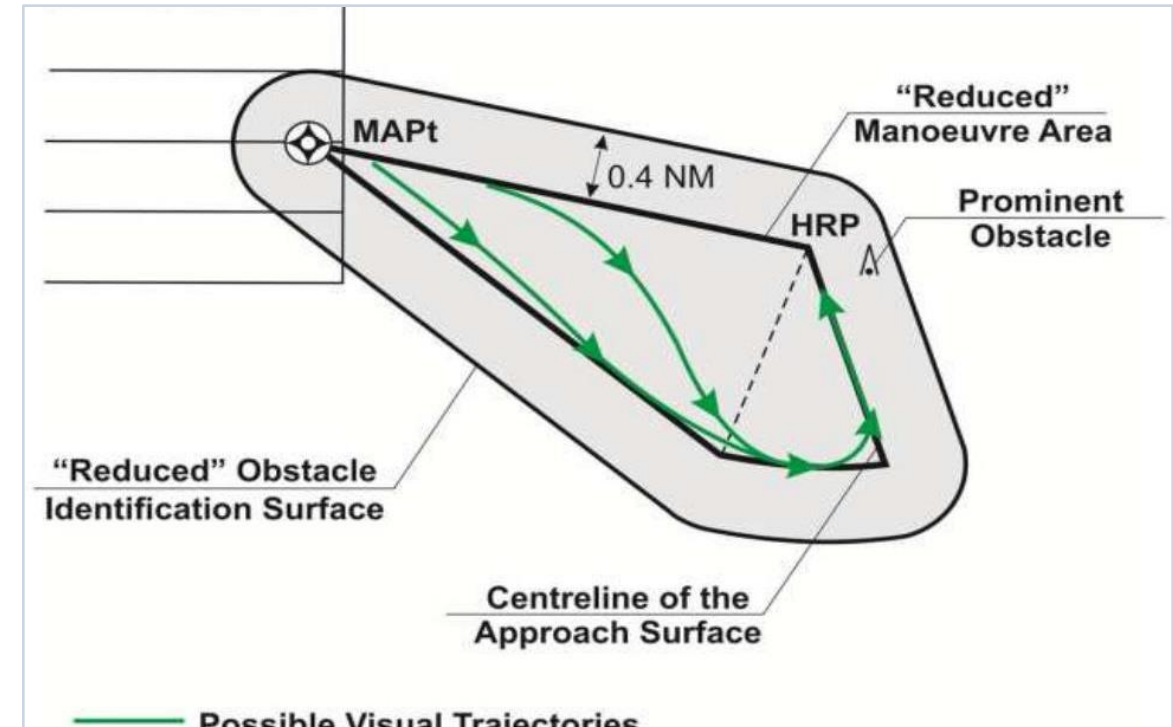
- Obstacles that penetrate the OIS shall be fully documented and accurately charted for pilot awareness.
- Other obstacles, even if they do not penetrate the OIS, may still be documented and charted if deemed necessary for operational safety.

Manoeuvring - VS

A relevant obstacle infringing the level OCS less than 0.4 NM from the HRP, may be ignored for this OCS assessment if:

- Flyover of the heliport or landing location during the visual manoeuvre is prohibited.
- The obstacle is not inside the “manoeuvre area” that is reduced accordingly.
- The obstacle does not penetrate the sloping OCS and the IFR protection areas.

Note: In order to disregard an obstacle, the “manoeuvring area” needs to be reduced.



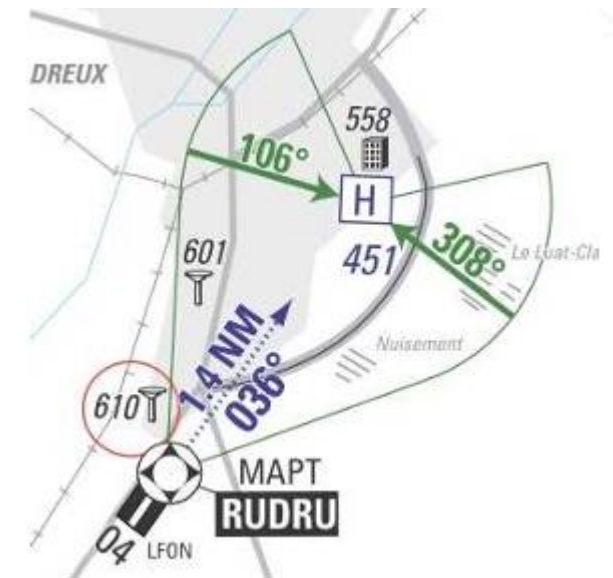
Manoeuvring - VS (Visual Segment)

VISIBILITY REQUIREMENTS: The visibility minimums to fly a manoeuvring visual segment shall not be less than the **MAPt/HRP distance** or than the value of **r (radius of the base turn)**, whichever is greater.



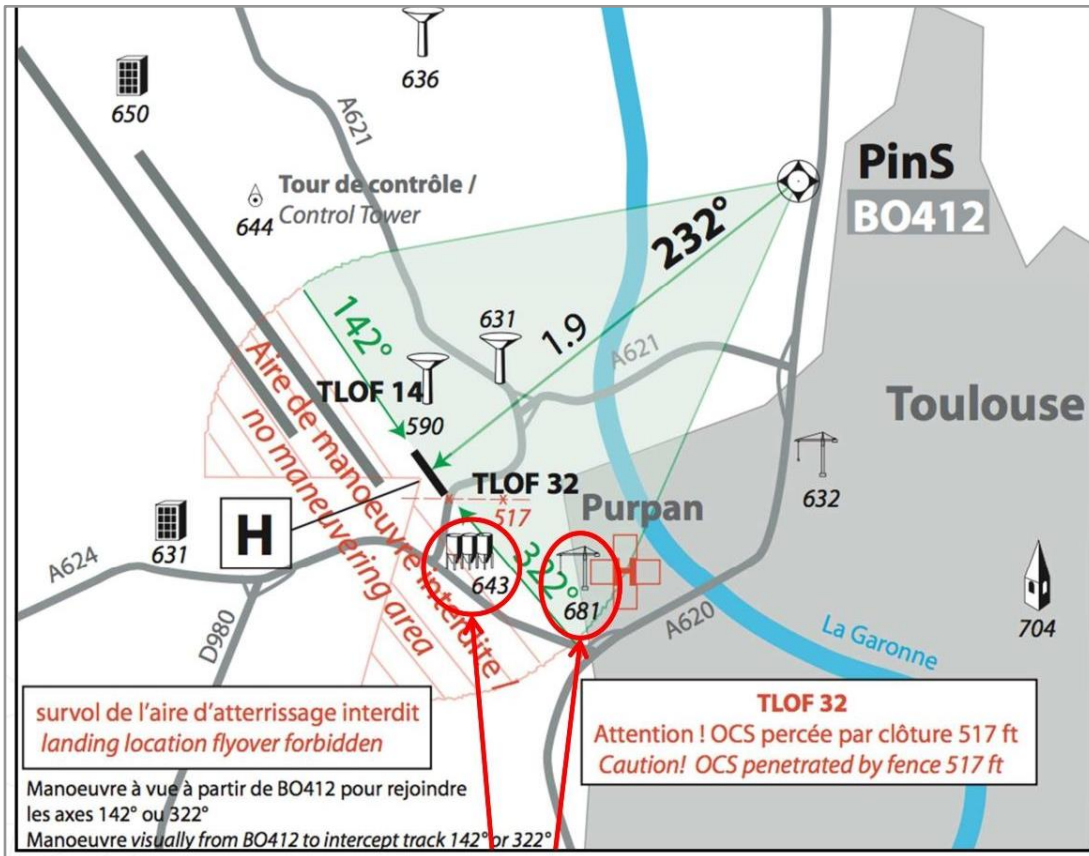
Instrument Approach Chart

LNAV M-VS OCH: 455		
CAT	MDA (H)	VIS
H	910 (460)	2600



Visual Manoeuvring Area Detail

Toulouse Blagnac RNAV GNSS 232



Case Study: Complex MVS Analysis

⚠ "No Manoeuvring Area" Zone:

Critical airspace restriction depicted on the chart.

⚠ Obstacle Clearance Surface (OCS) Caution:

Note the penetration warning related to perimeter fencing impacting the OCS.

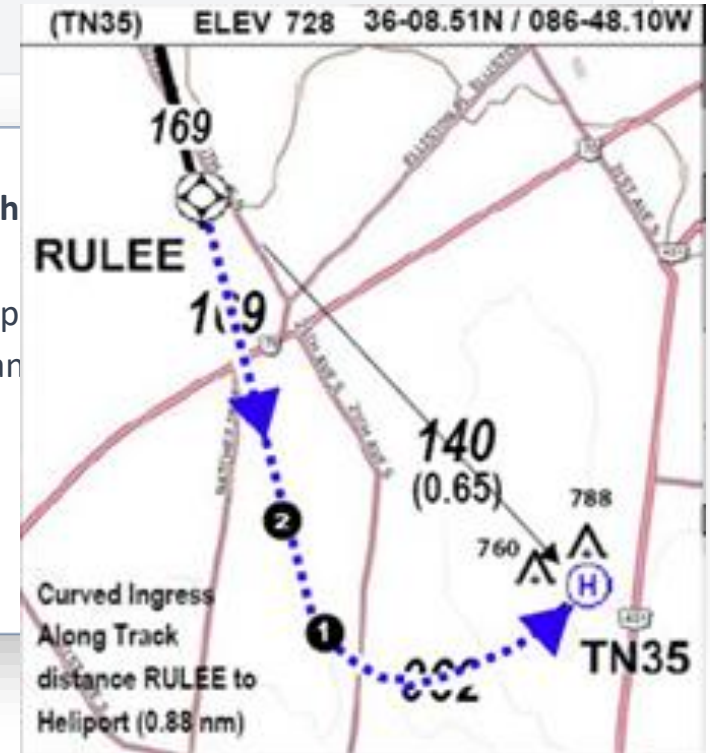
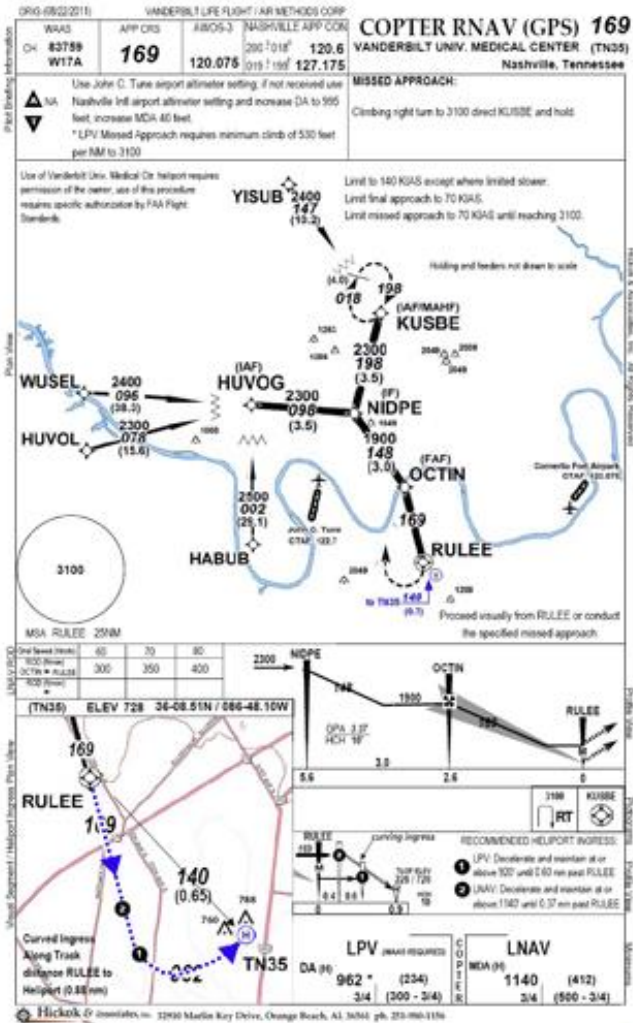
✈ "Landing location flyover forbidden."

This regulation directly dictates the manoeuvre area design.

Visual Segment « Route Visual Segment »

Example future development of criteria

This example COPTER RNAV (GPS) 169 approach is defined by a series of routes. This creates a **specific, structured route** for the pilot to the landing site, providing enhanced guidance and safety in the final phase.





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End