



**Straten CSL**

**CLIENT REPORT**

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# Aeronautical Study

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**Whitestown Way, Dublin 24 — Large-Scale Residential Development**

**Prepared for: ARP 4.2 Sustainable Communities (Ireland) Fund**

**Document Reference: 110ARP001-2 V1.0**

**Date: 30 April 2026**

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## Executive Summary

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ARP 4.2 Sustainable Communities (Ireland) Fund has requested Straten CSL to analyse the possible development of a new building near Casement Airport (ICAO code: EIME). The analysis aims to assess the potential impact on instrument flight procedures in operation and applicable obstacle limitation surfaces, and in case of impact the analysis provides possible mitigations.

To authorize the proposed building, the new obstacle must be analysed with respect to Instrument Flight Procedures (IFPs) in accordance with ICAO Doc. 8168 Vol. II (PANS-OPS) and Obstacle Limitation Surfaces (OLS) in accordance with ICAO Annex 14 Vol. I.

### Key Highlights:

- The proposed building development is compatible with the currently published Instrument Flight Procedures (IFPs) at Casement Airport.
- The proposed building development is compatible with the applicable Obstacle Limitation Surfaces (OLS) at Casement Airport.
- Therefore, no mitigation is required.

The outcomes of this study confirm that the proposed building is compatible with the safeguarding requirements of Casement Airport.

The findings provide a clear and proportionate safeguarding position to support the planning process and inform engagement with Casement Airport

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# 1 Introduction

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## 1.1 Background

ARP 4.2 Sustainable Communities (Ireland) Fund has requested Straten CSL to analyse the possible development of a new building near Casement Airport (ICAO code: EIME). The analysis aims to assess the potential impact on instrument flight procedures in operation and applicable obstacle limitation surfaces, and in case of impact the analysis provides possible mitigations.

The proposed area is positioned approximately 5050 meters (m) south-east of Casement Airport. A maximum elevation of 118.325 above mean sea level (AMSL) has been used (as derived from the documentation provided by the customer) for the analysis.

## 1.2 Objectives

The objectives of this engagement are to:

- Identify the possible penetration of the new proposed obstacle in relation to the Instrument Flight Procedures (IFPs) in accordance with the ICAO Doc. 8168 Vol. II.
- Identify the possible penetration of the new proposed obstacle in relation to the applicable Obstacle Limitation Surfaces (OLS) in accordance with the ICAO Annex 14 Vol. I.
- Identify, and describe possible mitigations in case of penetration.

## 2 Modelling

The obstacle model considered for this study is an area, dedicated to the building construction, defined by the shape reported in Figure 1 and Figure 2. The total area elevation is equal to 118.325 m AMSL, such value (directly provided by the customer) is based on the following assumptions and considerations:

- An equivalent declared height of 21.675 m AGL.
- No vertical buffer has been applied.
- No horizontal buffer has been applied.



FIGURE 1: BUILDING DEVELOPMENT AREA OF INTEREST (GOOGLE EARTH VIEW)

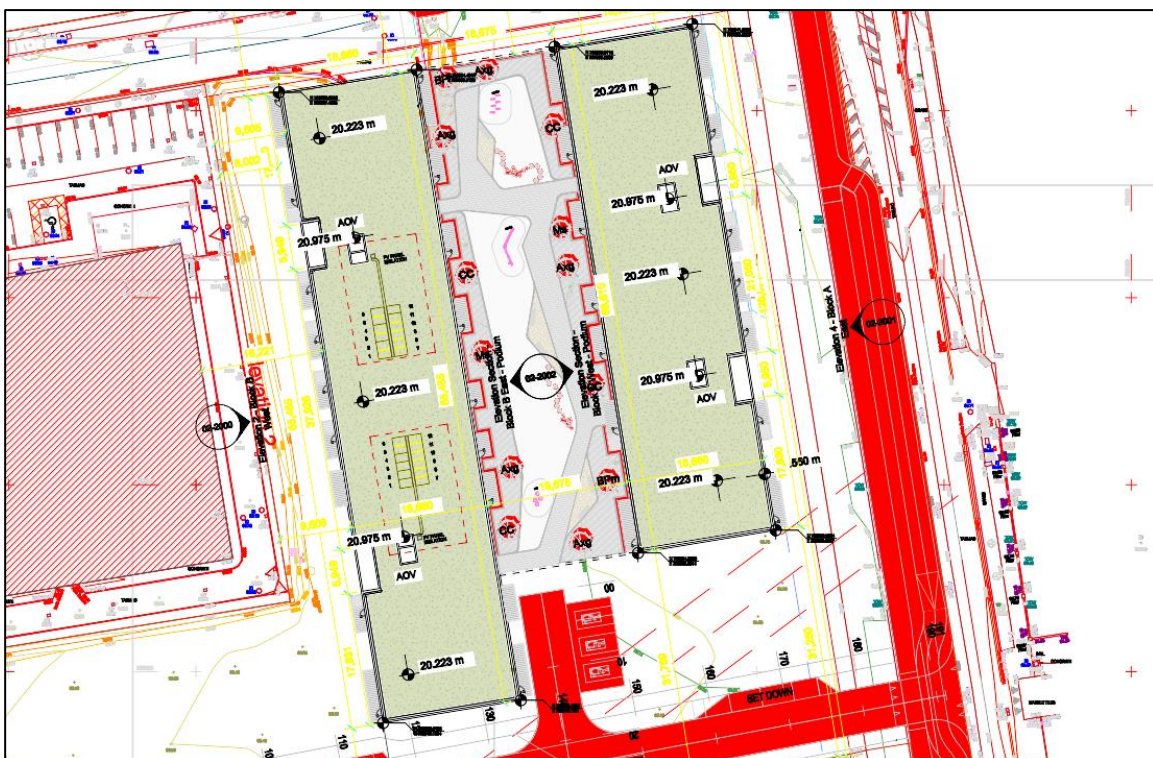


FIGURE 2: BUILDING SITE PLAN

## 3 IFP Analysis

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### 3.1 Methodology

The IFPs assessed are as per Appendix B: Casement – Instrument Flight Procedures related to Casement Airport (ICAO Code: EIME) as published under the Irish Defence Aeronautical Data website:

- Departure DAP RWY 28-10-22-04 Cat. A/B
- Departure DAP RWY 28-10-22-04 Cat. C/D
- Departure BAL RWY 28-10-22-04 Cat. A/B
- Departure BAL RWY 28-10-22-04 Cat. C/D
- ILS Y RWY 10 Cat. C/D
- ILS Z RWY 10 Cat. A/B
- ILS W RWY 10 Cat. C/D
- ILS X RWY 10 Cat. A/B
- VOR RWY 10
- VOR RWY 22
- VOR RWY 28
- SRA RWY 10
- RNP RWY 28
- ATCSMAC
- Minimum Sector Altitudes
- Visual Circling VM(C)

A detailed analysis, and proposed mitigations, is reported below.

### 3.2 Analysis – Departure DAP RWY 28-10-22-04 Cat A/B

The proposed construction falls under the protection areas of the Runway 04 and Runway 10 departure trajectories (Figure 3). The proposed construction, anyway, does not vertically impact the instrument flight procedure.



FIGURE 3: DEPARTURE DAP RWY 28-10-22-04 CAT A/B

The following results are derived for the obstacle analysis and are displayed below:

**Note:** All Table values, in this report, are displayed in red if penetrating a surface and in green if there is no penetration, i.e., no impact.

Departure RWY 04				
Item	Elevation [m]	MOC [m]	Penetration [m]	Notes
Proposed Building	118.325	75.0	-249.0	NIL

Departure RWY 10				
Item	Elevation [m]	MOC [m]	Penetration [m]	Notes
Proposed Building	118.325	37.3	-224.9	NIL

### 3.3 Analysis – Departure DAP RWY 28-10-22-04 Cat C/D

The proposed construction falls under the protection areas of the Runway 04 and Runway 10 departure trajectories (Figure 4). The proposed construction, anyway, does not vertically impact the instrument flight procedure.

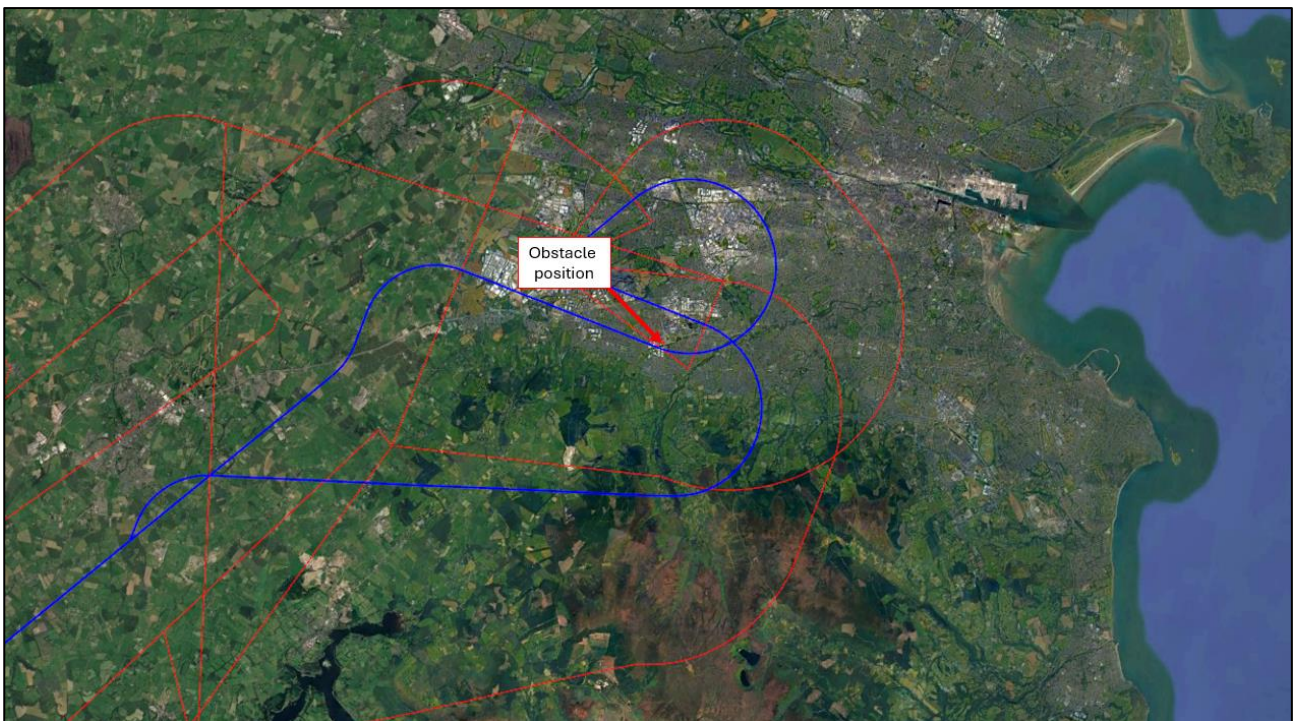


FIGURE 4: DEPARTURE DAP RWY 28-10-22-04 CAT C/D

The following results are derived for the obstacle analysis and are displayed below:

Departure RWY 04				
Item	Elevation [m]	MOC [m]	Penetration [m]	Notes
Proposed Building	118.325	75.0	-249.0	NIL

Departure RWY 10				
Item	Elevation [m]	MOC [m]	Penetration [m]	Notes
Proposed Building	118.325	37.3	-224.9	NIL

### 3.4 Analysis – Departure BAL RWY 28-10-22-04 Cat A/B

The proposed construction falls under the protection areas of the Runway 04 and Runway 10 departure trajectories. Anyway, the BAL departure procedures Cat. A/B are similar to the trajectories defined by DAP departure procedures Cat. A/B, especially until initiating the second turn.

Therefore, it can be easily assumed (also considering the wide vertical margin obtained by DAP trajectories) that BAL departures for Cat. A/B are not penetrated by the proposed construction.

### 3.5 Analysis – Departure BAL RWY 28-10-22-04 Cat C/D

The proposed construction falls under the protection areas of the Runway 04 and Runway 10 departure trajectories. Anyway, the BAL departure procedures Cat. C/D are similar to the trajectories defined by DAP departure procedures Cat. C/D, especially until initiating the second turn.

Therefore, it can be easily assumed (also considering the wide vertical margin obtained by DAP trajectories) that BAL departures for Cat. C/D are not penetrated by the proposed construction.

### 3.6 Analysis – ILS Y RWY 10 Cat. C/D

The proposed construction falls under the Obstacle Assessment Surfaces (OAS) and Missed Approach Segment protection areas of the ILS Y RWY 10 Cat. C/D (Figure 5). The proposed construction, anyway, does not vertically impact the instrument flight procedure.



FIGURE 5: ILS Y RWY 10 CAT. C/D

The following results are derived for the obstacle analysis and are displayed below:

Obstacle Assessment Surface (CAT I) <sup>(1)</sup>				
Item	Elevation [m]	Height Loss [m]	Penetration [m]	Notes
Proposed Building	118.325	49.0	-250.4 <sup>(2)</sup>	NIL

(1) It shall be noted that lower published minima for Cat. D only has been considered for obstacle analysis since higher minima, linked to a 2.5% missed approach climb gradient or Cat. C, is automatically covered by the conclusions provided.

(2) The proposed construction does not penetrate the OAS. Therefore, according to the ICAO PANS-OPS criteria, this obstacle is excluded from the OCA/H computation.

Turning Missed Approach				
Item	Elevation [m]	MOC [m]	Penetration [m]	Notes
Proposed Building	118.325	50.0	-449.1	NIL

### 3.7 Analysis – ILS Z RWY 10 Cat. A/B

The proposed construction falls under the Obstacle Assessment Surfaces (OAS) and Missed Approach protection areas of the ILS Z RWY 10 Cat. A/B. Anyway, the ILS Z RWY 10 Cat. A/B protection areas and Obstacle Assessment Surfaces are similar to the trajectories defined by ILS Y RWY 10 Cat. C/D.

Therefore, it can be easily assumed (also considering the wide vertical margin obtained by ILS Y RWY 10 Cat. C/D analysis) that ILS Z RWY 10 Cat. A/B is not penetrated by the proposed construction.

### 3.8 Analysis – ILS W RWY 10 Cat. C/D

The proposed construction falls under the Obstacle Assessment Surfaces (OAS) and Missed Approach protection areas of the ILS W RWY 10 Cat. C/D. Anyway, the ILS W RWY 10 Cat. C/D protection areas, Obstacle Clearance Altitude/Height (OCA/H) and Obstacle Assessment Surfaces are similar to the trajectory defined by ILS Y RWY 10 Cat. C/D.

Therefore, it can be easily assumed (also considering the wide vertical margin obtained by ILS Y RWY 10 Cat. C/D analysis) that ILS W RWY 10 Cat. C/D is not penetrated by the proposed construction.

### 3.9 Analysis – ILS X RWY 10 Cat. A/B

The proposed construction falls under the Obstacle Assessment Surfaces (OAS) and Missed Approach protection areas of the ILS X RWY 10 Cat. A/B. Anyway, the ILS X RWY 10 Cat. A/B protection areas, Obstacle Clearance Altitude/Height (OCA/H) and Obstacle Assessment Surfaces are similar to the trajectory defined by ILS Z RWY 10 Cat. A/B and ILS Y RWY 10 Cat. C/D.

Therefore, it can be easily assumed (also considering the wide vertical margin obtained by ILS X RWY 10 Cat. C/D analysis and considerations for ILS Z RWY 10 Cat. A/B) that ILS X RWY 10 Cat. A/B is not penetrated by the proposed construction.

### 3.10 Analysis – VOR RWY 10

The proposed construction falls under the Missed Approach Segment protection areas of the VOR RWY 10 (Figure 6). The proposed construction, anyway, does not vertically impact the instrument flight procedure.



FIGURE 6: VOR RWY 10

The following results are derived for the obstacle analysis and are displayed below:

Missed Approach Segment				
Item	Elevation [m]	MOC [m]	Penetration [m]	Notes
Proposed Building	118.325	50.0	-199.0	NIL

### 3.11 Analysis – VOR RWY 22

The proposed construction falls outside the Missed Approach protection areas of the VOR RWY 22. Therefore, no obstacle analysis is required.

### 3.12 Analysis – VOR RWY 28

The proposed construction falls under the Final Approach Segment protection areas of the VOR RWY 28 (Figure 7). The proposed construction, anyway, does not vertically impact the instrument flight procedure.



FIGURE 7: VOR RWY 28

The following results are derived for the obstacle analysis and are displayed below:

Final Approach Segment				
Item	Elevation [m]	MOC [m]	Penetration [m]	Notes
Proposed Building	118.325	63.8	-61.7	NIL

### 3.13 Analysis – SRA RWY 10

The proposed construction falls under the Missed Approach Segment protection areas of the SRA RWY 10 (Figure 8). The proposed construction, anyway, does not vertically impact the instrument flight procedure.



FIGURE 8: SRA RWY 10

The following results are derived for the obstacle analysis and are displayed below:

Missed Approach Segment				
Item	Elevation [m]	MOC [m]	Penetration [m]	Notes
Proposed Building	118.325	50.0	-449.3 <sup>(1)</sup>	NIL

(1) It shall be noted that the procedure based on a missed approach climb gradient of 2.5% is automatically protected.

### 3.14 Analysis – RNP RWY 28

The proposed construction falls under the LNAV Final Approach Segment protection areas (Figure 9), LNAV/VNAV Final Approach Side Surface (Figure 10) and SBAS Obstacle Assessment Surfaces (Figure 11) of the RNP RWY 28. The proposed construction, anyway, does not vertically impact the instrument flight procedures based on LNAV, LNAV/VNAV and LPV minima.

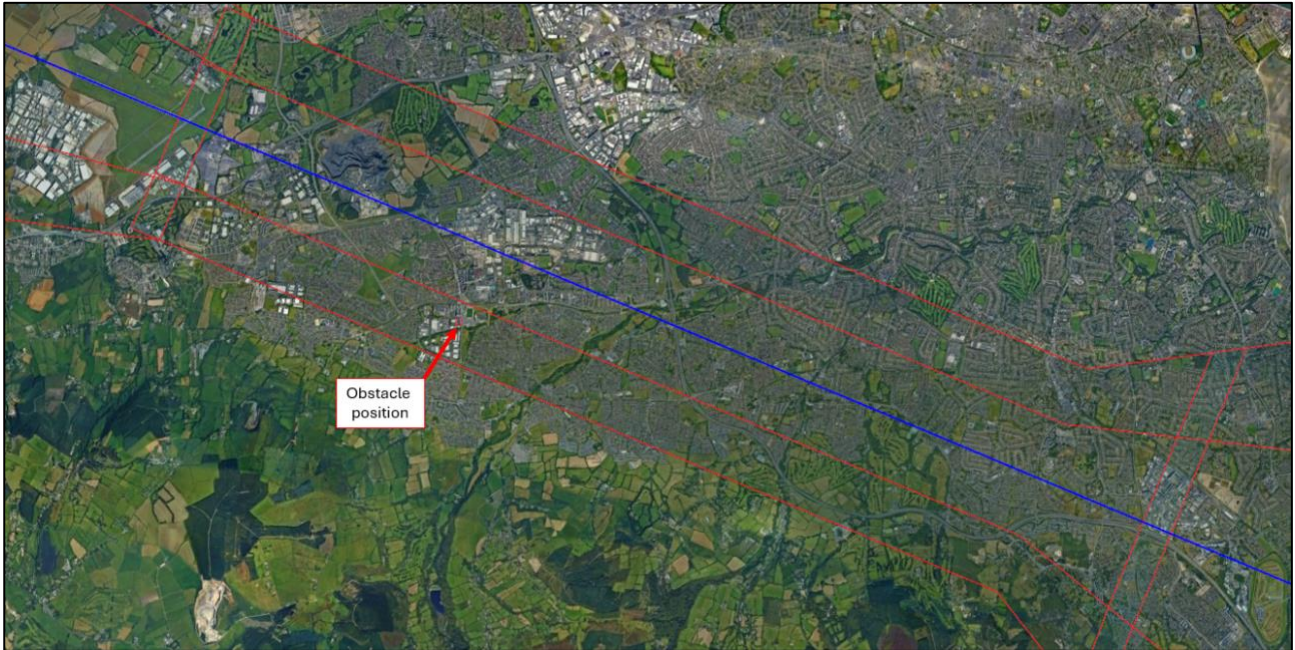


FIGURE 9: RNP RWY 28 – LNAV MINIMA



FIGURE 10: RNP RWY 28 –LNAV/VNAV MINIMA



FIGURE 11: RNP RWY 28 – LPV MINIMA

The following results are derived for the obstacle analysis and are displayed below:

Final Approach Segment - LNAV				
Item	Elevation [m]	MOC [m]	Penetration [m]	Notes
Proposed Building	118.325	55.1	-55.1	NIL

Final Approach Surface - LNAV/VNAV <sup>(1)</sup>				
Item	Elevation [m]	Height Loss [m]	Penetration [m]	Notes
Proposed Building	118.325	49.0	-156.8 <sup>(2)</sup>	NIL

(1) It shall be noted that published minima for Cat. D only has been considered for obstacle analysis since all other aircraft categories are automatically covered by the conclusions provided.

(2) The proposed construction does not penetrate the OAS. Therefore, according to the ICAO PANS-OPS criteria, this obstacle is excluded from the OCA/H computation.

Obstacle Assessment Surface (CAT I) <sup>(1)</sup>				
Item	Elevation [m]	Height Loss [m]	Penetration [m]	Notes
Proposed Building	118.325	49.0	-282.1 <sup>(2)</sup>	NIL

(1) It shall be noted that published minima for Cat. D only has been considered for obstacle analysis since all other aircraft categories are automatically covered by the conclusions provided.

(2) The proposed construction does not penetrate the OAS. Therefore, according to the ICAO PANS-OPS criteria, this obstacle is excluded from the OCA/H computation.

### 3.15 Analysis – ATCSMAC

The proposed construction falls outside the ATCSMAC sectors. Therefore, no obstacle analysis is required.

### 3.16 Analysis – Minimum Sector Altitude

The proposed construction falls between the ARP, BAL and DAP Minimum Sector Altitude sectors (Figure 12) The proposed construction, anyway, does not vertically impact the instrument flight procedure.

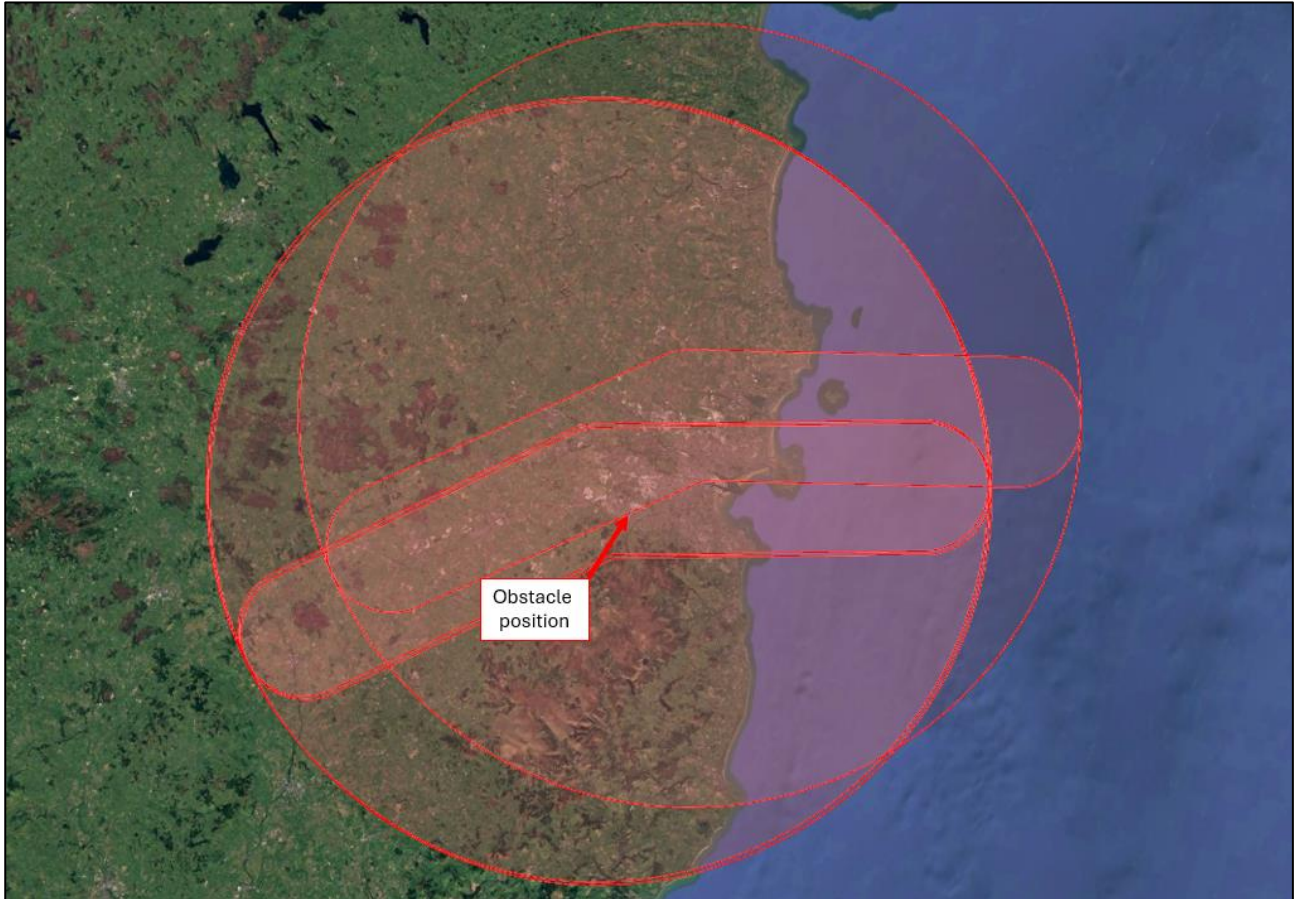


FIGURE 12: MINIMUM SECTOR ALTITUDES

The following results are derived for the obstacle analysis and are displayed below for each most penalizing sector:

ARP MSA - TO 050° to TO 255° (2800 ft)				
Item	Elevation [m]	MOC [m]	Penetration [m]	Notes
Proposed Building	118.325	300.0	-435.2	NIL

BAL MSA - TO 050° to TO 255° (2800 ft)				
Item	Elevation [m]	MOC [m]	Penetration [m]	Notes
Proposed Building	118.325	300.0	-435.2	NIL

DAP MSA - TO 052° to TO 257° (2800 ft)				
Item	Elevation [m]	MOC [m]	Penetration [m]	Notes
Proposed Building	118.325	300.0	-435.2	NIL

### 3.17 Analysis – Visual Manoeuvring (Circling)

The proposed construction falls outside the Visual Manoeuvring (Circling) protection areas. Therefore, no obstacle analysis is required.

## 4 OLS Analysis

### 4.1 Methodology

The ICAO Annex 14 Vol. I Obstacle Limitation Surface (OLS) analysis is based on the information reported under the Irish Defence Aeronautical Data (<https://www.military.ie/en/public-information/aeronautical-data/>) for Casement Airport (ICAO Code: EIME).

### 4.2 Analysis

The proposed building is located under the Casement OLS, in particular under the Conical Surface, as shown in Figure 13.



FIGURE 13: CASEMENT OLS

The following results are derived for the obstacle analysis and are displayed below:

Conical RWY 08/26				
Item	Elevation [m]	Surface altitude [m]	Penetration [m]	Notes
Proposed Building	118.325	172.123	-53.798	NIL

## 5 Conclusion

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This feasibility study has assessed the proposed building construction south-east of Casement Airport (EIME) against the most recent Instrument Flight Procedures (ICAO Doc. 8168 Vol. II) and Obstacle Limitation Surfaces (ICAO Annex 14 Vol. I).

The principal findings are as follows:

- **Instrument Flight Procedures (IFPs):** No penetration, a vertical clearance is granted according to the applicable design ICAO PANS-OPS criteria.
- **Obstacle Limitation Surfaces (OLS):** No penetration, a vertical clearance is granted according to the applicable design ICAO Annex 14 Vol. I criteria.

On the basis of the above analysis, the proposed construction area at a maximum elevation of 118.325 m AMSL, positioned according to Figure 1 and Figure 2, is considered compatible with the safeguarding requirements Casement Airport.

## 6 Appendices

### 6.1 Appendix A: Aerodrome Data

IRISH AIR CORPS

EIME AD 2 - 1  
19 MAR 2026

#### EIME AD 2.1 AERODROME LOCATION INDICATOR AND NAME

EIME - CASEMENT

#### EIME AD 2.2 AERODROME GEOGRAPHICAL AND ADMINISTRATIVE DATA

1	ARP and its site	531811N 0062719W Midpoint RWY10/28
2	Direction and distance from (city)	13 KM (7 NM) SW of Dublin city
3	AD Elevation, Reference Temperature & Mean Low Temperature	319ft AMSL / 19° C (July)
4	Geoid undulation at AD ELEV PSN	184ft
5	MAG VAR/Annual change	1.5°W (2025) / 11' decreasing
6	AD Operator, address, telephone, telefax, email, AFS, Website	Post: Irish Air Corps HQ, Casement Aerodrome Baldonnel Dublin 22 Ireland  Phone: +353 1 403 7800 H24 AFS: EIMEZTZX Email: airoorpsops@defenceforces.ie
7	Types of traffic permitted (IFR/VFR)	IFR/VFR
8	Remarks	Aerodrome for Irish Air Corps use. All other users strictly PPR.

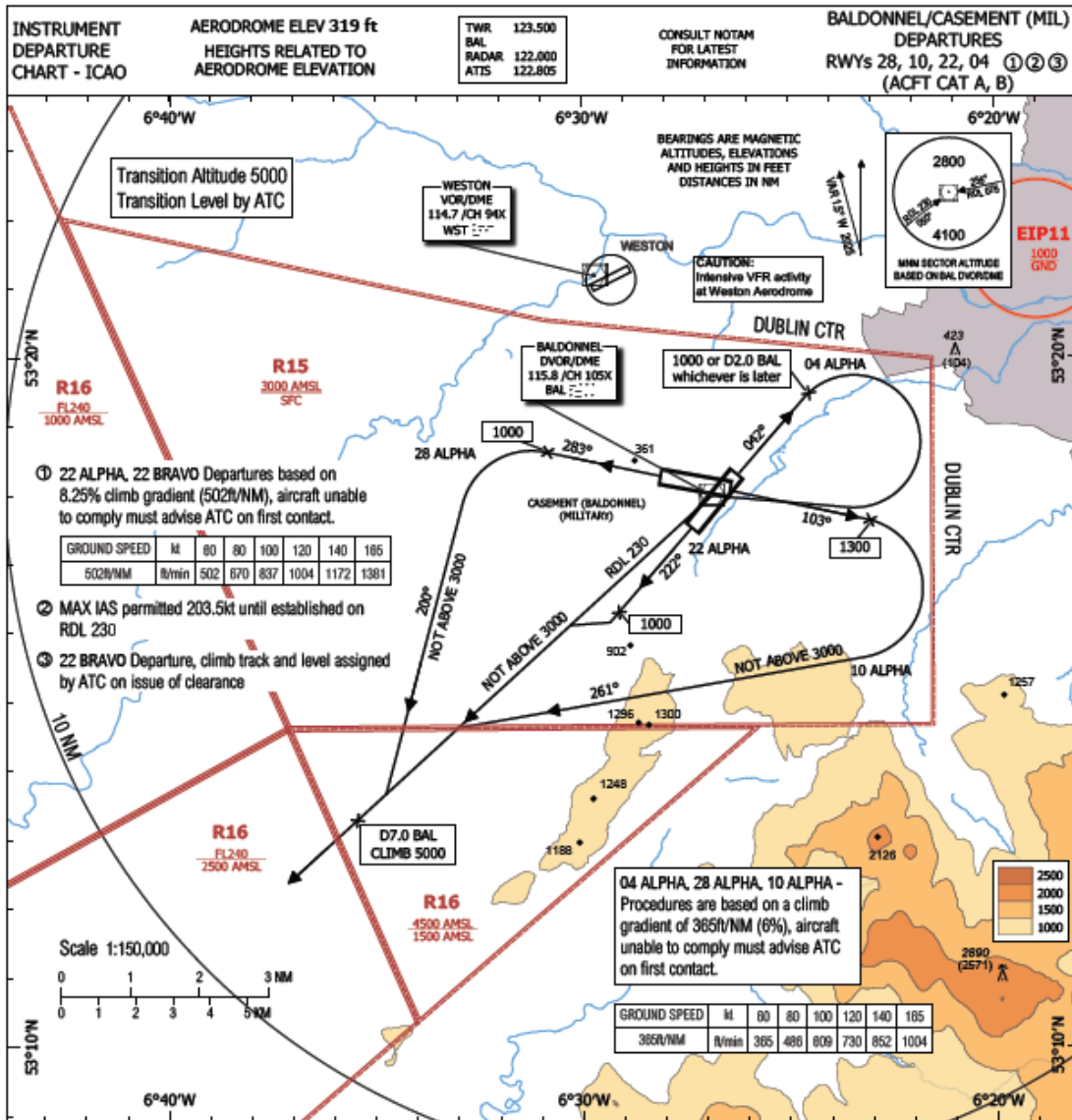
#### EIME AD 2.12 RUNWAY PHYSICAL CHARACTERISTICS

Designations RWY NR	TRUE BRG	Dimensions of RWY	Strength (PCN) and surface of RWY and SWY	THR coordinates RWY end coordinates THR Geoid undulation	THR elevation and highest elevation of TDZ of precision APP RWY
1	2	3	4	5	6
10	101.917°	1828M x 45M	PCN 52/F/DW/T ASPHALT -	THR: 531816.87N 0062807.75W END: 531805.85N 0062840.87W GEOID: 184ft	THR 283ft TDZ 291ft
28	281.937°	1828M X 45M	PCN 52/F/DW/T ASPHALT -	THR: 531805.85N 0062840.87W END: 531816.87N 0062807.75W GEOID: 184ft	THR 315ft
04	040.926°	1462M X 45M	PCN 48/F/DW/T ASPHALT -	THR: 531738.90N 0062713.73W END: 531812.62N 0062822.01W GEOID: 184ft	THR 319ft
22	220.937°	1462M X 45M	PCN 48/F/DW/T ASPHALT -	THR: 531812.62N 0062822.01W END: 531738.90N 0062713.73W GEOID: 184ft	THR 305ft

## 6.2 Appendix B: Casement – Instrument Flight Procedures

IRISH AIR CORPS

EIME AD 2.24-8



Departure	Routing	Climb Instruction
04 ALPHA	Climb on runway track, at 1000 or D2.0 BAL DME, whichever is later, turn right inbound to BAL VOR, from BAL track RDL 230	Climb 3000 Passing D7.0 BAL outbound on RDL 230 continue climb to 5000 Maintain 6% climb gradient until 2800
28 ALPHA	Climb on runway track, at 1000 turn left to track 200°, to intercept RDL 230 BAL outbound	Climb 3000 Passing D7.0 BAL outbound on RDL 230 continue climb to 5000 Maintain 6% climb gradient until 2800
10 ALPHA	Climb on runway track, at 1300 turn right to track 261°, to intercept RDL 230 BAL outbound	Climb 3000 Passing D7.0 BAL outbound on RDL 230 continue climb to 5000 Maintain 6% climb gradient until 2800
22 ALPHA	Climb on runway track, at 1000 turn right to intercept RDL 230 BAL outbound	Climb 3000 Passing D7.0 BAL outbound on RDL 230 continue climb to 5000 Maintain 8.25% climb gradient until 2800
22 BRAVO	Climb on track 237°, at 1000 turn right to track assigned by ATC	Climb to assigned level Maintain 8.25% climb gradient until initial assigned level

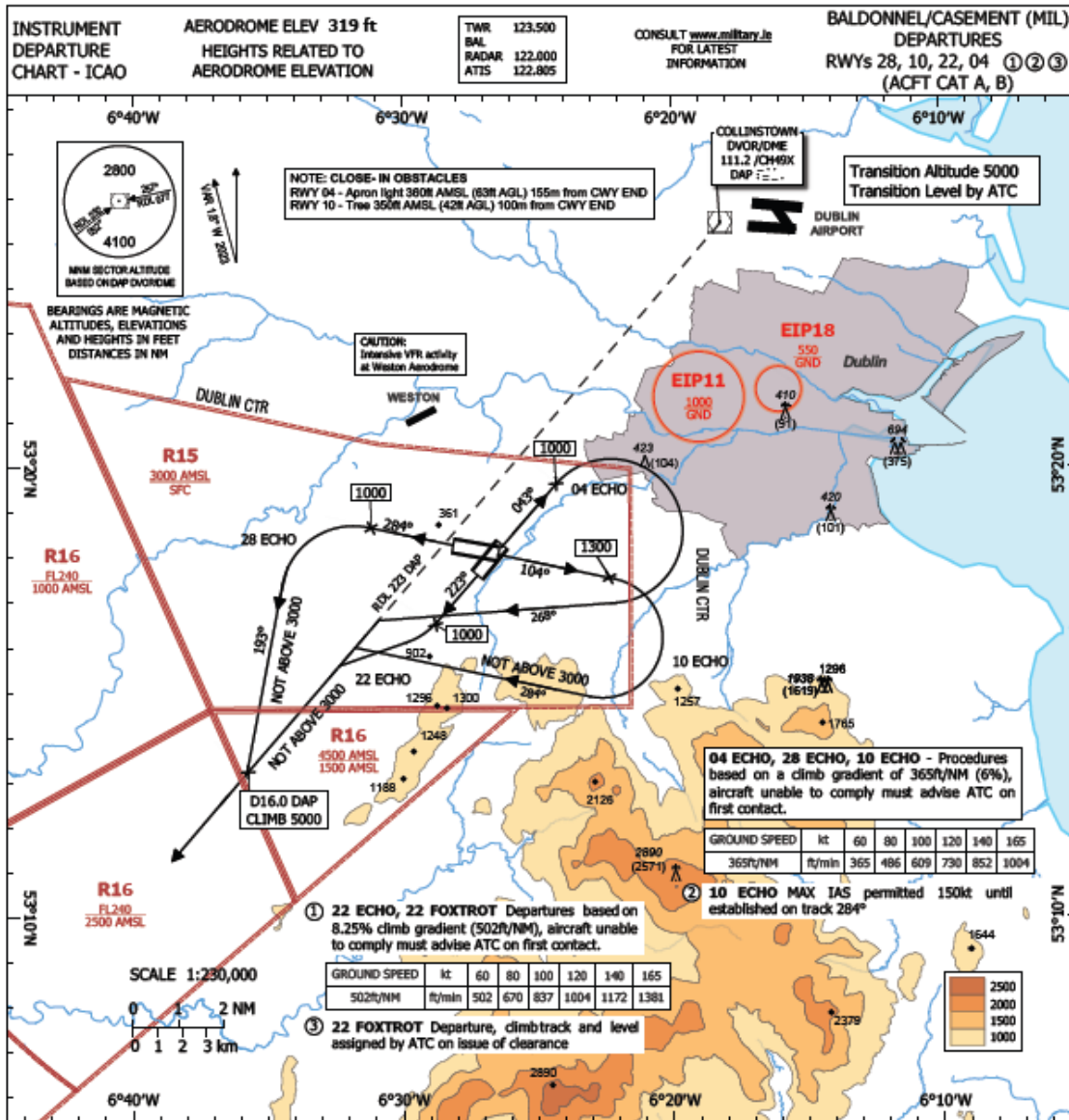
APPROVED BY GOC AIR CORPS

30 OCT 2025



IRISH AIR CORPS

EIME AD 2.24-30



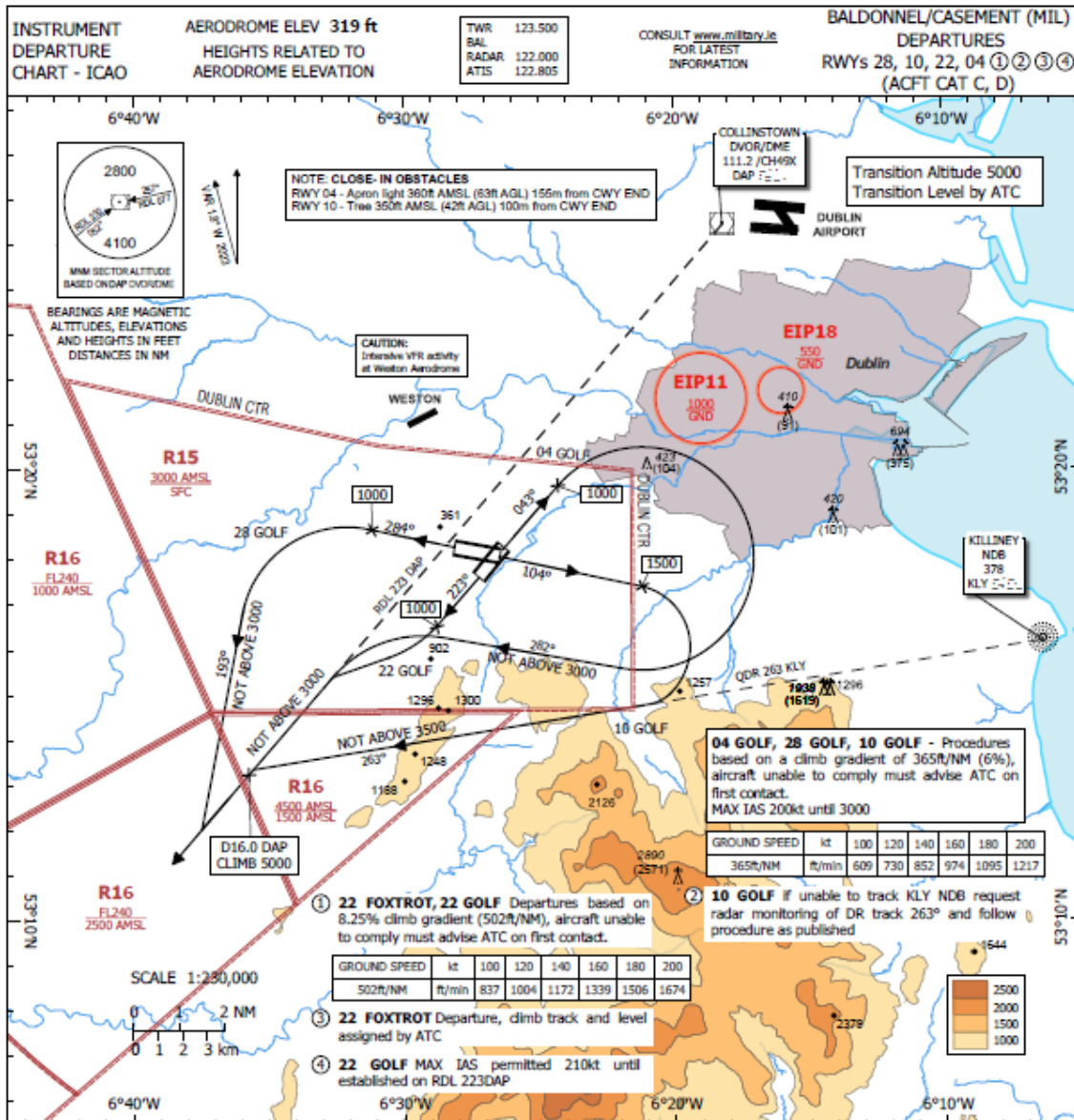
Departure	Routing	Climb Instruction
04 ECHO	Climb on runway track, at 1000 turn right to track 268° to intercept RDL 223 DAP outbound	Climb 3000 Passing D16.0 DAP outbound on RDL 223 continue climb to 5000. Maintain 6% climb gradient until 2800
22 ECHO ①	Climb on runway track, at 1000 turn right to intercept RDL 223 DAP outbound	Climb 3000 Passing D16.0 DAP outbound on RDL 223 continue climb to 5000. Maintain 8.25% climb gradient until 2800
10 ECHO ②	Climb on runway track, at 1300 turn right to track 284° to intercept RDL 223 DAP outbound	Climb 3000 Passing D16.0 DAP outbound on RDL 223 continue climb to 5000. Maintain 6% climb gradient until 2800
28 ECHO	Climb on runway track, at 1000 turn left to track 193° to intercept RDL 223 DAP outbound	Climb 3000 Passing D16.0 DAP outbound on RDL 223 continue climb to 5000. Maintain 6% climb gradient until 2800
22 FOXTROT ①③	Climb on track 238°, at 1000 turn right to track assigned by ATC	Climb to assigned level Maintain 8.25% climb gradient until initial assigned level

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03 OCT 2024

IRISH AIR CORPS

EIME AD 2.24-31



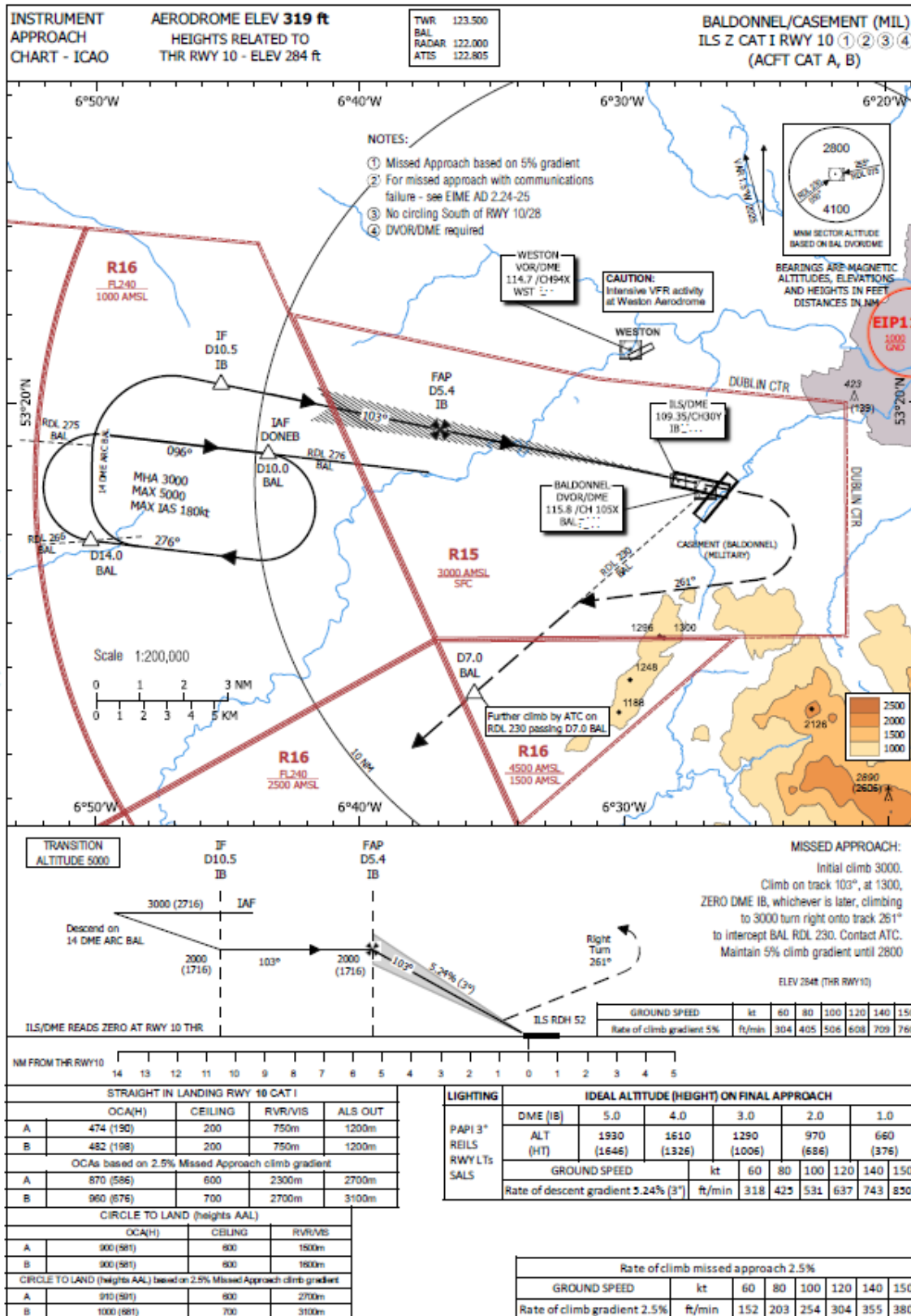
Departure	Routeing	Climb Instruction
04 GOLF	Climb on runway track, at 1000 turn right to track 282° to intercept RDL 223 DAP outbound	Climb 3000 Passing D16.0 DAP outbound on RDL 223 continue climb to 5000. Maintain 6% climb gradient until 2800
22 GOLF ①④	Climb on runway track, at 1000 turn right to intercept RDL 223 DAP outbound	Climb 3000 Passing D16.0 DAP outbound on RDL 223 continue climb to 5000. Maintain 8.25% climb gradient until 2800
10 GOLF ②	Climb on runway track, at 1500 turn right to intercept bearing 263° from KLY to intercept RDL 223 DAP outbound	Climb 3500 Passing D16.0 DAP outbound on RDL 223 continue climb to 5000. Maintain 6% climb gradient until 2800
28 GOLF	Climb on runway track, at 1000 turn left to track 193° to intercept RDL 223 DAP outbound	Climb 3000 Passing D16.0 DAP outbound on RDL 223 continue climb to 5000. Maintain 6% climb gradient until 2800
22 FOXTROT ①③	Climb on track 238°, at 1000 turn right to track assigned by ATC	Climb to assigned level. Maintain 8.25% climb gradient until initial assigned level

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EIME AD 2.24-10

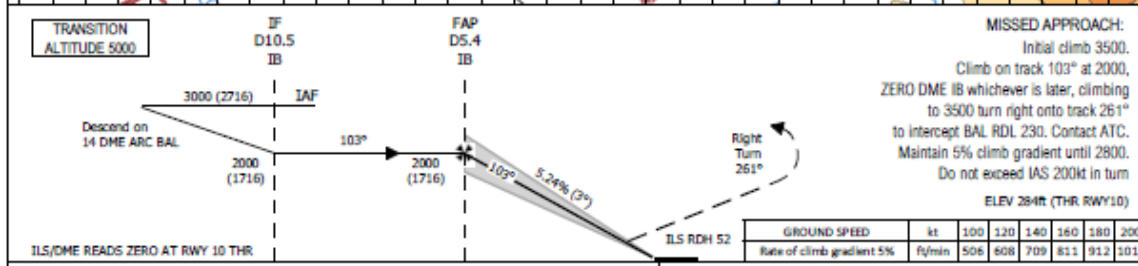
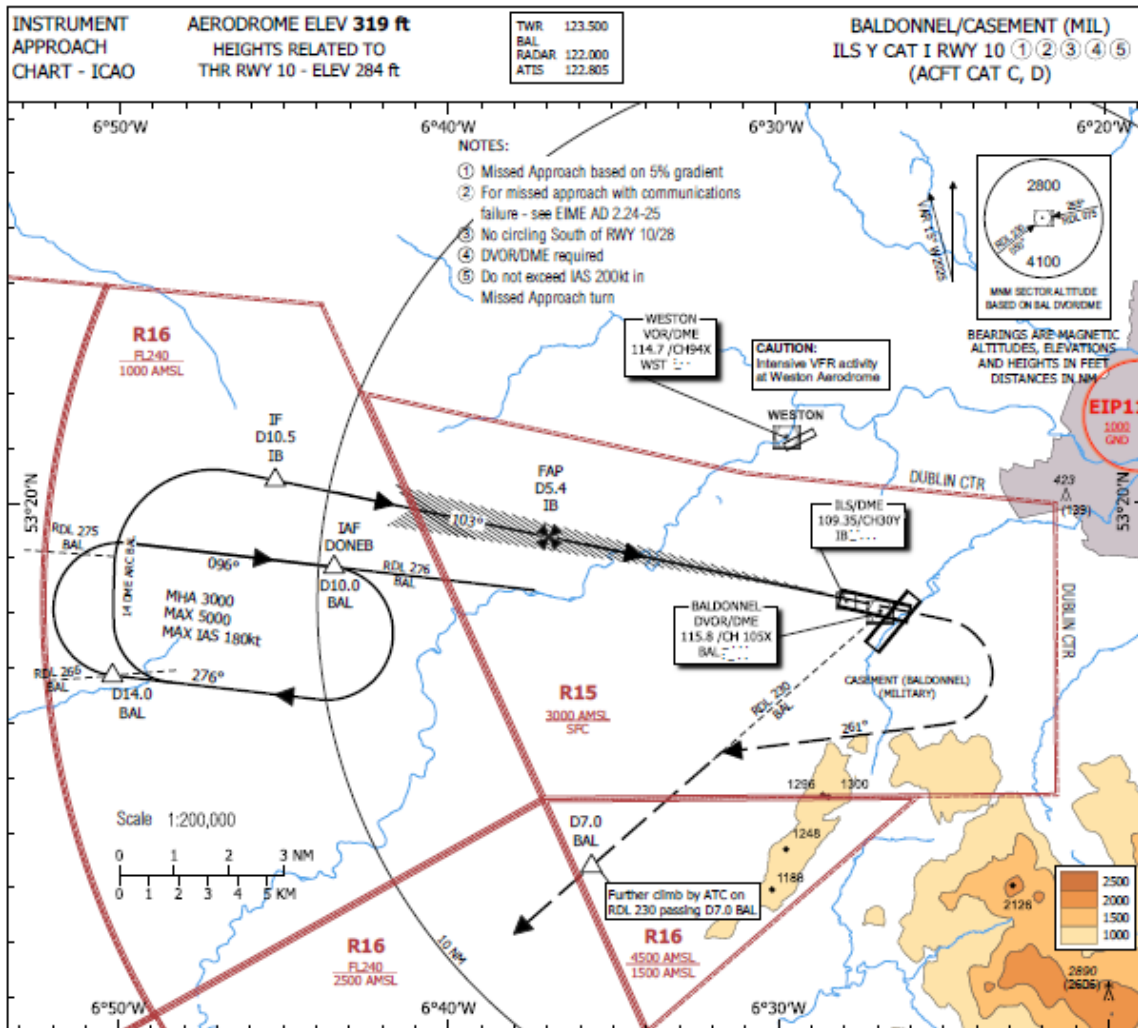


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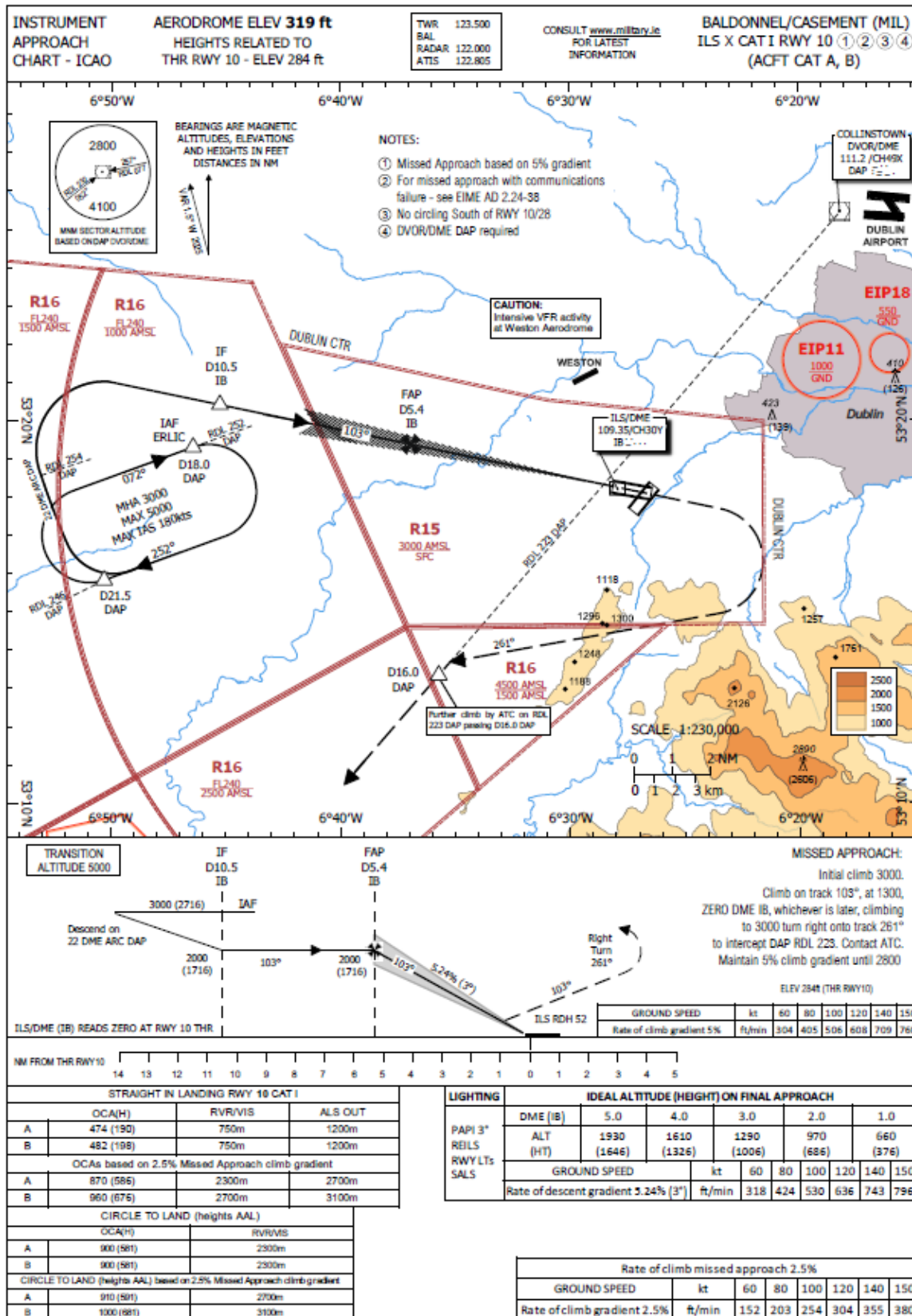
STRAIGHT IN LANDING RWY 10 CAT I				LIGHTING	IDEAL ALTITUDE (HEIGHT) ON FINAL APPROACH							
OCA(H)	CEILING	RVR/VIS	ALS OUT		DME (IB)	5.0	4.0	3.0	2.0	1.0		
C	482 (208)	300	750m	1200m	ALT (HT)	1930 (1646)	1610 (1326)	1290 (1006)	970 (686)	660 (376)		
D	500 (216)	300	750m	1200m	GROUND SPEED	kt	60	80	100	120	140	150
OCAs based on 2.5% Missed Approach climb gradient					Rate of descent gradient 5.24% (3°)	ft/min	318	425	531	637	743	850
CIRCLE TO LAND (heights AAL)					Rate of climb missed approach 2.5%							
C	1000 (881)	700	2400m		GROUND SPEED	kt	100	120	140	160	180	200
D	1220 (801)	1000	3800m		Rate of climb gradient 2.5%	ft/min	254	304	355	406	456	507
CIRCLE TO LAND (heights AAL) based on 2.5% Missed Approach climb gradient												
C	1380 (1076)	1100	4400m									
D	1400 (1081)	1100	4400m									

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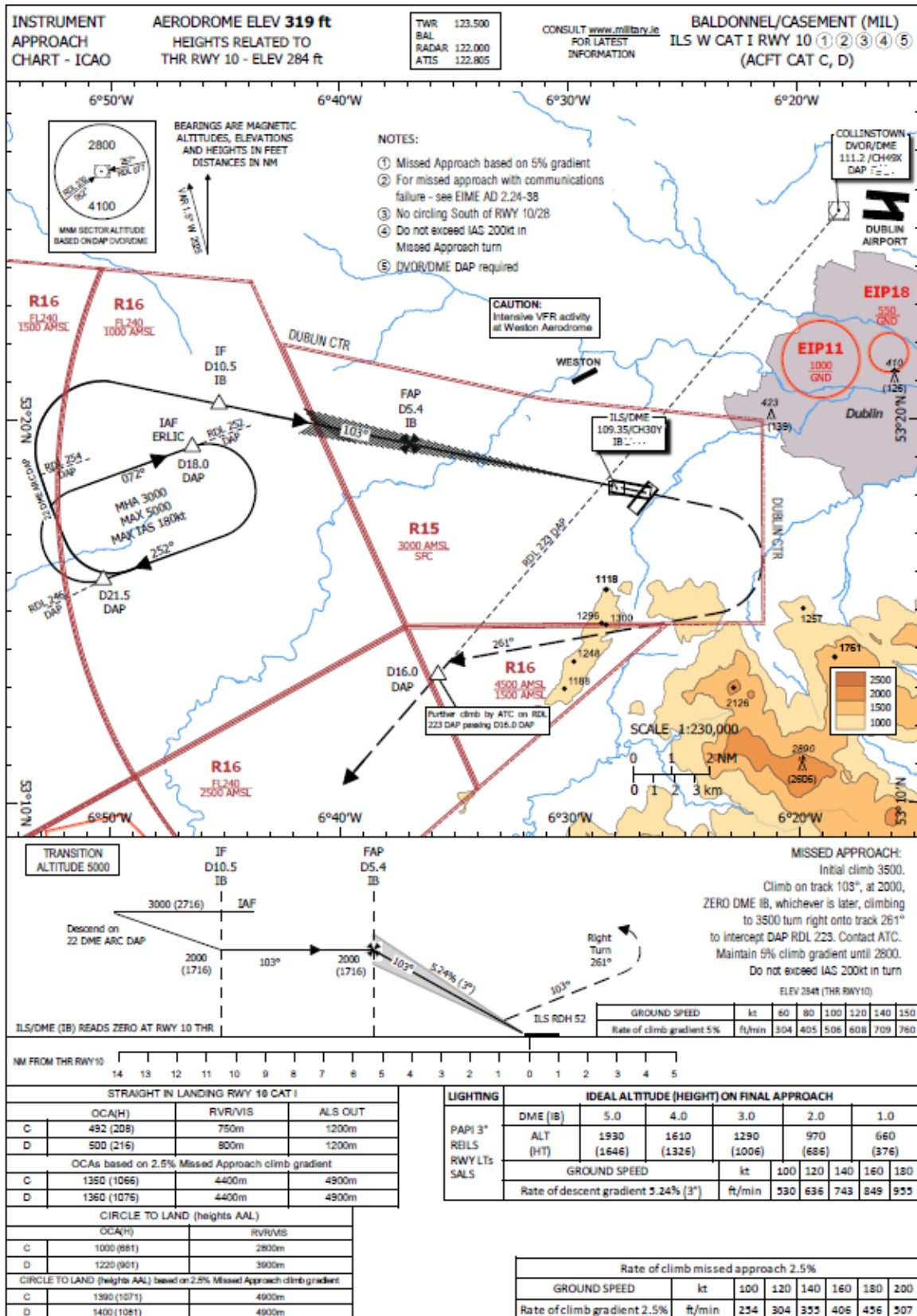


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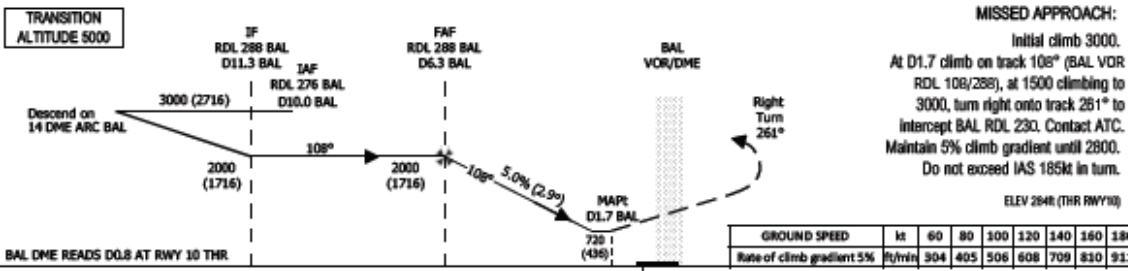
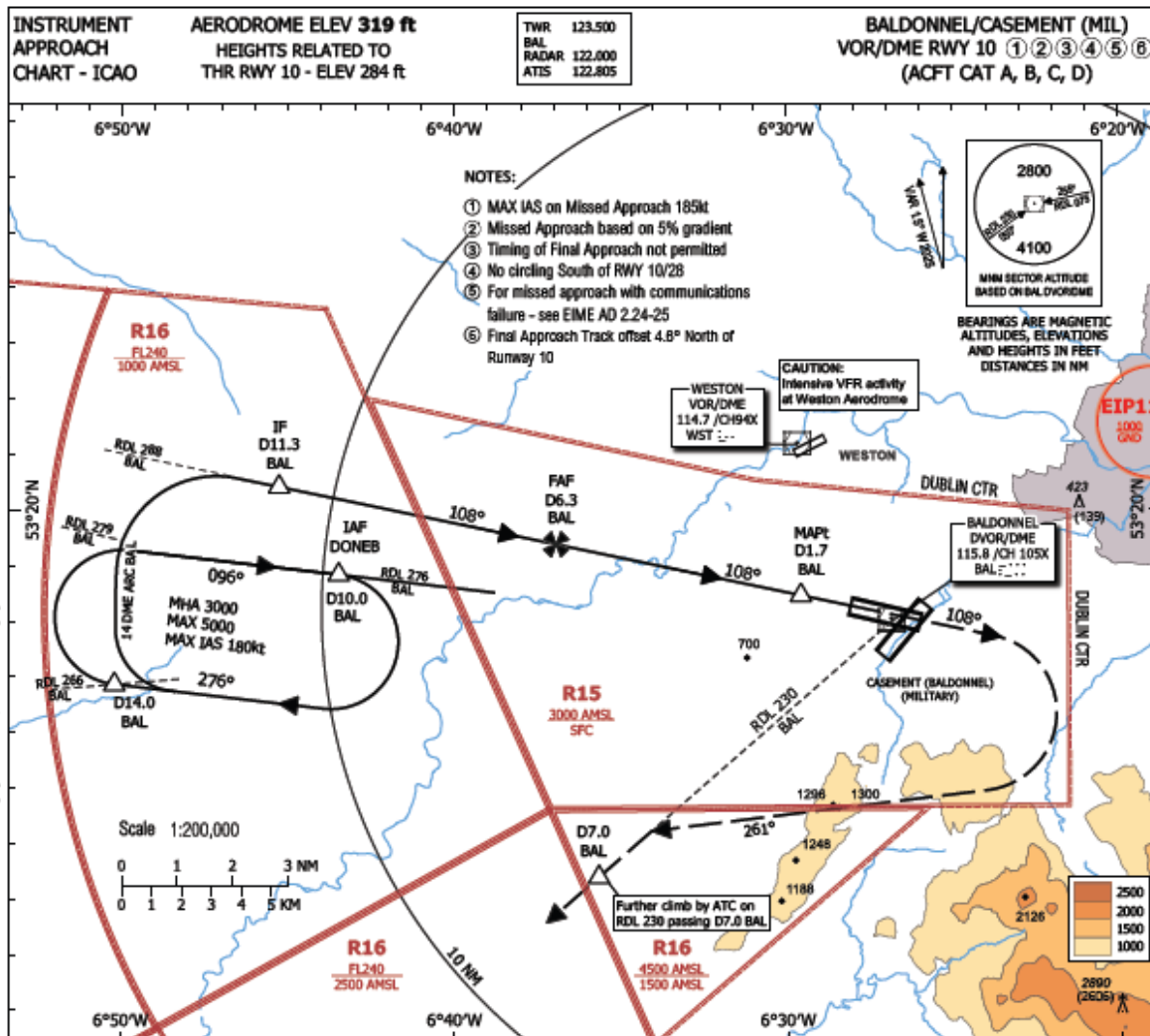


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EIME AD 2.24-15



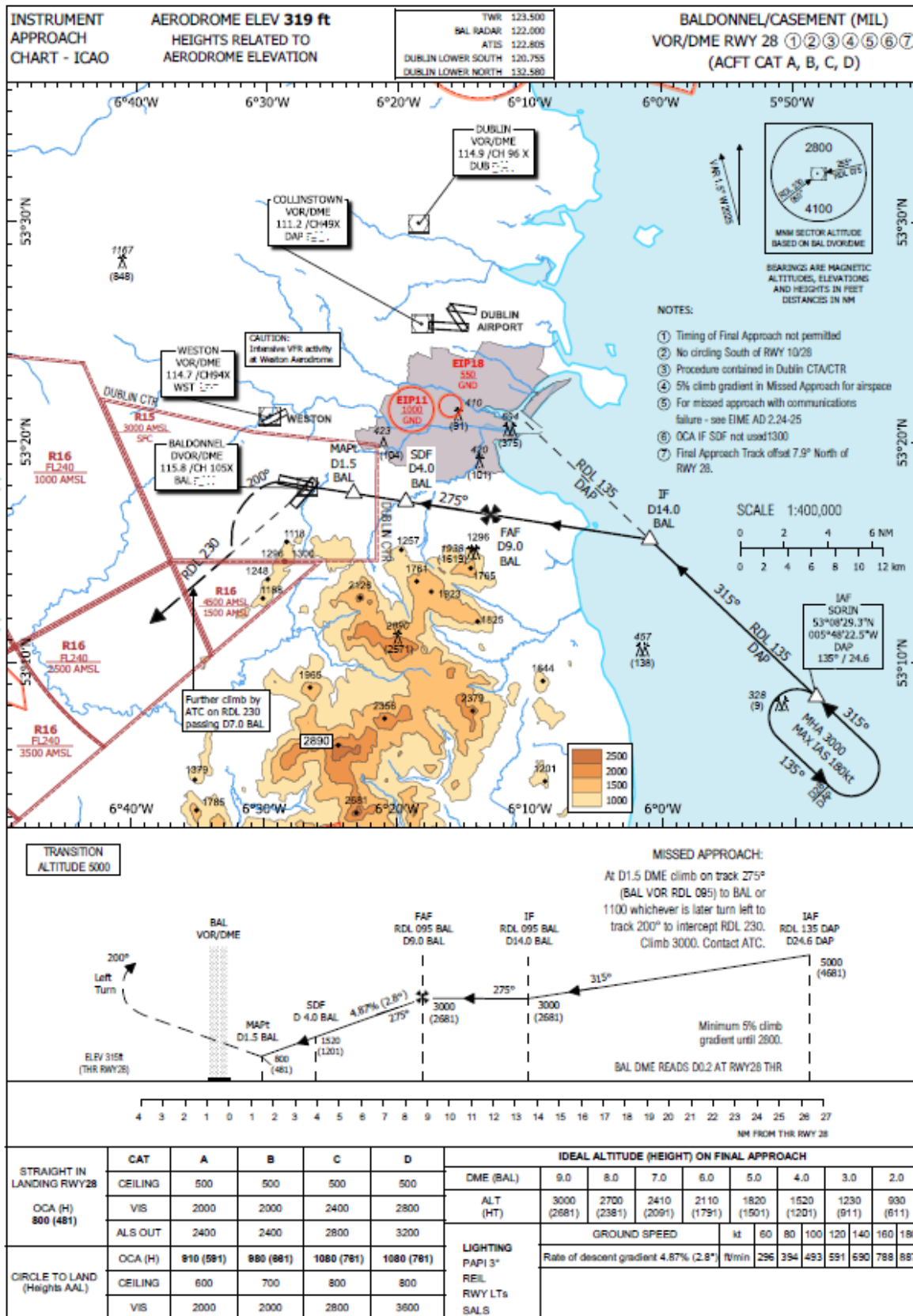
NM FROM THR RWY10		14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	1	2	3	4	5	
STRAIGHT IN LANDING RWY10 OCA (H) 720 (438)	CAT	A	B	C	D	LIGHTING																
	CEILING	500	500	500	500	IDEAL ALTITUDE (HEIGHT) ON FINAL APPROACH																
	VIS	2000	2000	2400	2800	DME (BAL)	6.0	5.0	4.0	3.0	2.0	ALT (HT)	1910 (162s)	1610 (132s)	1300 (101s)	1000 (71s)	700 (41s)	GROUND SPEED				
ALS OUT	2400	2400	2800	3200					kt	60	80	100	120	140	160	180	Rate of descent gradient 5.0% (2.9%)					
CIRCLE TO LAND (Heights AAL)	OCA (H)	1000 (881)	1230 (911)	1400 (1081)	1720 (1401)																	
	CEILING	700	1000	1100	1500																	
	VIS	2000	2000	2800	3600																	
OCAs based on 2.5% Missed Approach climb gradient																						
CAT		A	B	C	D																	
OCA (H)		1000 (71s)	1230 (94s)	1400 (111s)	1400 (111s)					GROUND SPEED				kt	60	80	100	120	140	160	180	
				Rate of climb gradient 2.5%				ft/min				152	203	254	304	355	406	456				

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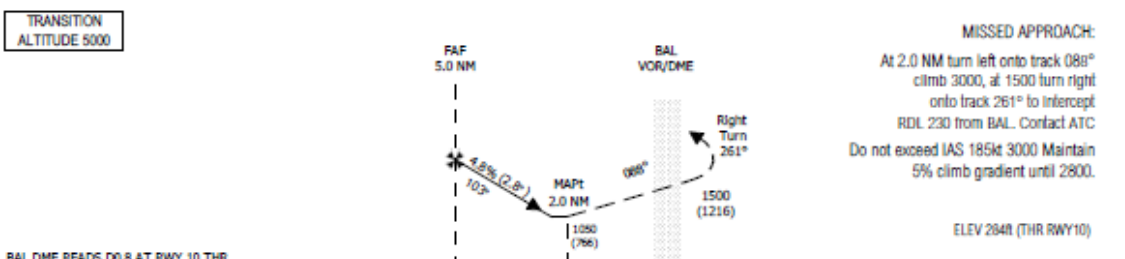
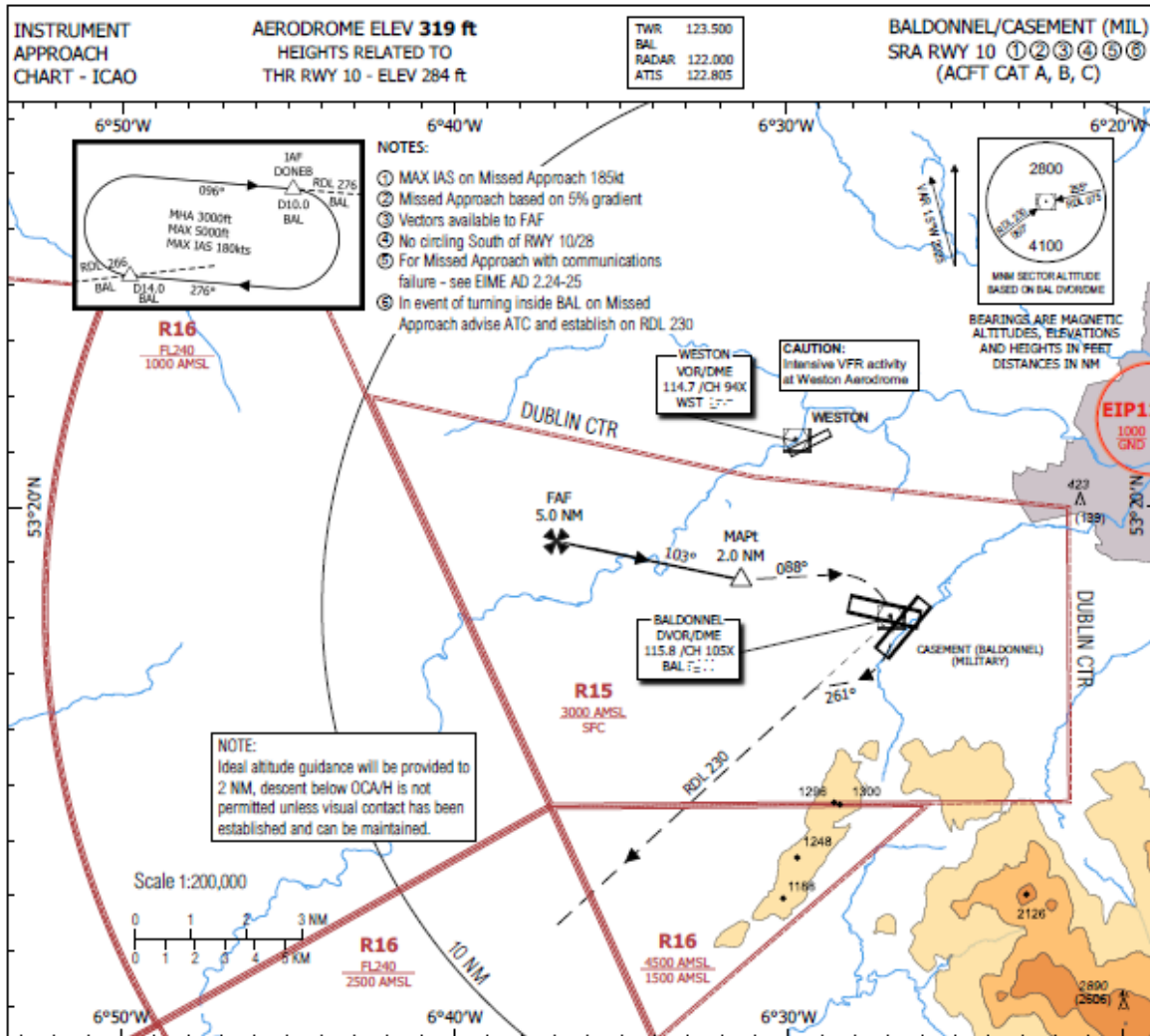
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NM FROM THR RWY10				
	CAT	A	B	C
STRAIGHT IN LANDING RWY10 OCA (H) 1060 (786)	CEILING	800	800	800
	VIS	2000	2000	3600
	ALS OUT	2400	2400	4000
CIRCLE TO LAND (Heights AAL)	OCA (H)	1140 (821)	1480 (1181)	1810 (1291)
	CEILING	900	1200	1300
	VIS	2000	2000	2800
OCAs based on 2.5% Missed Approach climb gradient				
	CAT	A	B	C
	OCA (H)	1130 (846)	1320 (1036)	1500 (1216)

LIGHTING	IDEAL ALTITUDE (HEIGHT) ON FINAL APPROACH								
	Distance (NM)	5.0	4.0	3.0	2.0				
	ALT (HT)	1800 (1516)	1510 (1226)	1210 (926)	920 (636)				
	GROUND SPEED	kt	60	80	100	120	140	160	180
Rate of descent gradient 4.8% (2.8°)		ft/min	293	391	489	586	684	782	880

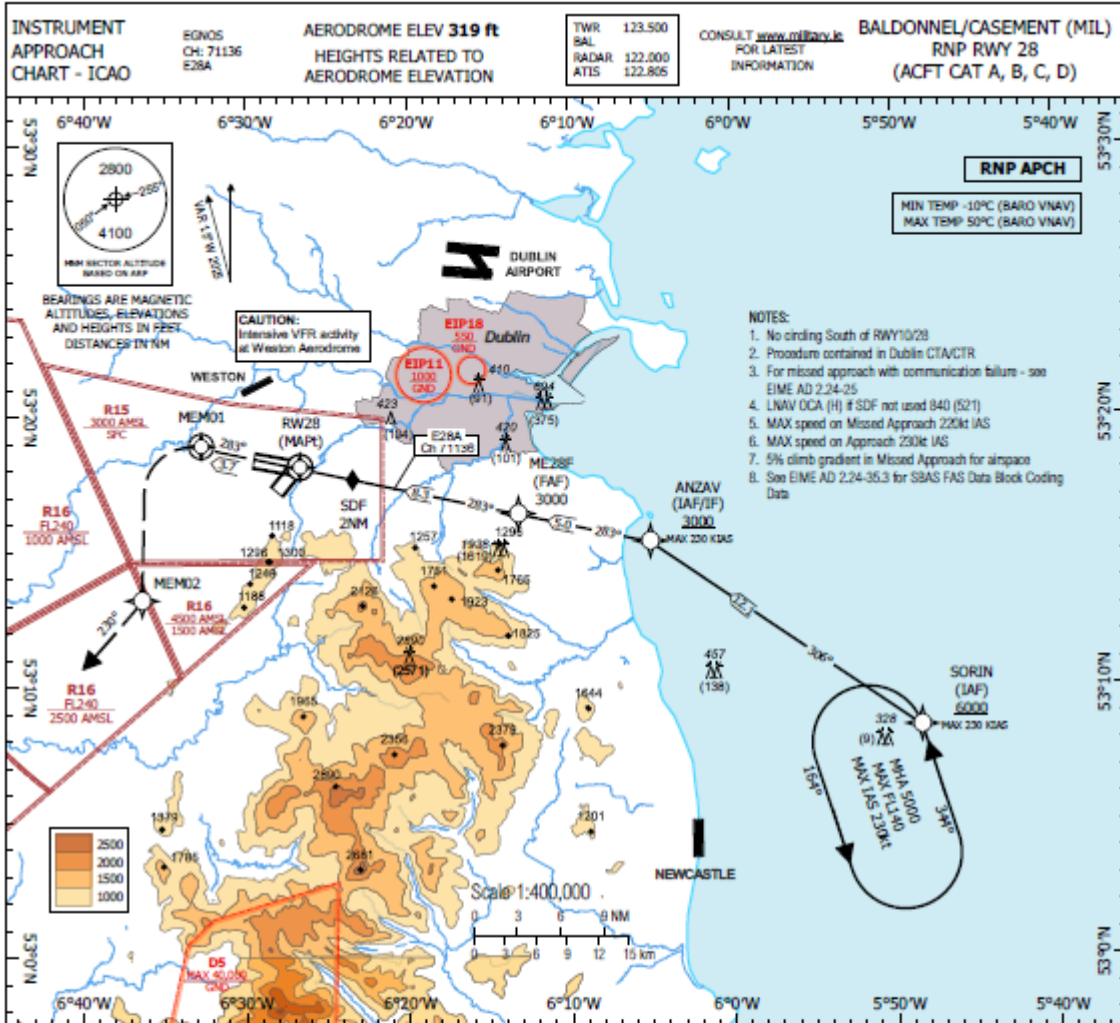
GROUND SPEED		kt	60	80	100	120	140	160	180
Rate of climb gradient 2.5%		ft/min	152	203	254	304	355	406	456

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**MISSED APPROACH:**  
Initial climb 3000.  
Climb straight ahead to MEM01, then climbing turn LEFT track direct to MEM02.  
Contact ATC - Expect track 230° from MEM02.  
MAX Speed on Missed Approach 220kt IAS.  
Maintain 5% climb gradient for airspace

**TRANSITION ALTITUDE 5000**

**ELEV 315 (THR RWY28)**

STRAIGHT IN LANDING RWY 28	CAT	A	B	C	D
LNAV	OCA (H) 2.5% / 5%	750 (431)			
	VIS	1600m	1600m	1800m	1800m
LNAV/NAV	OCA (H) 2.5% / 5%	640 (321)	650 (331)	660 (341)	670 (351)
	VIS	1100m	1100m	1200m	1200m
LPV	OCA (H) 2.5% / 5%	619 (300)			
	VIS	900m	900m	900m	900m
CIRCLCE TO LAND (Heights AAL)	OCA (H)	900 (581)	980 (661)	1080 (761)	
	VIS	2500m	2700m	3200m	3600m

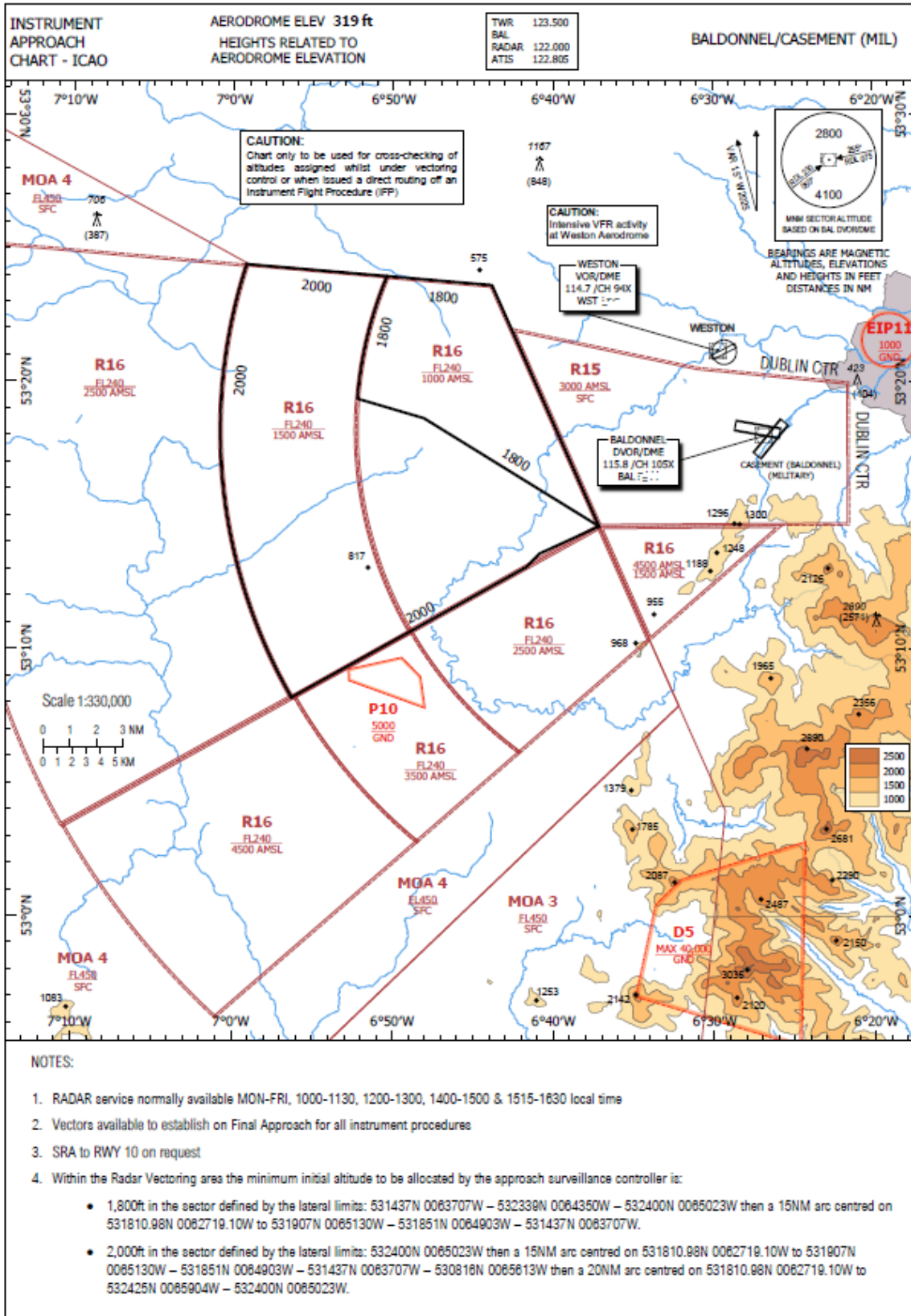
Distance to THR (NM)	IDEAL ALTITUDE (HEIGHT) ON FINAL APPROACH							
	8.3 (FAF)	8.0	7.0	6.0	5.0	4.0	3.0 (SDF)	2.0 (SDF)
ALT (HT)	3000 (2681)	2910 (2591)	2500 (2271)	2270 (1951)	1980 (1641)	1640 (1321)	1320 (1001)	1000 (681)
LIGHTING	PAPI 3° REL							
	RWY LTs							
SALS	GROUND SPEED							
	Rate of descent gradient 5.2% ft/min							

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