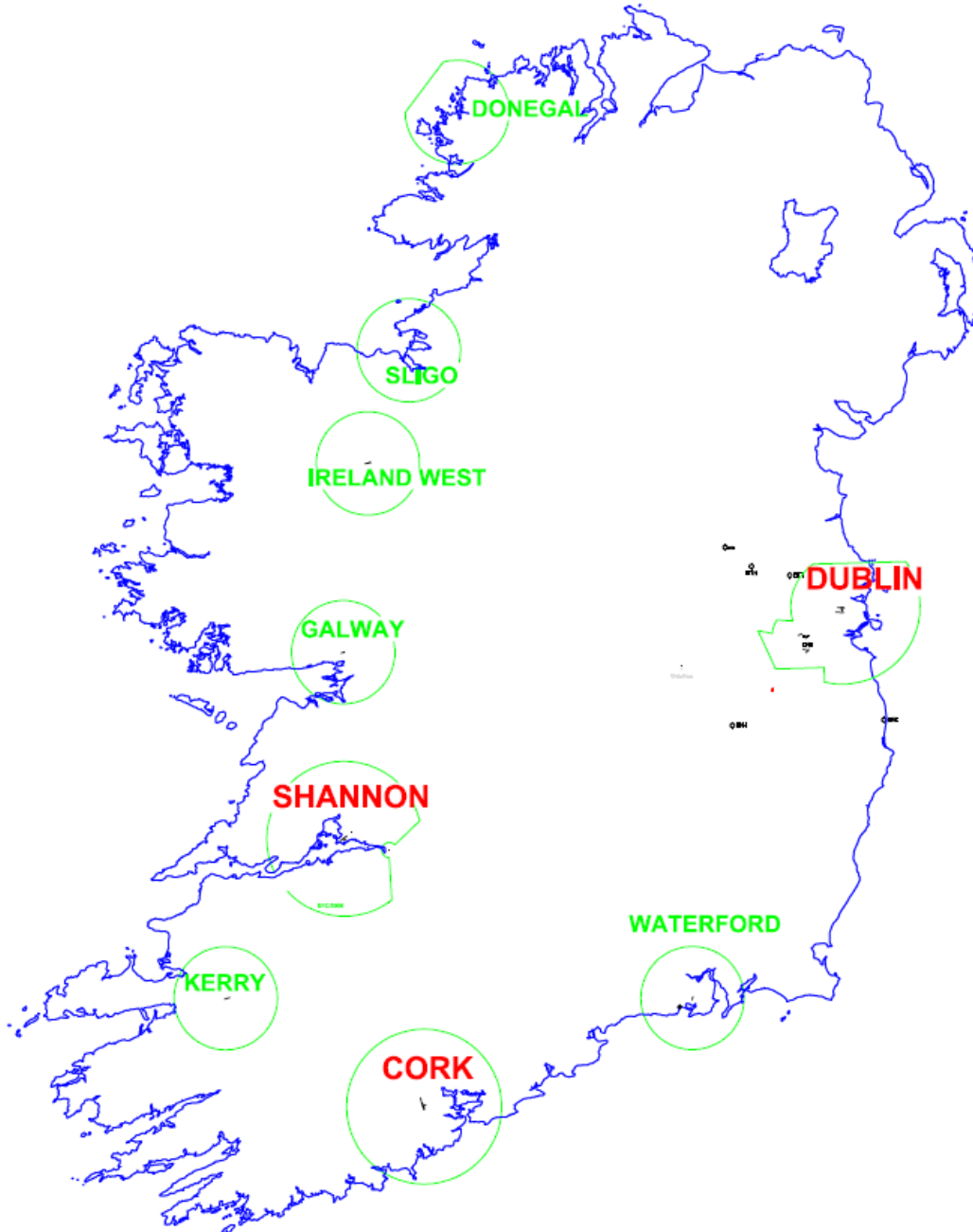




PBN Implementation in Ireland & Point Merge Dublin/EIDW – ‘TMA2012’

Presented by Donal Lamont & Dermot Mc Mahon

Ireland PBN Candidate Airports



Status of PBN Implementation in Ireland

		En-Route	Terminal		Approach
			SID/STAR	Point Merge	
State	Dublin	✓	✓	✓ ✓	✓
	Cork	✓	✓		✓
	Shannon	✓	✓		✓
Regional	Donegal	✓			✓
	Galway	✓			
	Ireland West	✓			
	Kerry	✓	✓		✓
	Sligo	✓			
	Waterford	✓			✓

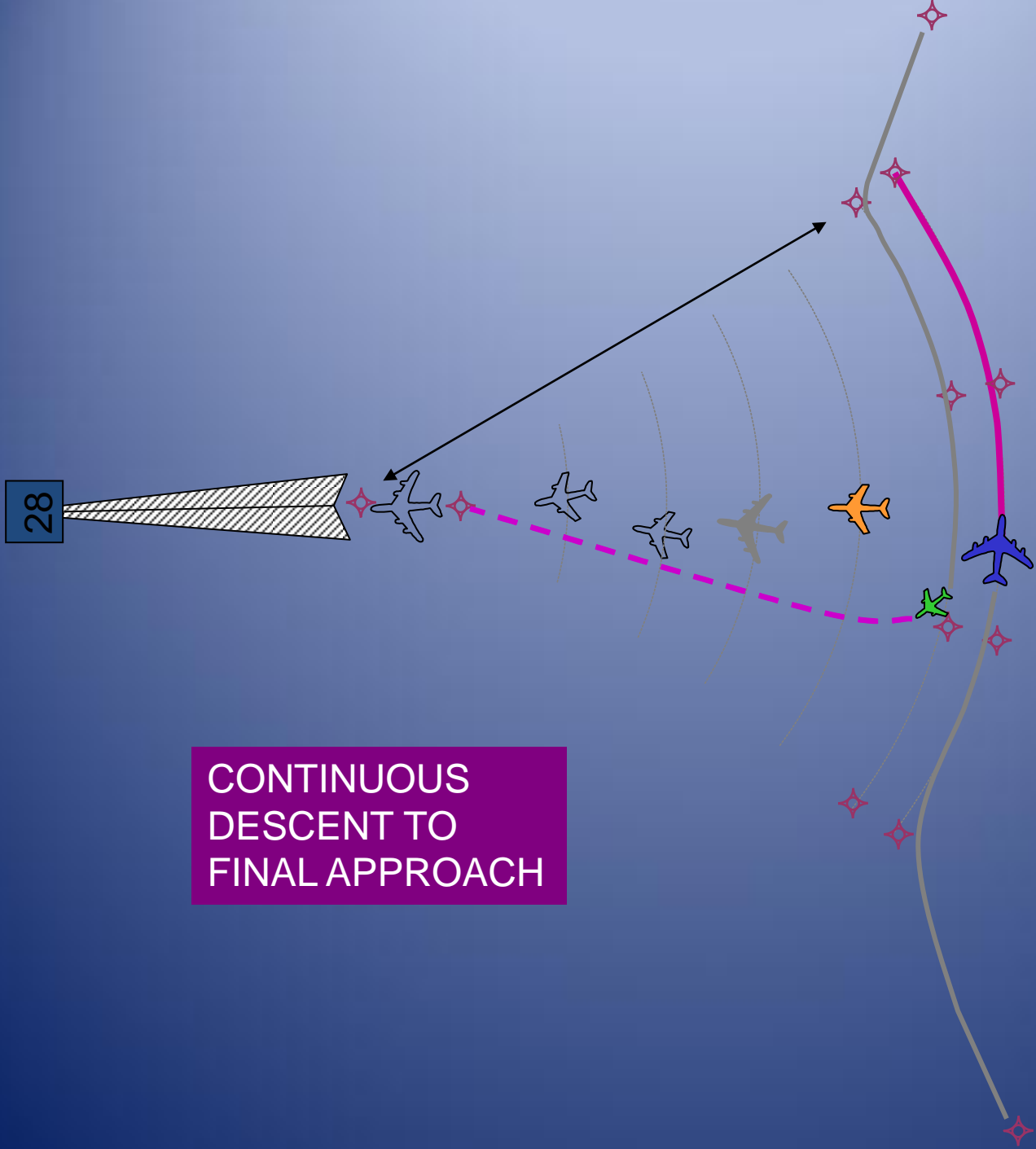
✓ Completed

✓ Planned

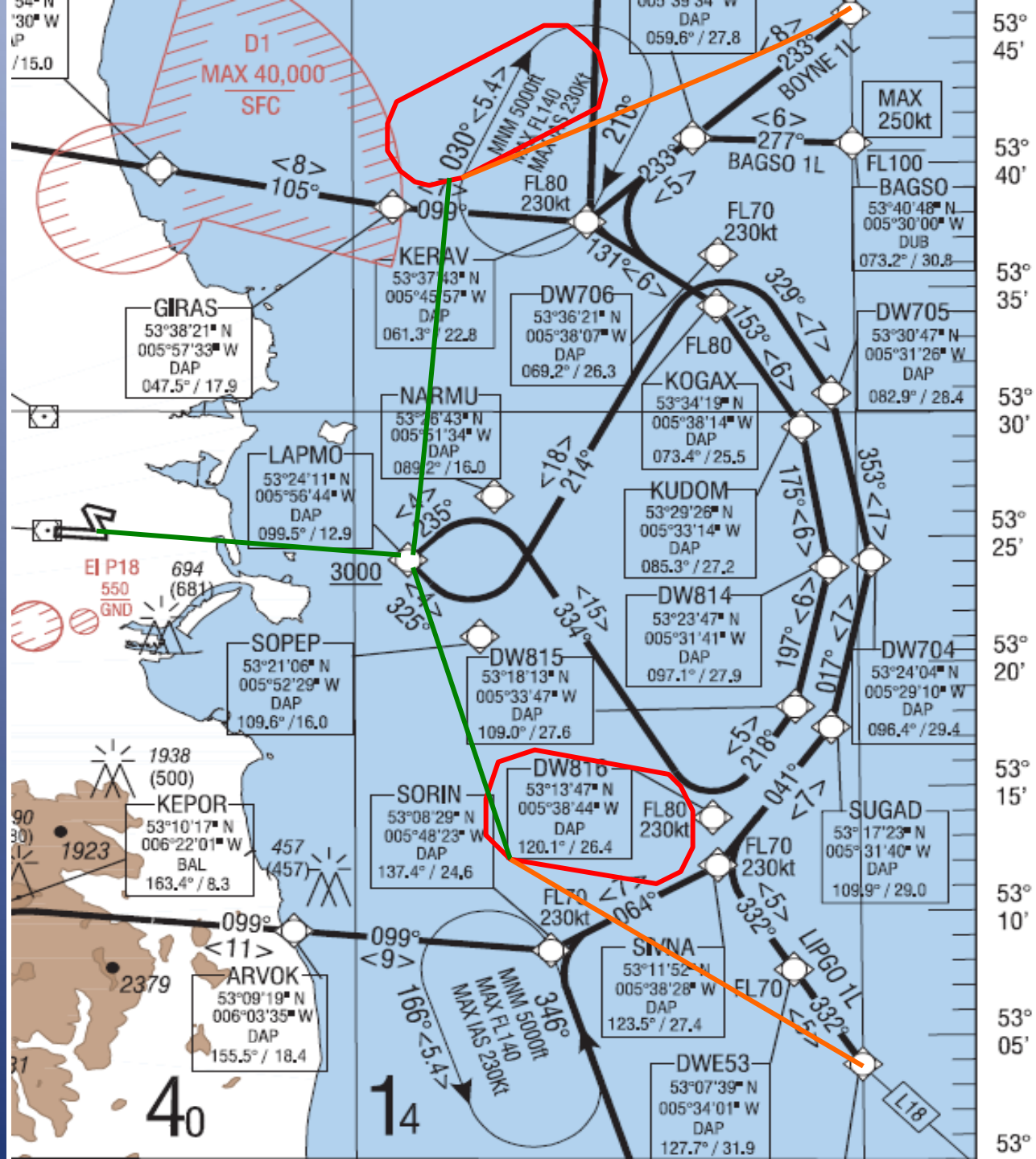
28

CONTINUOUS
DESCENT TO
FINAL APPROACH

EQUIDISTANT
ARCS FOR
SEQUENCING



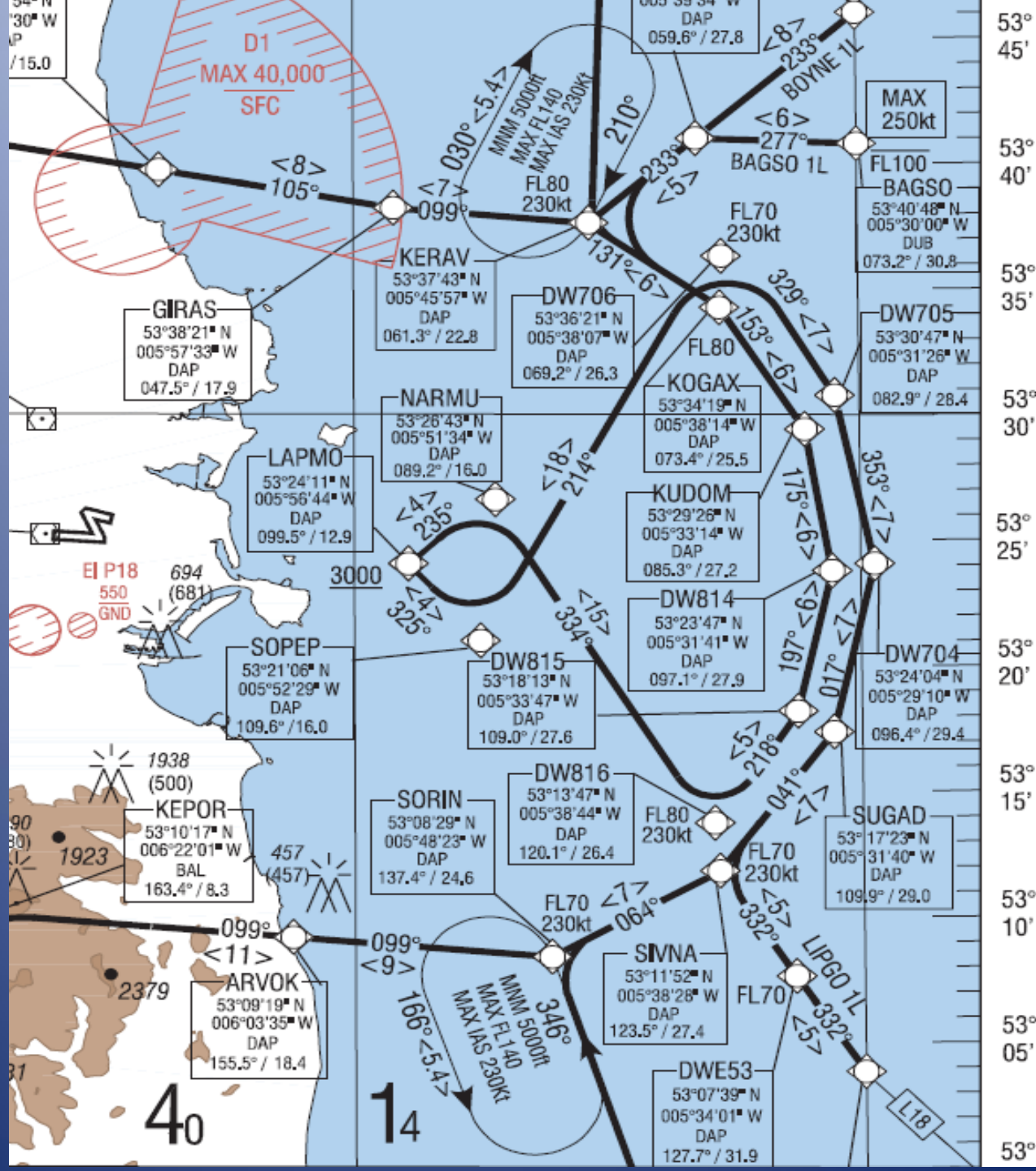
Old
'racetrack'
holding vs
Point
Merge
linear
holding



HOLDING

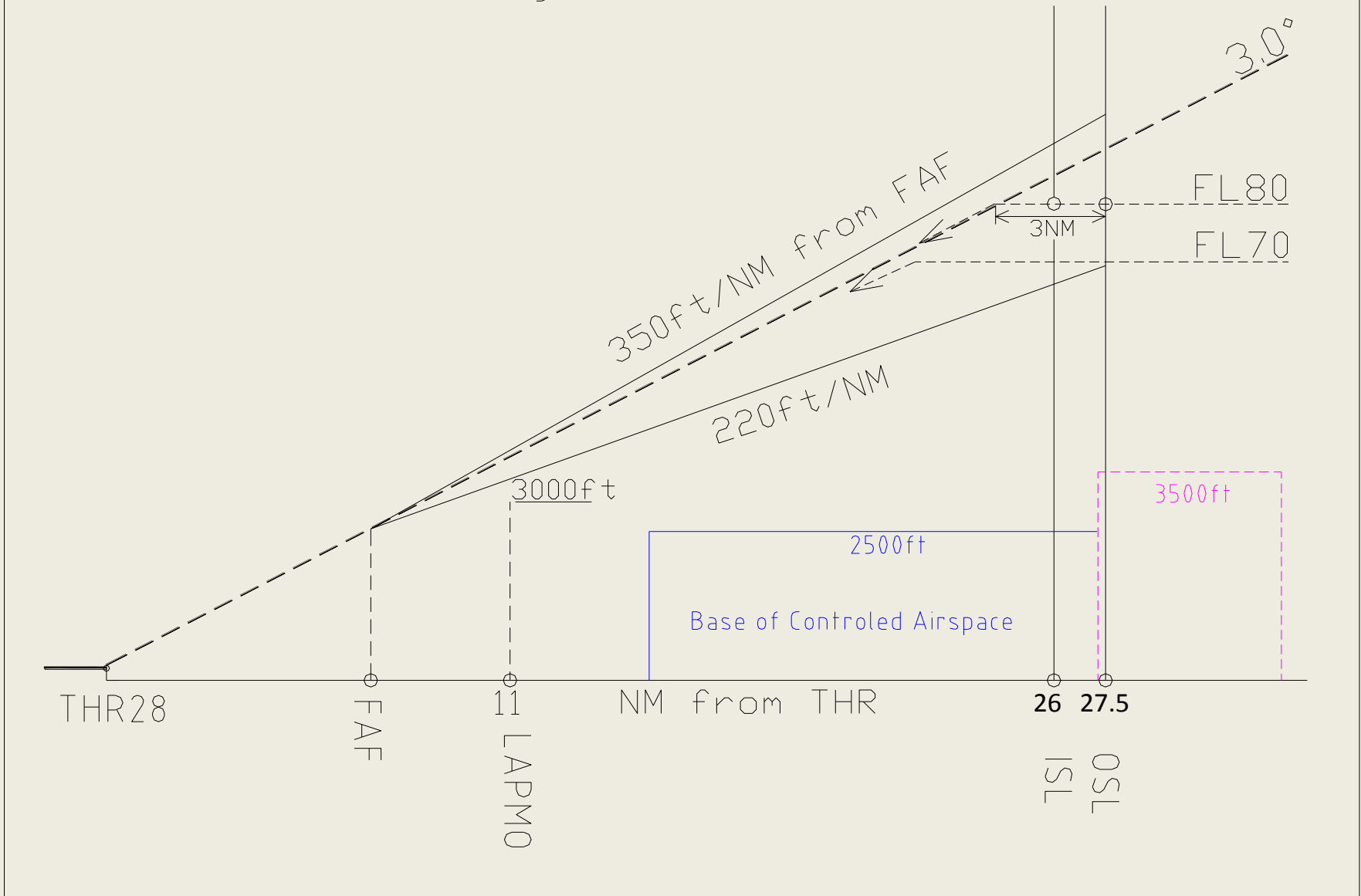
- Linear holding replaces ‘racetrack’ holds
- ICAO Annex 6 & EU-OPS requires fuel to be carried for the ‘Expected Approach’
- The STAR & Approach Procedure for runway in use = ‘Expected Approach’
- Holding was/is ‘Extra’; sometimes fuel planned, sometimes not!
- However – when STAR includes Holding?

EIDW RWY28 Operational 'L' STARs

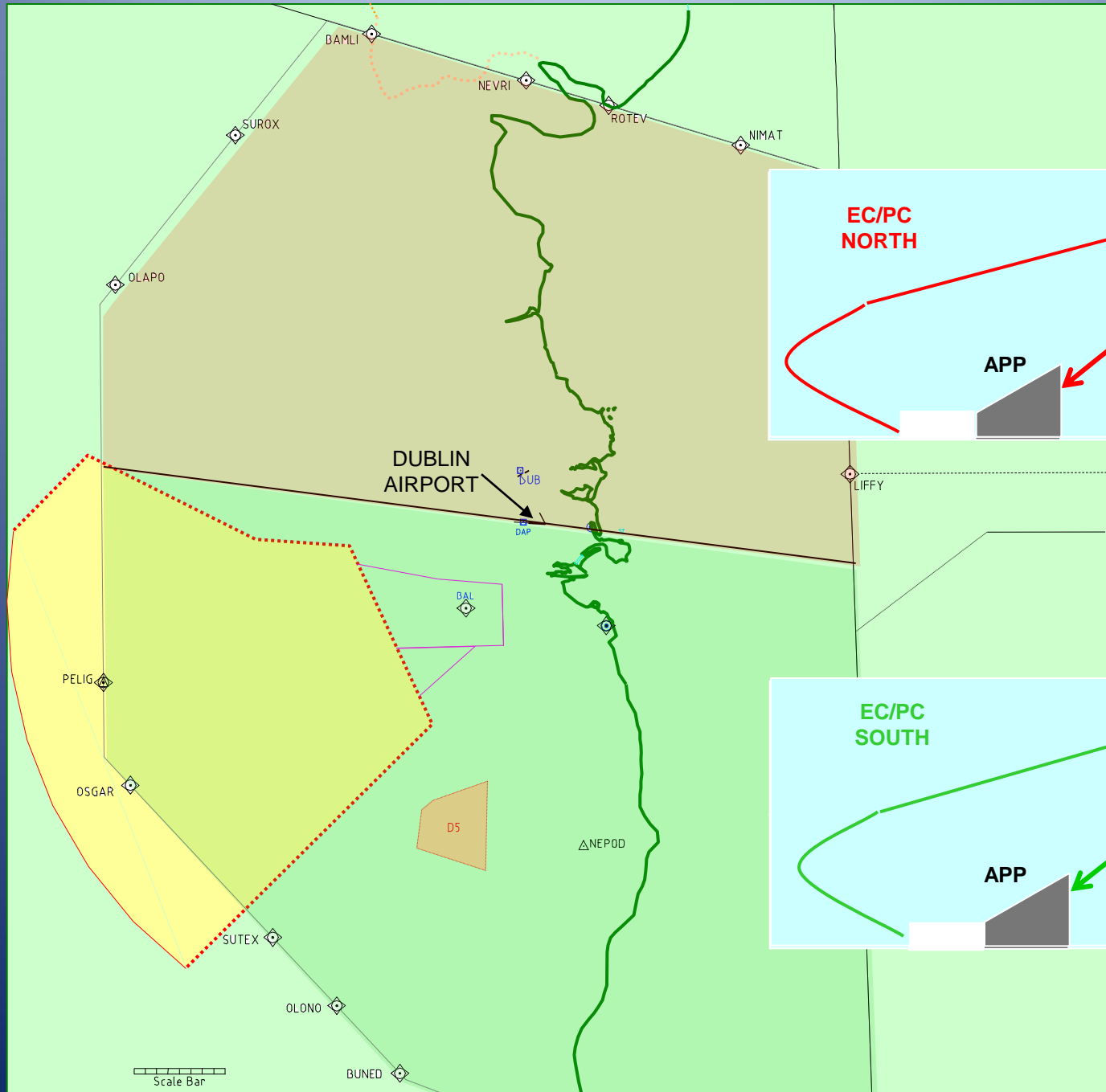


Optimised Descent Profile

Section Through Centreline RWY28



Dublin Airspace Sectorisation Pre Dec 2012



FL245

EC/PC NORTH

APP

GND

FL245

EC/PC SOUTH

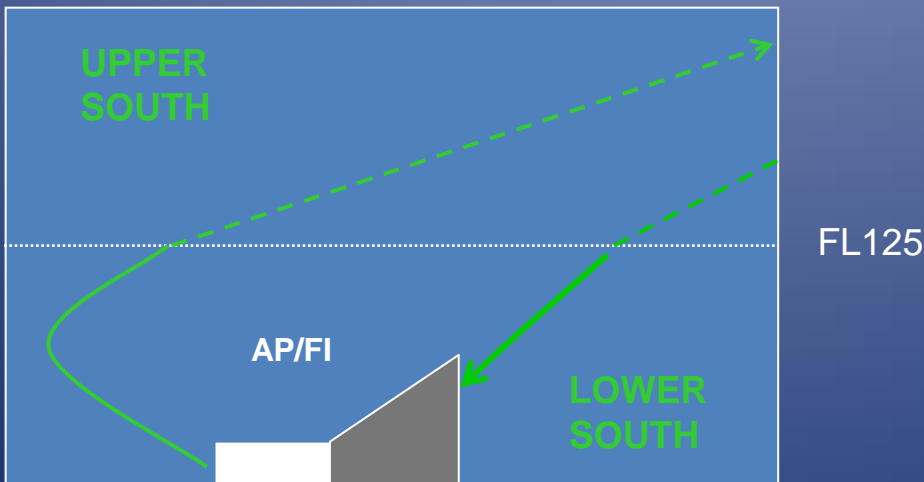
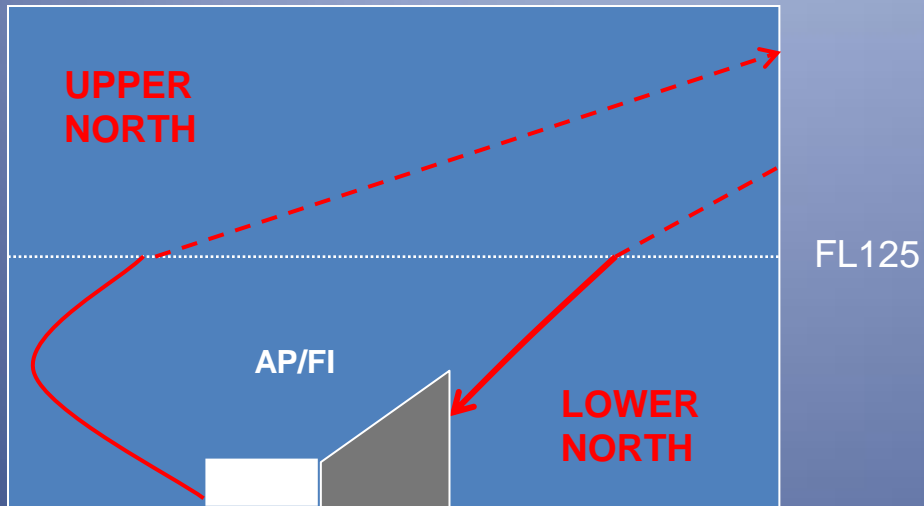
APP

GND



Airspace & Workload Re-organisation

- ▶ Upper/Lower split
- ▶ EC/PC \Rightarrow 2 EC

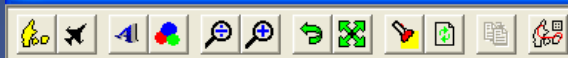


Sat 2nd December 2012

Active Flightday: 2012-12-02

Version 3.4.0 (c) DSE A/S 200

Plot Display (Garbage Editor)

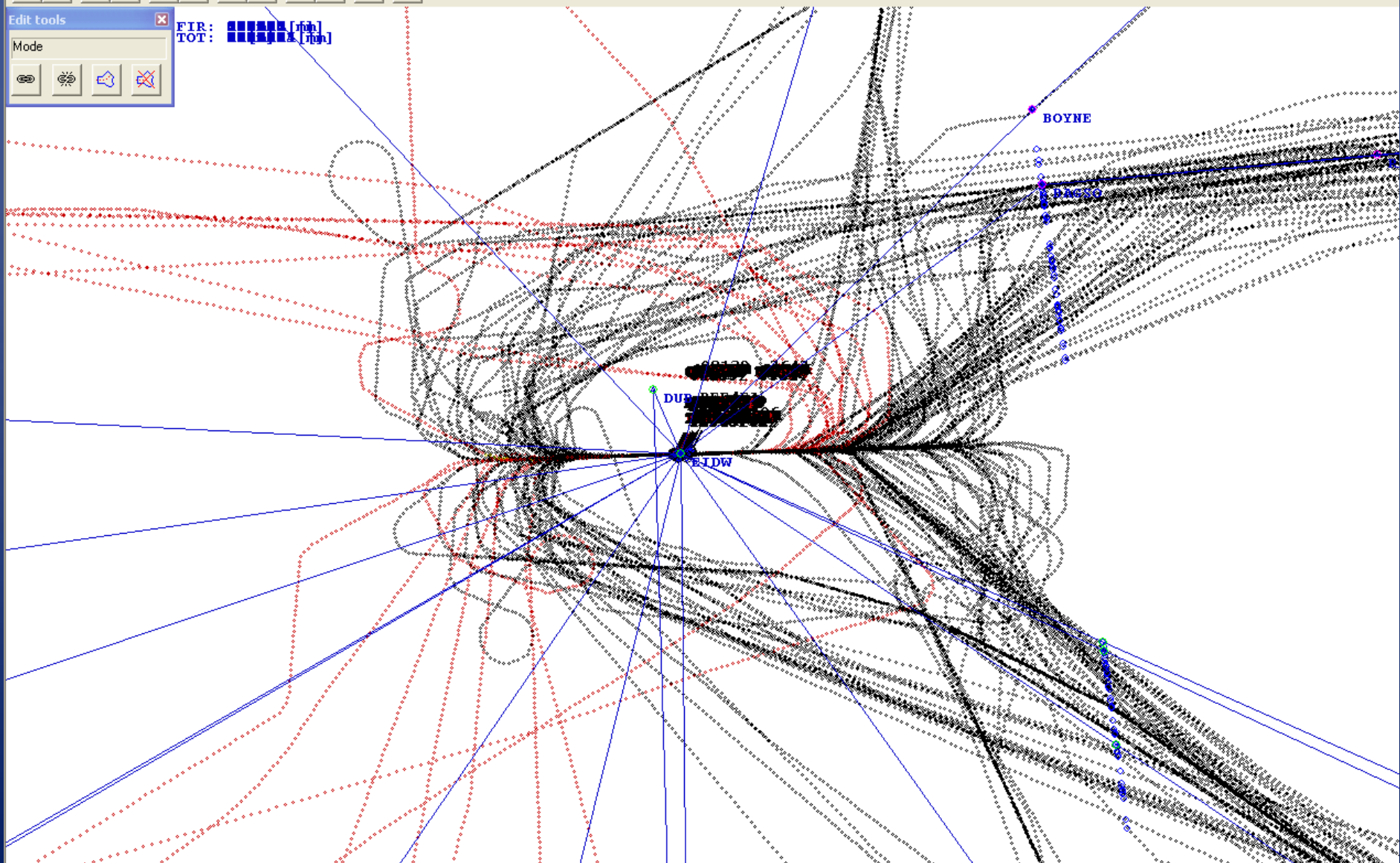


Edit tools

Mode

Buttons: [Link], [Disconnect], [Home], [X]

FIR: [grid]
TOT: [grid]



Friday 10th May 2013

Active Flightday: 2013-05-10

Version 3.4.0 (c) DSE A/S

Plot Display (Garbage Editor)

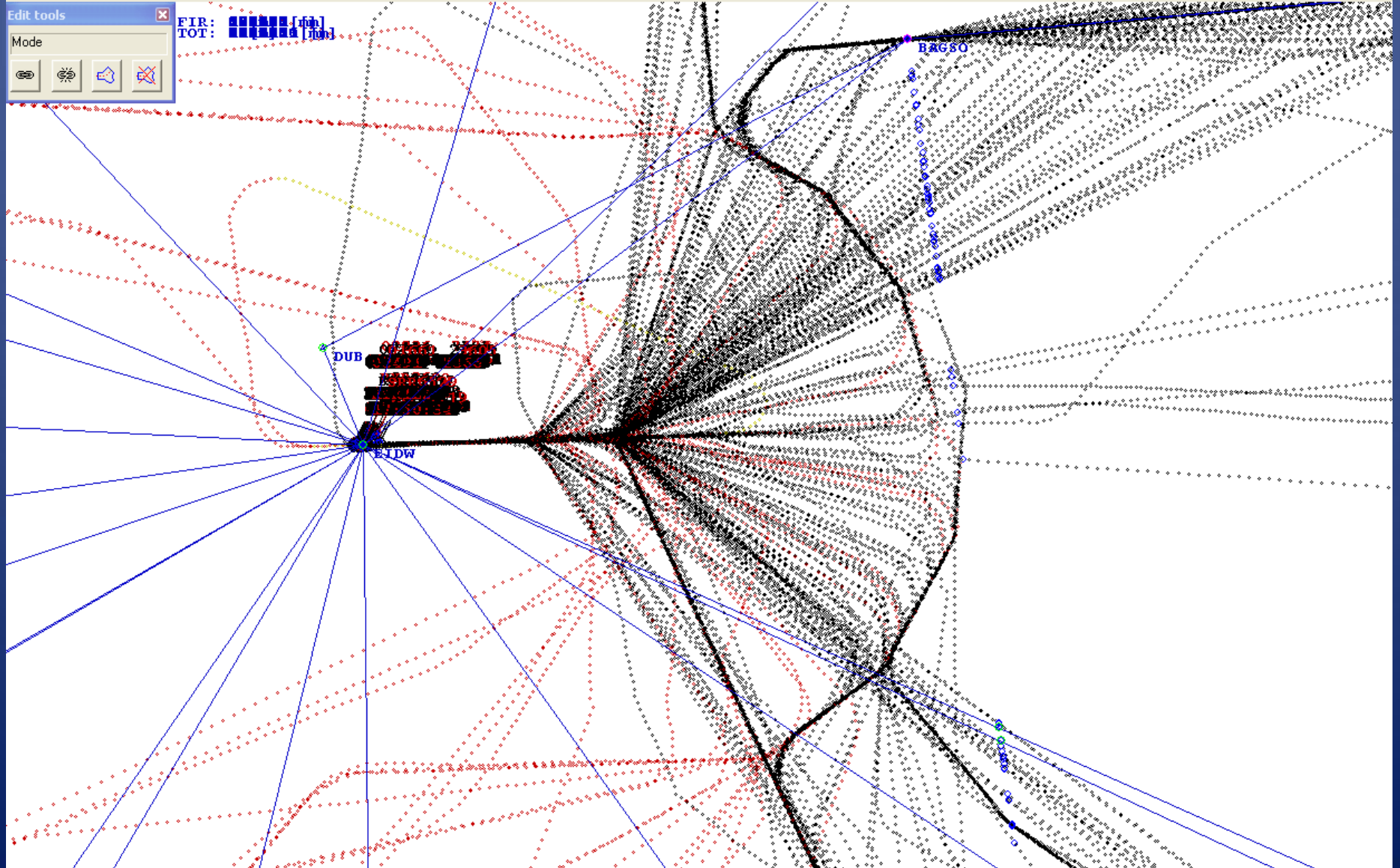


Edit tools

Mode

Buttons: [Link], [Refresh], [Home], [Close]

FIR: [Grid]
TOT: [Grid]



Tracks: 287 Corr:287 Sec:0

X: 584572 Y: 118053

N05344011,W00607329

203 ms (s)

Friday 21st June 2013

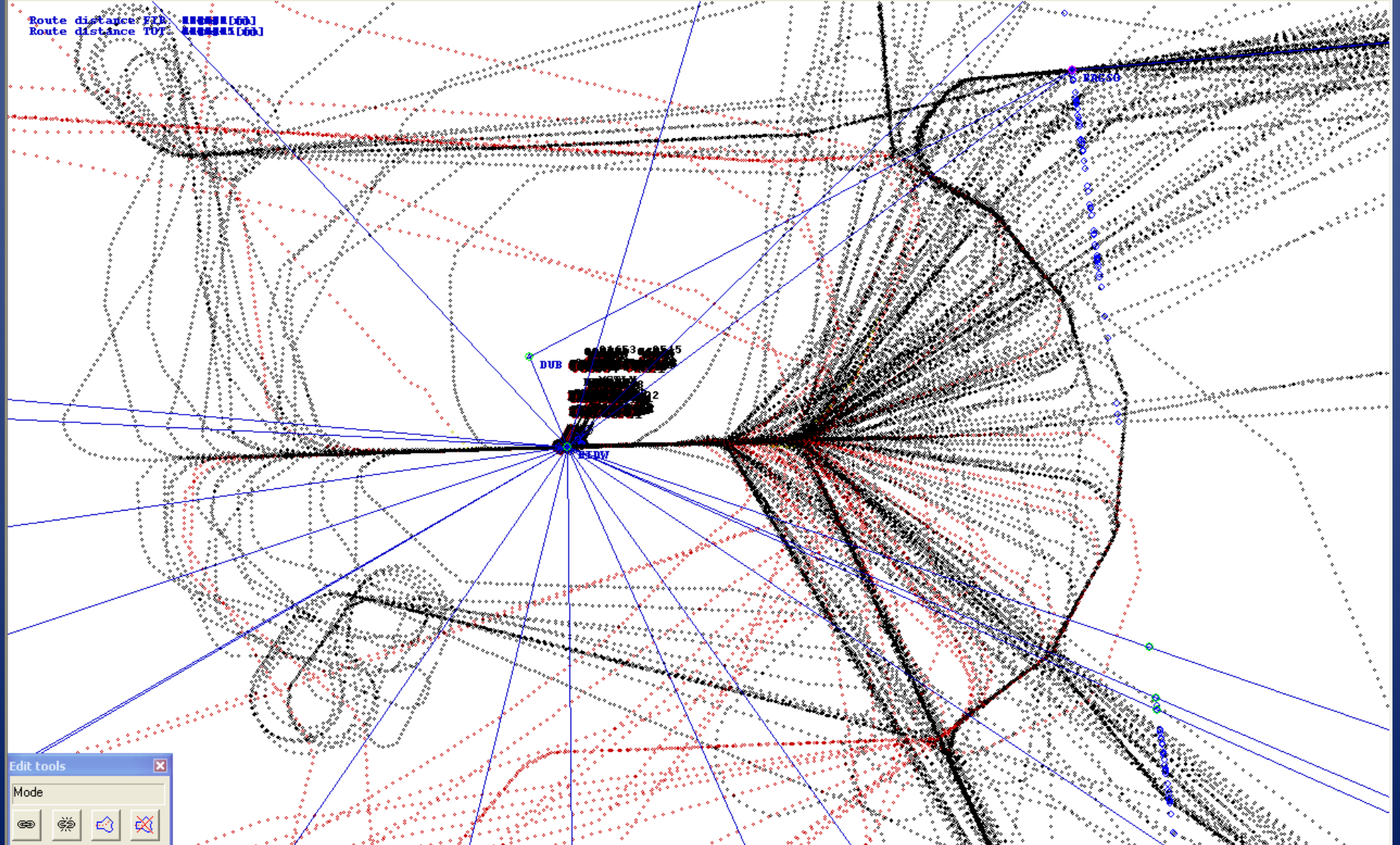
Active Flightday: 2013-06-21

Version 3.4.0 (c) DSE A/S 2009

Plot Display (Garbage Editor)



Route distance FZL [000]
Route distance TDY [000]



Edit tools

Mode

An 'Edit tools' panel with a 'Mode' dropdown menu and four icons: a selection tool, a pan tool, a zoom tool, and a delete tool.

Tracks: 307 Corr:307 Sec:0

X: 642258 Y: 045622

N05301234,W00524288

235 ms (s)

OVERVIEW

- Implemented on 13th December 2012
- High throughputs achieved in busy periods with minimal delay
- Majority of Arrivals do not enter sequencing leg linear hold at all and many were given very early direct routeings to LAPMO.
- New ATC sectorisation has enabled more efficient traffic handling and consequent capability to offer early direct-to Merge Point (LAPMO)
- No sequence leg run-offs experienced
- Minimal racetrack holding (generally only necessary when aircraft delivered to Dublin too high)
- Radar vectoring between 19:00 and 20:00 each evening to satisfy Safety Case requirement for controllers to maintain competency in the technique

DUBLIN 3Di ASSESSMENT

- NATS commissioned to conduct an independent study of performance parameters measured in Dublin airspace for the three months prior to and the three months following TMA2012 (Point Merge) implementation at Dublin.
- Calculates inefficiency in the lateral & horizontal planes
- For Dublin, 18,145 flights (pre-TMA2012 (Point Merge)) and 19,588 flights (post-TMA2012 (Point Merge)) formed the basis of the 3Di scores.
- The fuel burn savings were derived from distances flown

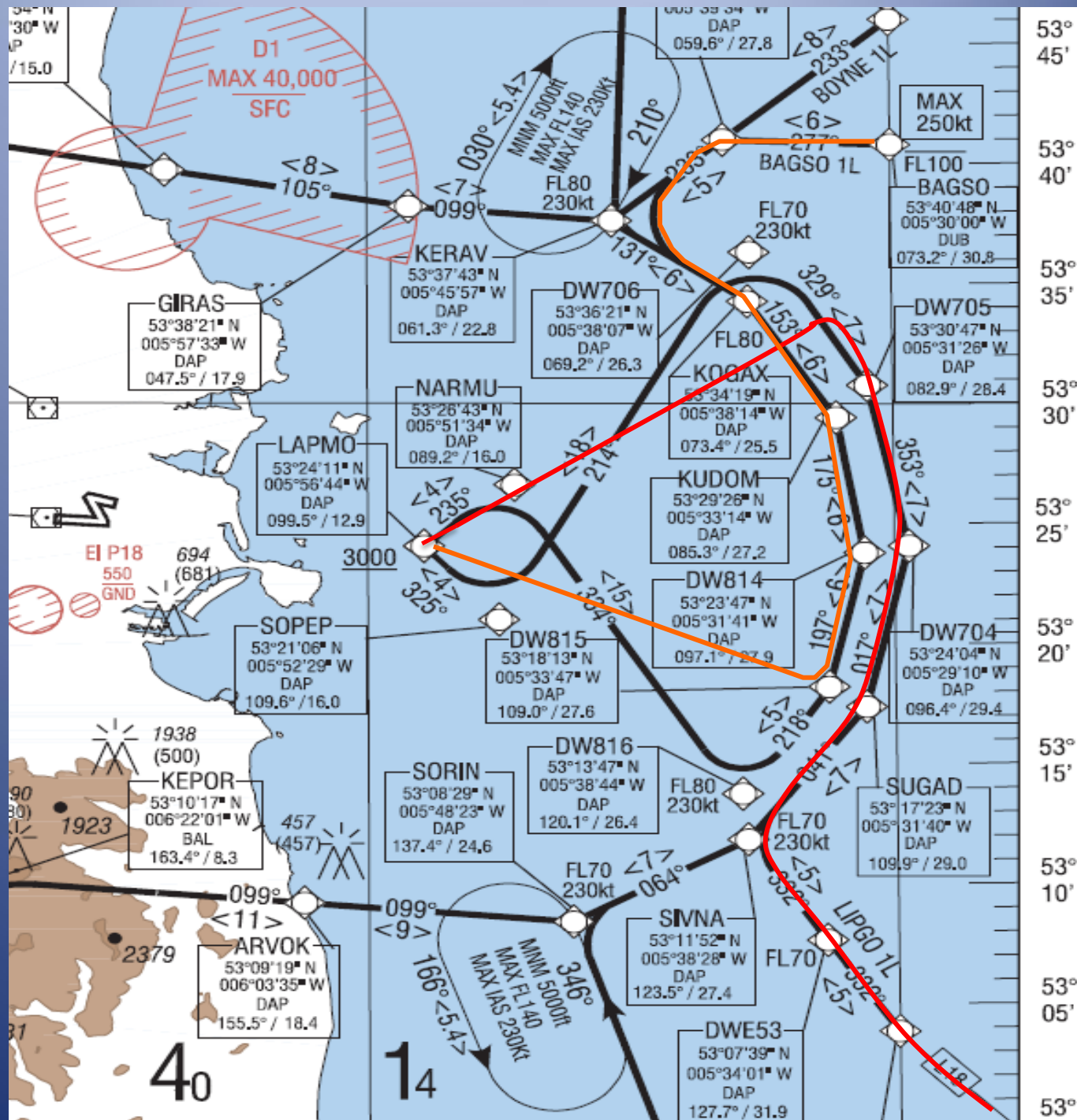
DUBLIN 3Di RESULTS

DUBLIN AIRSPACE	3Di SCORE (0-100)	AVERAGE FUEL BURN (kg)	AVERAGE TRACK DISTANCE (NM)
PRE-TMA2012 (POINT MERGE)	34.6	668.5	67.0
POST-TMA2012 (POINT MERGE)	28.5	540.9	55.7
PERCENTAGE IMPROVEMENT	17.6%	19.1%	20.3%

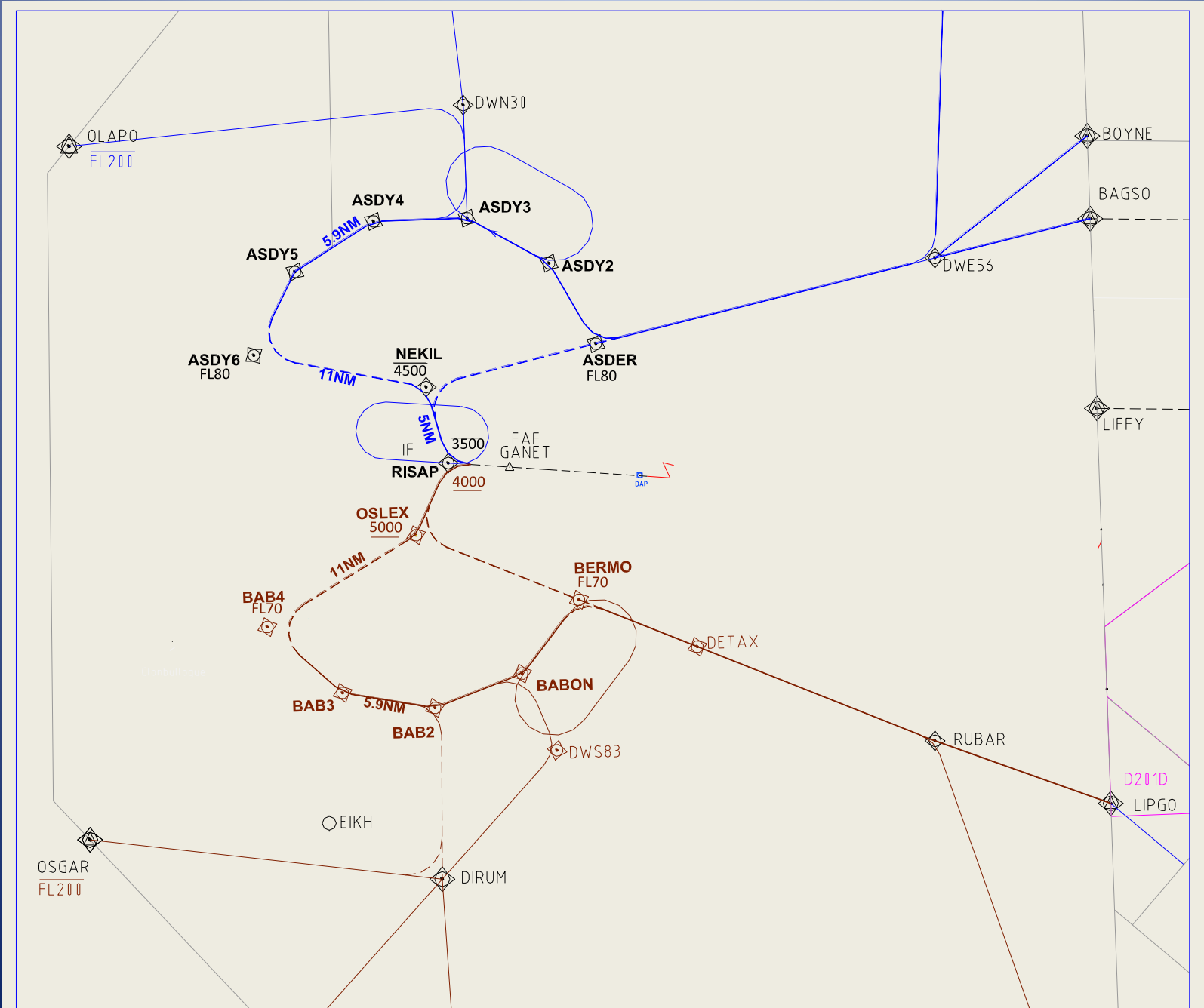
Challenges- IAA

- Feedback: Safety Concerns on 3 Fronts
- Controllers – use of 2 different STARs for same Final Approach & Runway
- Operators – Flight Plan ‘X’ STAR; Clearance ‘L’ STAR!
- Optimizing the Sequence Legs
- Publishing – ‘*Expected Approach Distance*’ for *Point Merge STARs*
- Introducing PM to other Runways

Option for Amendment of RWY28 STARs for operational assessment



Option Under Assessment for RWY10



'Surprises'

- Low QNH on Day 1
- 3 a/c missed entry point to leg
- Holding at start of sequence leg (both ends) – one period of heavy traffic
- 1 a/c backtrack (unplanned) caused back-up on approach & sequence legs
- Recovery – safe and orderly, with all sequence holds used and minimal vectoring – 15 minute max delay.

Challenges- ICAO & EASA

- Terminal Waypoint naming conventions – *Associated with Sequence Legs?*
- Fuel Planning – *'Expected Track Distance?'*
- Annex 6 – Matching 'legal' required fuel to be carried
- ICAO – Address the issues identified!

THE END

THANKYOU

Questions?