

Liverpool John Lennon Airport ACP

LJLA - Departure and Arrival Procedures

Formal Stage 2 Engagement

ACP-2015-09

Agenda

- Welcomes
- Introduction to the change
 - Where we are in the change
 - Previous progress
 - Statement of Need
 - The Airspace Modernisation Process
 - Design Principles
- Current Operation
- Additional Options
- Next Steps
- How to Provide Feedback
- Questions

Introduction to the Change

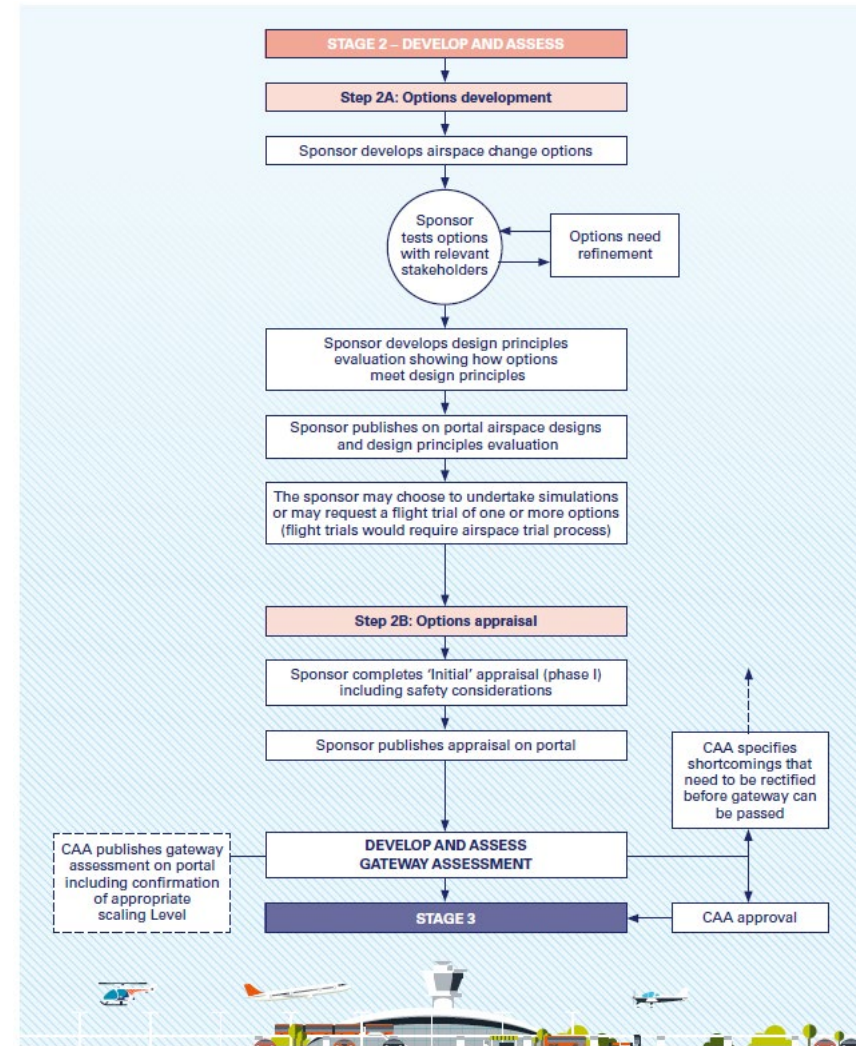
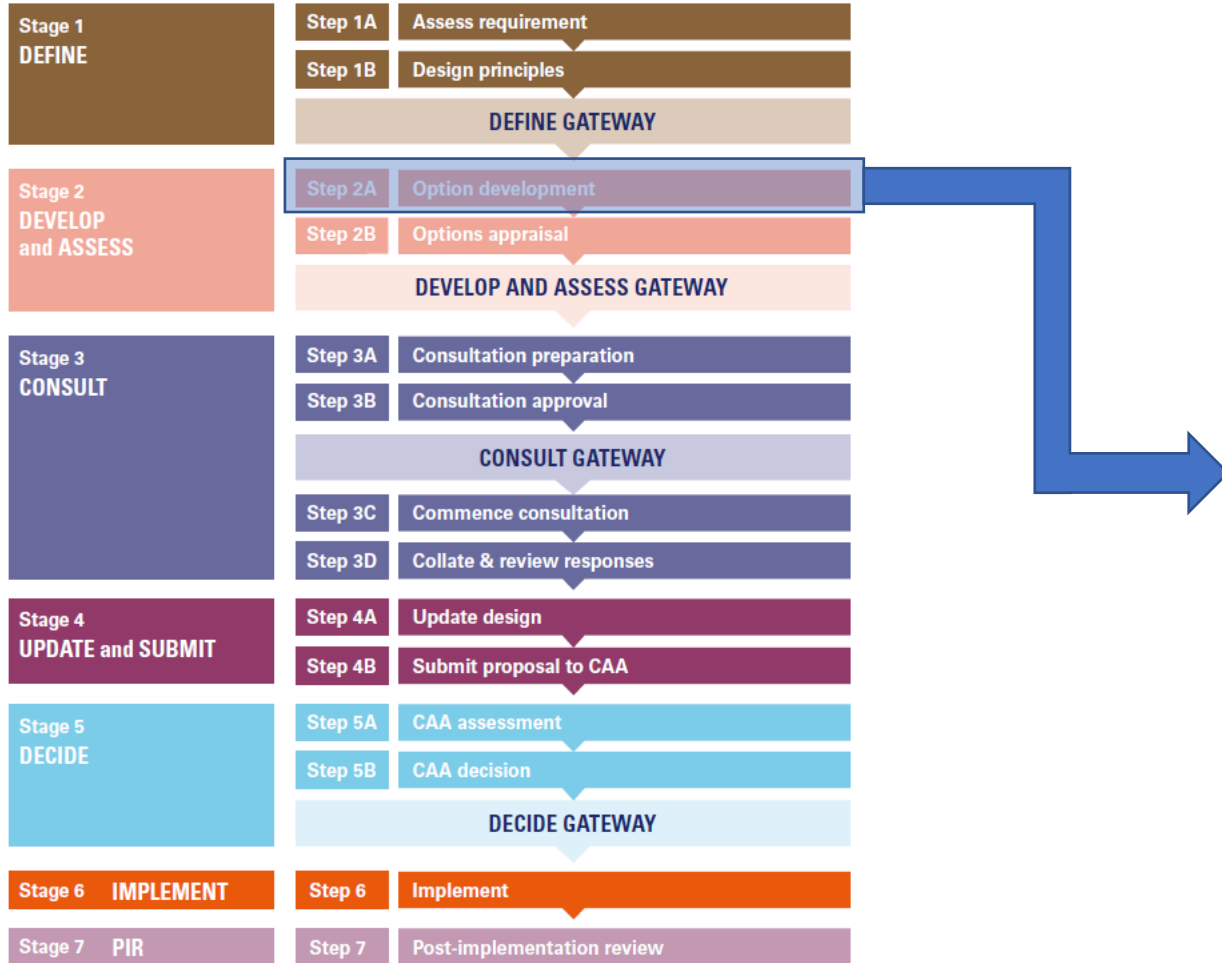


- Liverpool John Lennon Airport (LJLA) is approximate 7 nautical miles from Liverpool City Centre.
- Its current runway opened in 1966 and accommodated 62873 movements pre Covid 19 pandemic (2016).
- During the Covid 19 pandemic traffic numbers were greatly reduced but are now recovering.
 - LJLA accommodated 46529 movements in 2022.
- LJLA's traffic is comprised of a mixture of General Aviation and Commercial flights (~6:4 Commercial to GA).
- As part of the **Future AirSpace Implementation North (FASIN)** program of work, LJLA are modernising the Departure and Arrival Routes serving the Airfield and are seeking to integrate these into the wider network.
- LJLA like other airports are responsible for modernising their routes up to 7,000 ft, NATS En Route Ltd (NERL) are responsible for the airspace above 7,000 ft and the wider network.

Introduction to the Change

- The FASIN program of work is included within the CAA Airspace Modernisation Strategy CAP1711.
- Airspace Change within the UK is completed through the 7 Stage CAP1616 Airspace Change Process.
- In 2018 LJLA Submitted a Statement of Need to initiate this change.
- LJLA has previously completed Stages 1-3 and was paused from November '20 to Feb '23.
- LJLA has elected to return to Stage 2 to ensure all possible options are considered given the development of a national airspace change master plan which coordinates airspace changes within regional clusters.
- Neighbouring ACP sponsor designs have progressed and this return to Stage 2 will ensure LJLA proposed designs compatibility with other MTMA Sponsors.
- The options presented within this engagement are in addition to those previously presented.
- Further details of previous work is available from the airspace change portal:
<https://airspacechange.caa.co.uk/PublicProposalArea?pID=28>

Where are we in the Change



Statement of Need: Stage 1a

The Statement of Need is the first formal step in undertaking an Airspace Change. It sets out what airspace issue or opportunity the change is seeking to address



Liverpool John Lennon Airport (LJLA) wishes to comply with Resolution 36/23 ratified by the 36th International Civil Aviation Organisation (ICAO) General Assembly and also with the UK Future Airspace Strategy (FAS) published by the Civil Aviation Authority (CAA), by introducing routes and procedures compliant with Performance Based Navigation (PBN) criteria; it is understood that States are required to make these changes by 2024. The introduction of PBN procedures at LJLA must be aligned with the FASI(N) project to ensure the complex interactions between UK northern airports are considered. This will also help to ensure the FASI(N) project can also deliver the stated environmental and efficiency benefits.

The Liverpool Control Zone (CTR) currently operates below the Manchester Control Area (CTA) up to 2,500 ft AMSL (Class D airspace). The ATZ dimensions are Surface to 2,000 ft and the Liverpool CTR extends from the Surface to 2,500 ft AMSL. West of a north-south line through Liverpool, the Liverpool CTA extends from 2,500 ft to 3,500 ft AMSL (Class D airspace). To the west and north of Wallasey the Liverpool CTA extends from 1,500 ft to 3,500 ft (Class D airspace) in order to create an overland route for General Aviation traffic around the Wirral peninsular to Wallasey. To the west of Liverpool, coincident with Airways L10 and L975, are 8nm long portions of Class D airspace extending up to 3500 ft AMSL (airway base) and designated as Liverpool CTA. Further airspace is delegated to Liverpool by PC Wallasey Sector, but close cooperation with Manchester Approach is necessary when operating in these areas. A further area of Class A airspace to the south is also delegated to Liverpool up to 4000 ft AMSL.

A previous ACP commenced in July 2015 and introduced GNSS Lateral Navigation (LNAV) and combined Lateral/Vertical Navigation (LNAV/VNAV) Instrument Approach Procedures (IAP) for Runways 09 and 27 at LJLA. The VNAV component of the procedures is BaroVNAV. The procedures were introduced as a contingency for those occasions when the Instrument Landing System (ILS) was unavailable, and also to support training and currency requirements. These changes are contained entirely within controlled airspace and the CAA decision on 7 Apr 16 supported these changes.

Statement of Need: Stage 1a



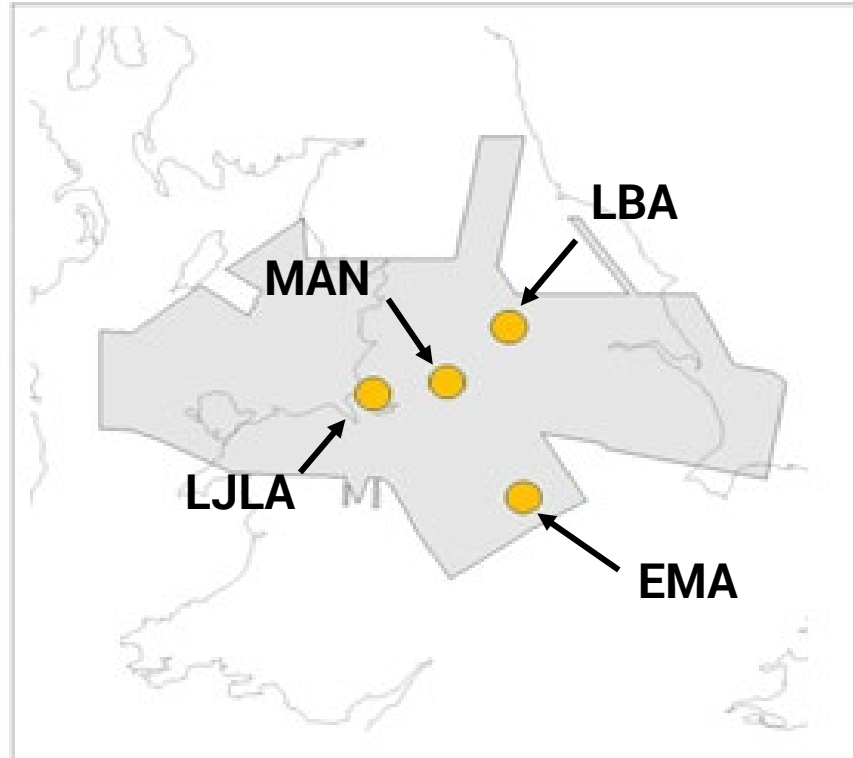
JLA ATC currently operate H24 as required, from a single asphalt runway, dimensions 2285m x 46m. The thresholds are at 60 ft (Rwy 09) and 78 ft (Rwy 27). The airport offers Approach, Tower and Radar services and has an ILS on both runways as well as the RNAV (GNSS) procedures and ILS/DME/NDB procedures on both runways.

Total movements at LJLA for 2016 were 61,577 (average of 5,131 per month). During the 5 year period 2013-2017 the average movement levels were 62,131. During the last complete year (2017) these were split proportionately as follows: Commercial 58%, Club 37%, Non-Commercial 3%, Other 2%. During 2016 LJLA dealt with 4.8 million pax. Due to the last recession, the 2007 Masterplan growth forecasts were not achieved. However, it is anticipated that the 2007 growth forecasts will now recover in future years, but over a longer period. The Airport has ambitious plans to serve more destinations, including long haul, with passenger forecasts indicating the potential to grow passenger numbers from 4.8 million passengers per year in 2016 to 7.8 million by 2030, and then to 11 million by 2050. These increases will require investment in a proposed expansion of the terminal building, additional car parking, passenger facilities including hotels, retail, food and drink services and a potential extension of the runway. There is also significant potential to grow cargo operations at LJLA, to attract specialist aviation businesses and to develop a cluster of related high quality employment opportunities. The investments in the Airport's physical infrastructure has the potential to increase total annual GVA impact to £625 million, and will enable it to support 12,280 jobs across the City Region by 2030, benefitting the wider Northern Powerhouse.

LJLA sits on the northern bank of the River Mersey directly opposite Ellesmere Port to the south. The westerly approach is above the town of Runcorn, 3.75 nm from touchdown. The easterly approach is also above the Bromborough area on the Wirral Peninsula, at a similar distance from touchdown. In moving forward with this project LJLA will be able to meet airline demand for PBN infrastructure and improve the resilience and redundancy of its airport operations. The improved efficiencies will also help to protect capacity for any future growth. Introduction of PBN procedures will drive new procedure designs that minimise delays and allow for more efficient interfaces with adjacent air traffic organisations. An aspiration of LJLA is to introduce new procedures that also offer environmental benefits, wherever possible within the constraints of PANS OPS compliant final designs.

FASIN Program related to this ACP

- The FASIN program of work is included within the CAA's Airspace Modernisation Strategy (CAP1711) under UK-ABN/2 Terminal Airspace Redesign.
- Terminal Airspace Redesign is a multi sponsor process which is being delivered through UK Airspace Change Masterplan.
- The UK Airspace Change Masterplan is a high-level coordinated implementation plan which has identified 3 Regional Clusters (Scottish TMA, Manchester TMA, London TMA) of dependent Airspace Changes.
- The LJLA ACP sits within the MTMA regional Cluster with implementation planned for 2027/28.



Interdependent Masterplan ACPs

- **Liverpool (LJLA, This one)**
- Manchester (MAN)
- East Midlands (EMA)
- Leeds Bradford (LBA)
- NERL MTMA

Design Principles: Stage 1b

Design Principles are used to form a qualitative structure against which the Design Options can be qualitatively evaluated. LJLA's DPs and Priorities are listed below:

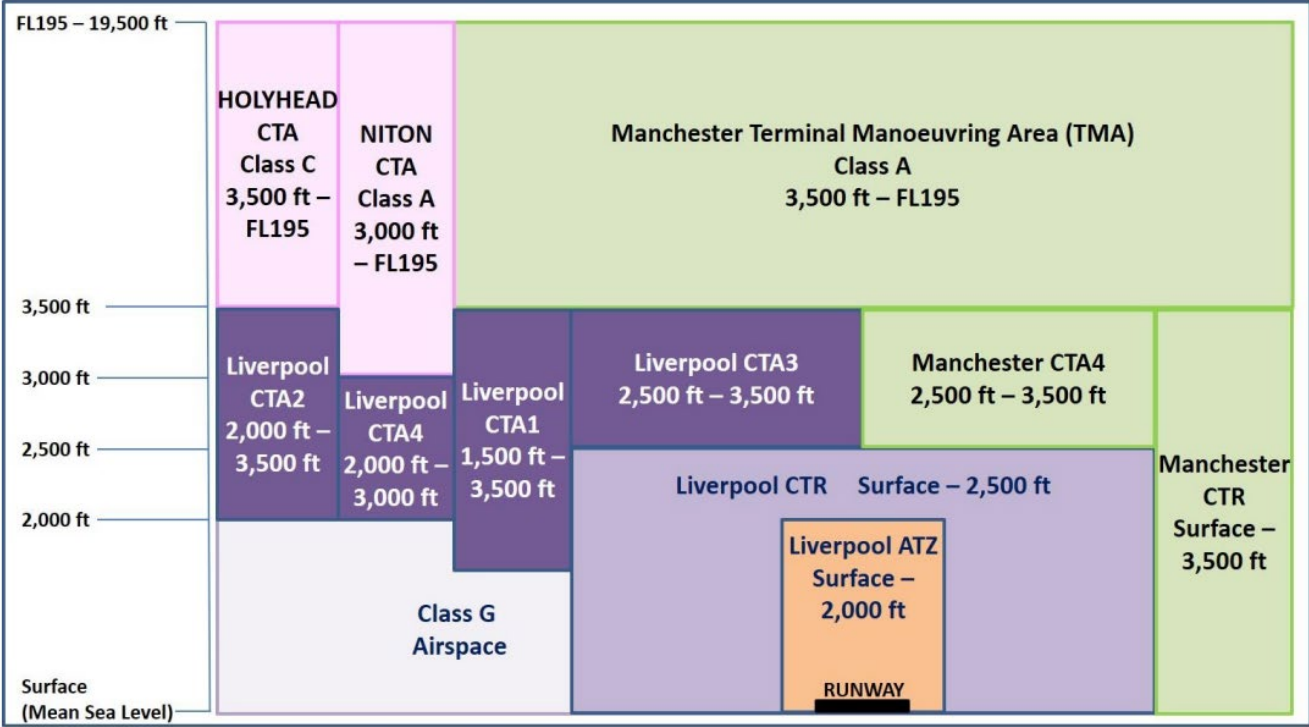
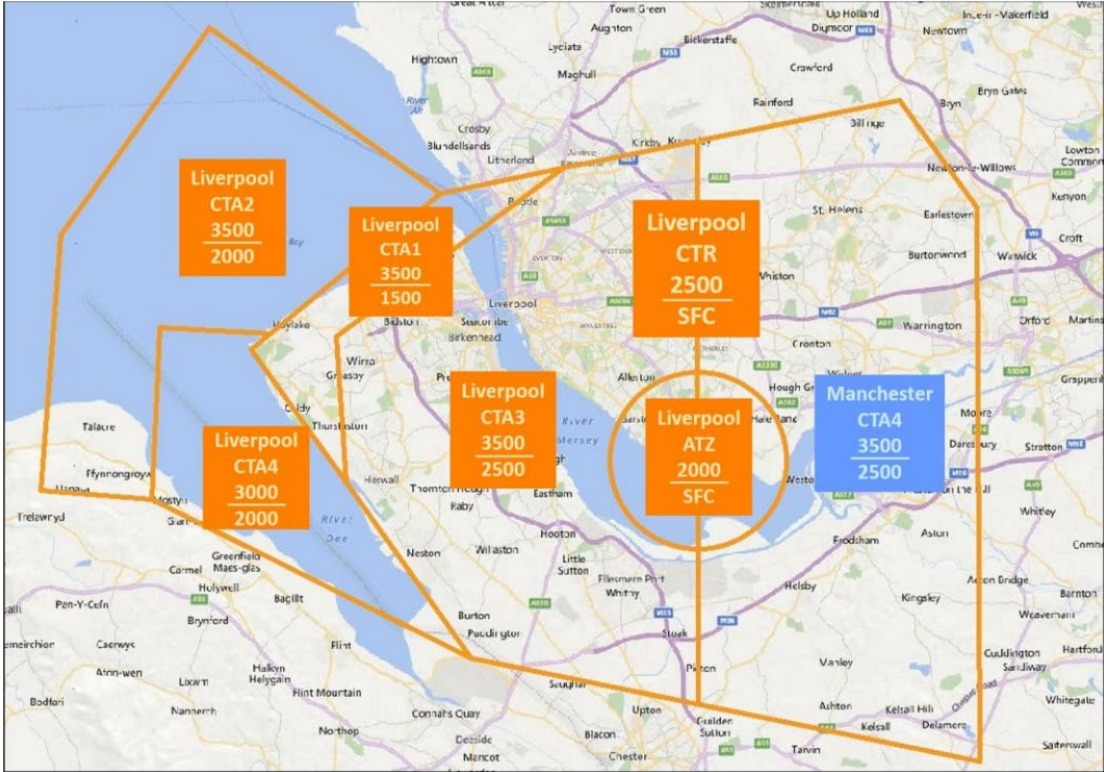


DP	Priority	Category	Description
1	1	Safety	Procedures must be designed to meet acceptable levels of flight safety
2	2	Environmental	Procedures must be designed to minimise aircraft emissions to reduce air pollution
3	3	Environmental	Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites
4	=4 (4a)	Environmental	Procedures must be designed to minimise the impact of noise below 7,000ft
5	=4 (4b)	Operational	Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity
6	6	Operational	Procedures should be designed to enable more continuous climbs
7	=7 (7a)	Technical	Procedures should be designed to fit within existing airspace constraints and boundaries
8	=7 (7b)	Operational	Procedures should be designed to enable more continuous descents
9	9	Operational	Procedures should be designed that minimise the number of track miles flown

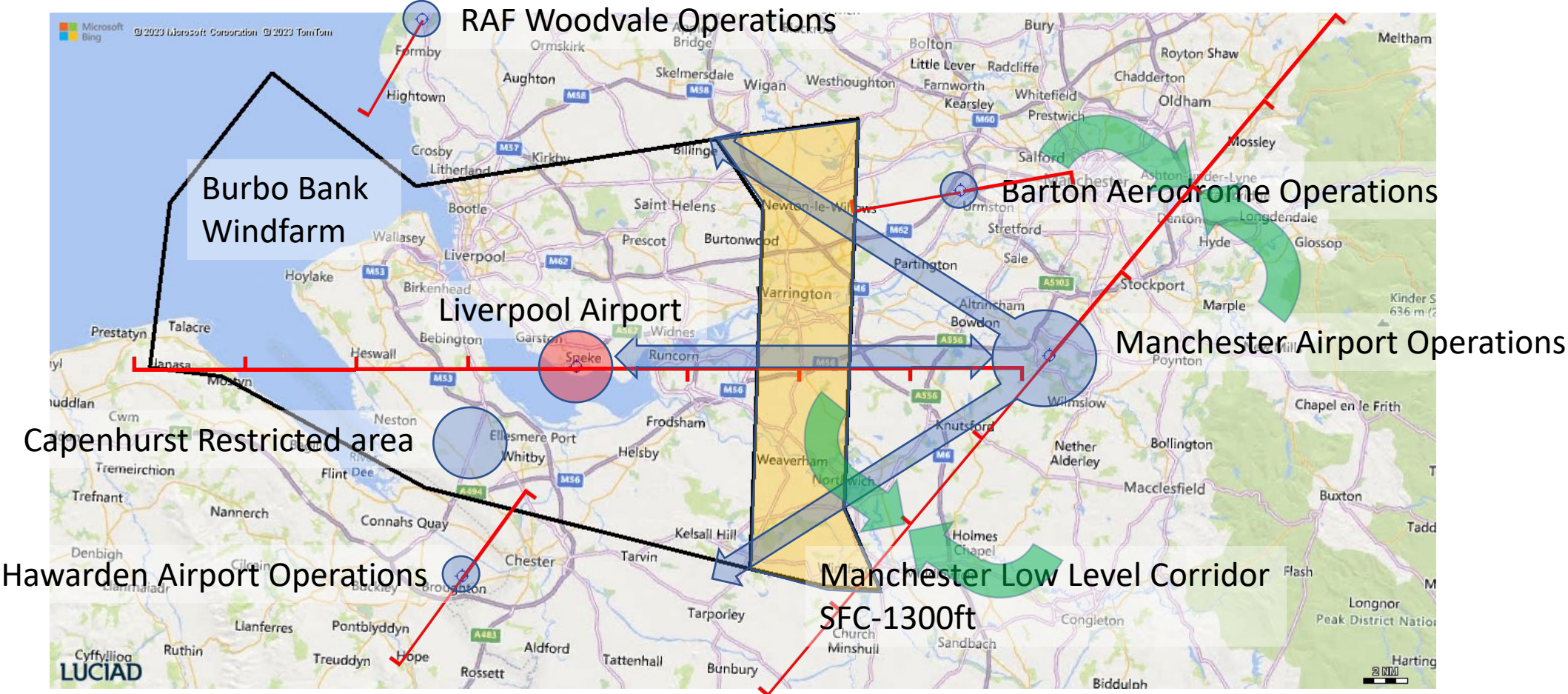
10	10	Technical	If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users
11	11	Operational	Procedures should be developed to allow for alternative routes to offer respite
12	=12 (12a)	Operational	Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload
13	=12 (12b)	Environmental	Procedures should be designed to concentrate routes to minimise the numbers overflown
14	14	Technical	Procedures should be designed to ensure predictability of tracks for consistency of operations
15	15	Operational	Procedures should be designed to include alternative routes to avoid other aviation operators
16	=1	AMS	Must accord with the CAA's published Airspace Modernisation Strategy (CAP1711) and any current or future plans associated with it. (Note: The CAA have stated that this DP is required by all change sponsors. CAP1711 describes what airspace modernisation must deliver including: <ul style="list-style-type: none"> - the need to increase aviation capacity; - growth to be sustainable - the need to maximise the utilisation of existing runway capacity)

Current Operation- Airspace

LJLA Airspace sits under the Manchester Terminal Manoeuvring Area (MTMA) and NERL Airspace, Airspace is Class D unless indicated.



Current Operational Considerations



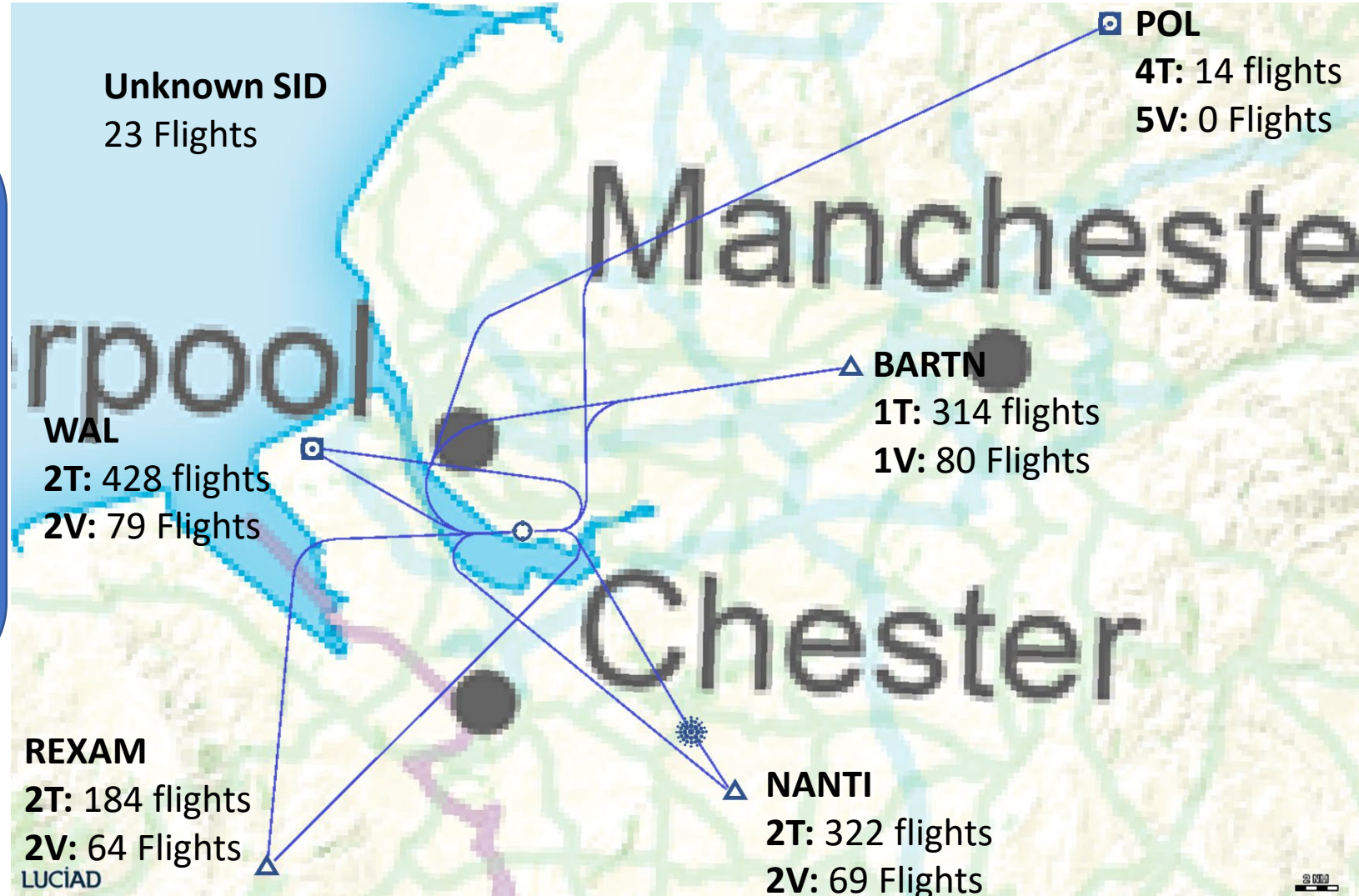
Current Operation- Departures

Planned Departures
for August 2022.

In August 2022, due to the prevailing winds:

77% flights departed runway 27 (Westerlies).

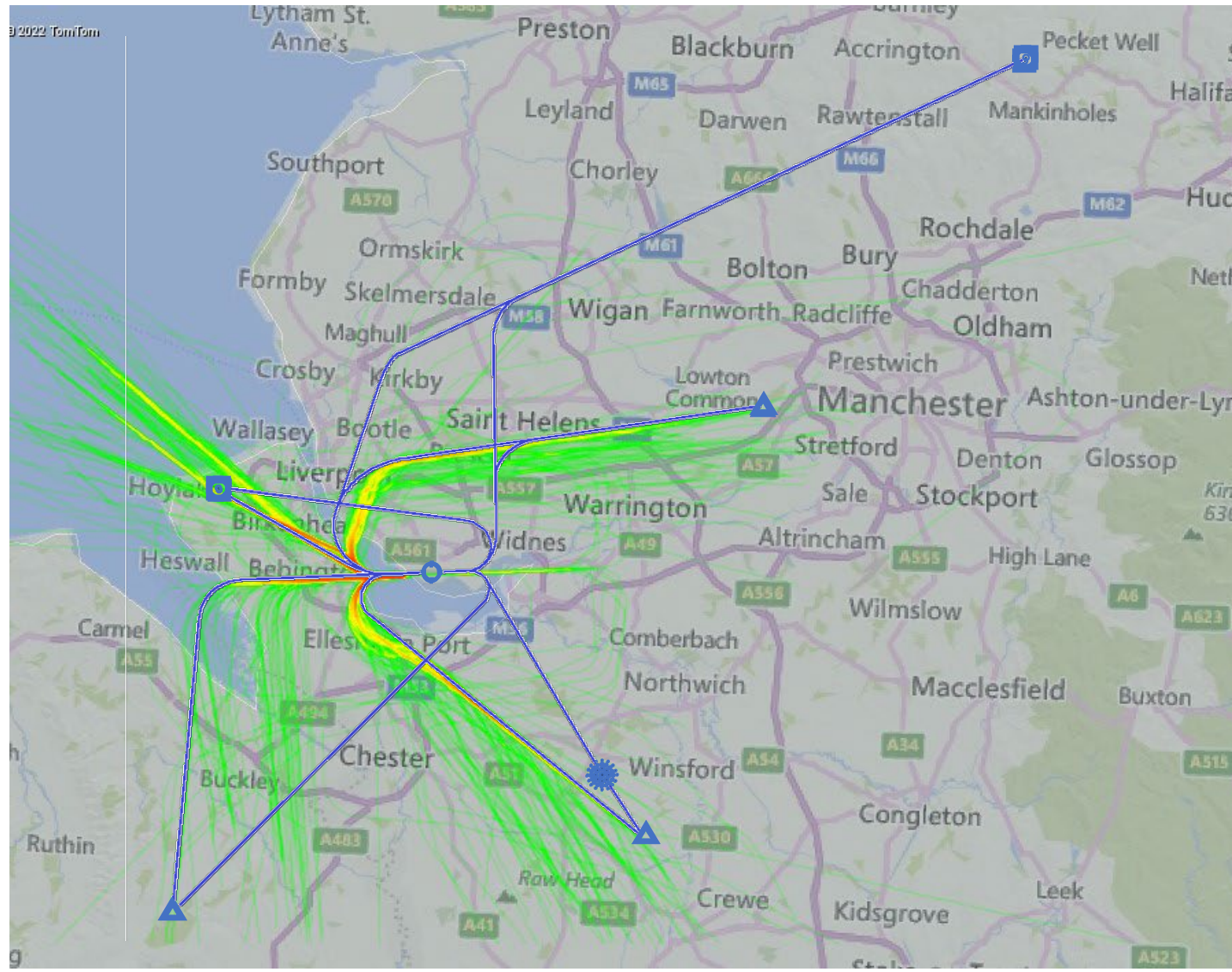
23% flights departed runway 09 (Easterlies).



Current Operation- Westerly Departures (Runway 27)

Actual Departures up to
FL120 for 1-7 August 2022.

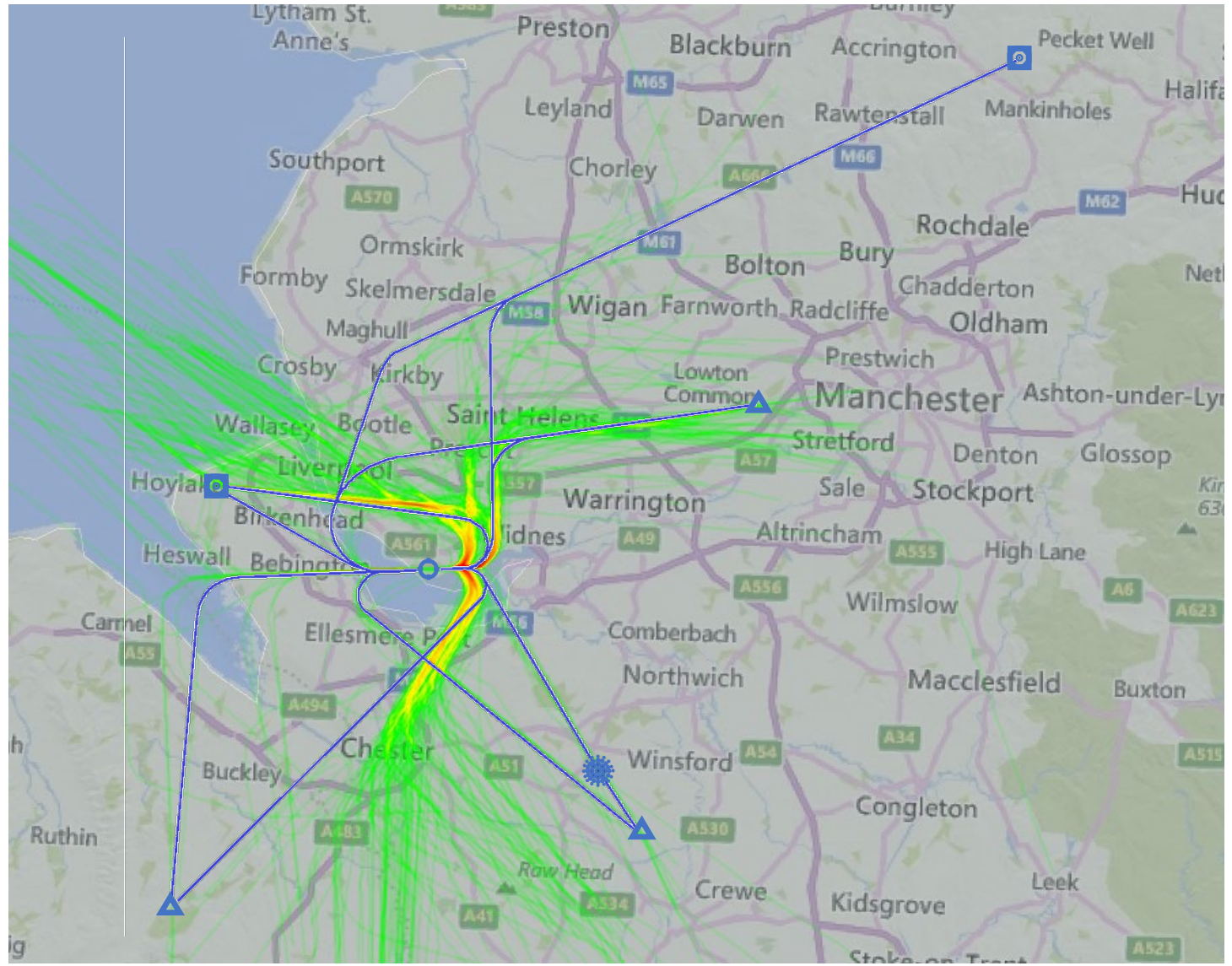
-  >40 Flights
-  20-39 Flights
-  10-19 Flights
-  5-9 Flights



Current Operation- Easterly Departures (Runway 09)

Actual Departures up to
FL120 for 13, 17, 28, 29,
30 and 31 August 2022.

-  >40 Flights
-  20-39 Flights
-  10-19 Flights
-  5-9 Flights



Current Operation- Arrivals

Aircraft flight plan to arrive at LJLA Holds/Stacks. (Holds are not included within the Airport ACP, these will be updated as part of the NERL led En-Route changes (ACP-2019-74))

LJLA currently uses the following Holds:
KEGUN (FL70 – FL100 (~7,000-10,000ft)).
TIPOD (FL70 – FL100).

Aircraft rarely hold when arriving at LJLA.

There are no published procedures (**Transitions**) for aircraft to land from the holding fixes.

This is currently managed tactically by ATC using **Vectoring**.

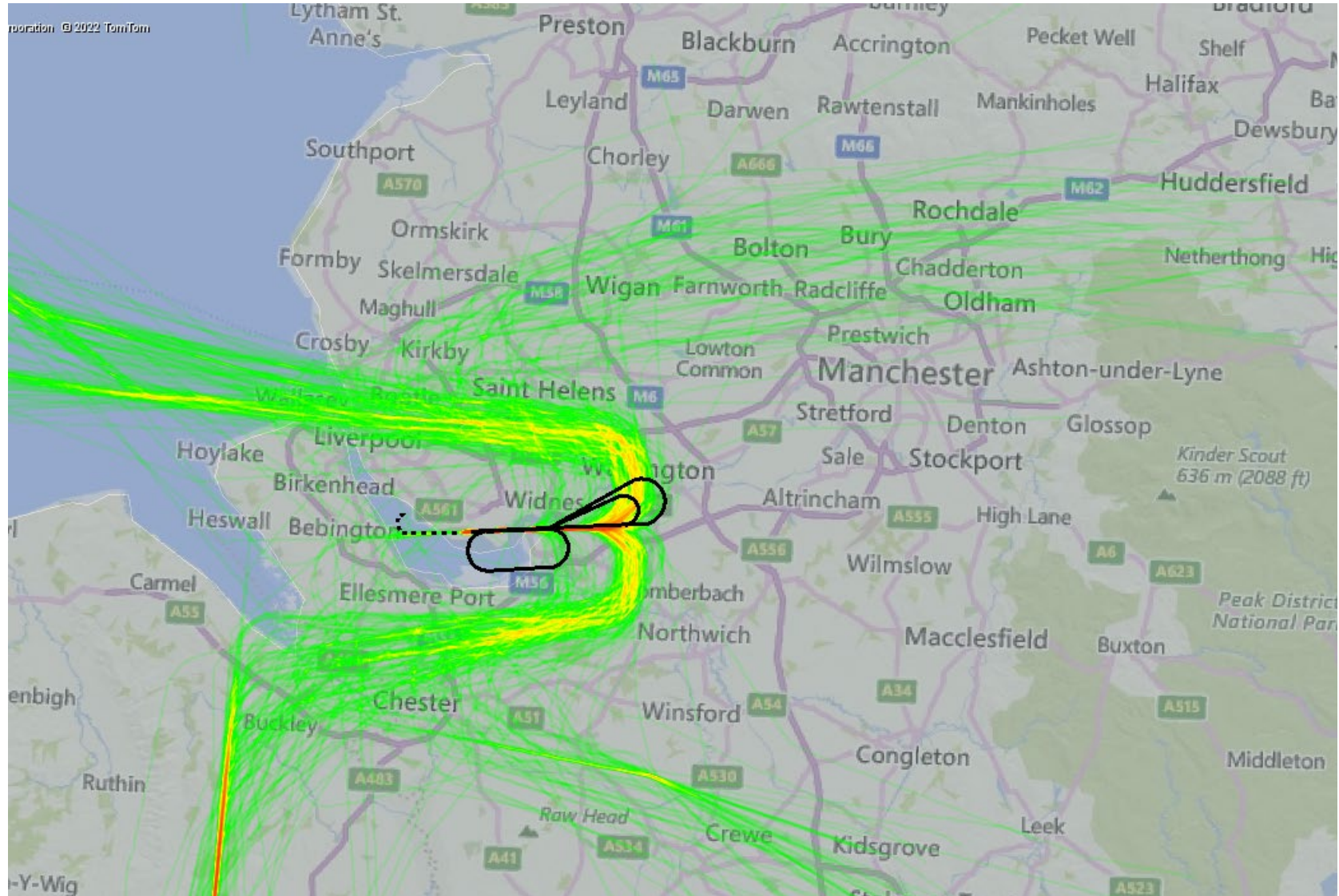
As part of this ACP new transitions from the holds (hold locations will be proposed by NERL) will be included.



Current Operation- Westerly Arrivals (Runway 27)

Actual Departures up to
FL120 for 1-7 August 2022.

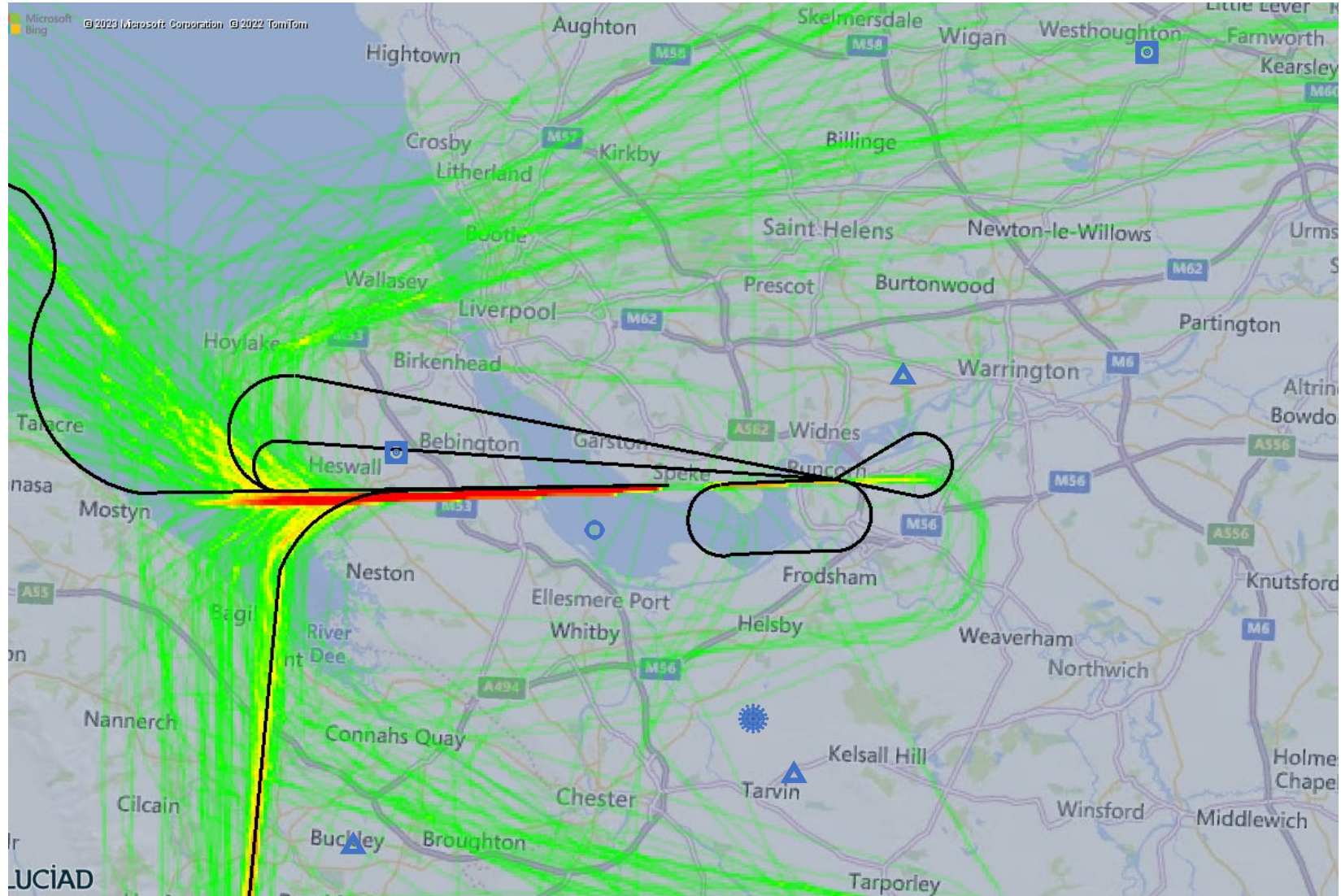
-  >40 Flights
-  20-39 Flights
-  10-19 Flights
-  5-9 Flights



Current Operation- Easterly Arrivals (Runway 09)

Actual Departures up to
FL120 for 13, 17, 28, 29,
30 and 30 August 2022.

-  >40 Flights
-  20-39 Flights
-  10-19 Flights
-  5-9 Flights

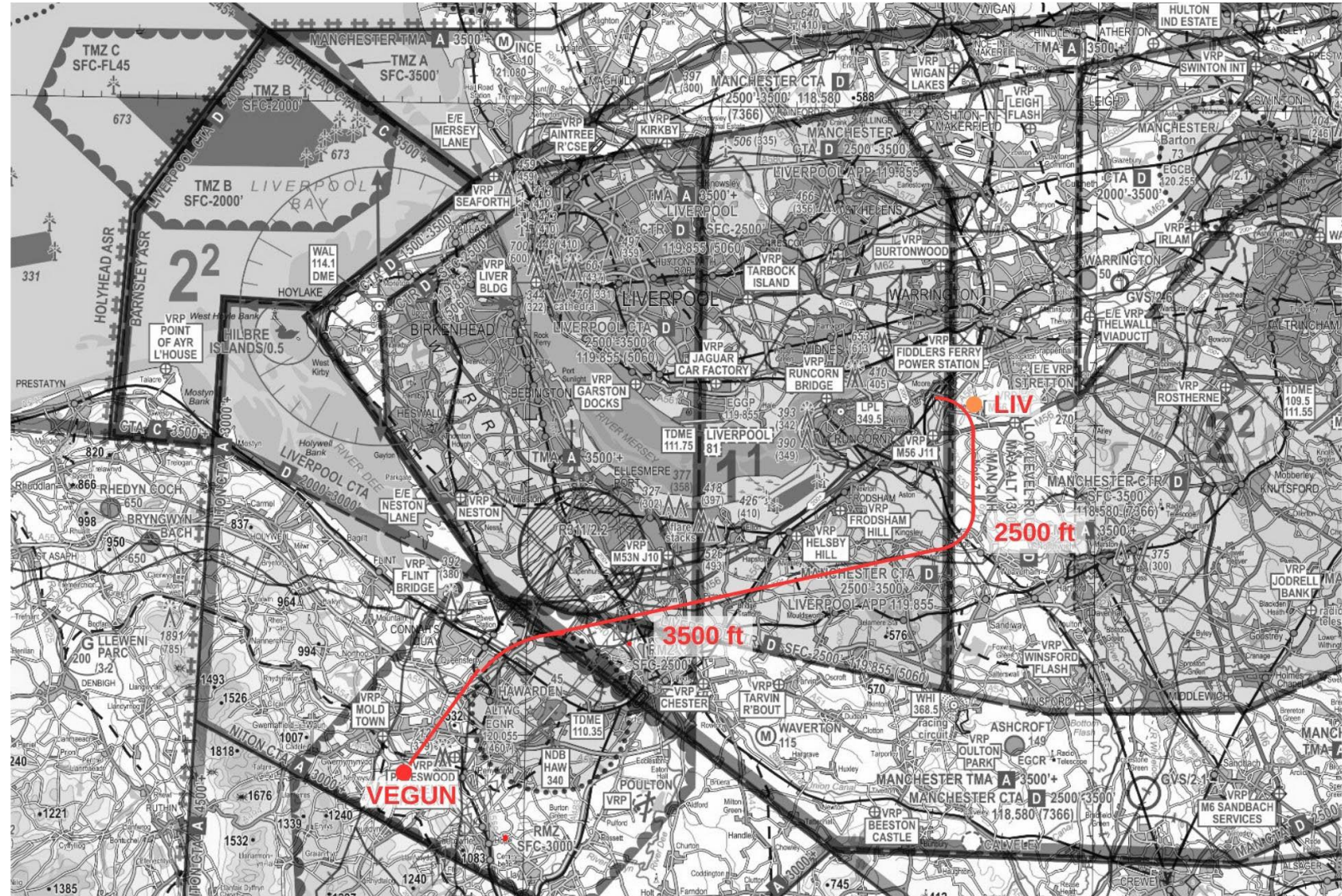


Additional Options

- A LJLA/ Manchester/ NERL/ ACOG workshop held in July 2022 identified additional options which require further consideration as part of a review of the LJLA Stage 2 Submission.
- These options consider 3 potential conflicts with Manchester traffic identified after LJLA had completed Stage 3 of the CAP1616 process:
 - 27 Southerly arrivals.
 - 09 Left turn departures.
 - 09 Right turn departures.
- Following this workshop LJLA agreed to present an additional 10 options:
 - 2 Arrival Options:
 - 2 Transitions.
 - 0 Approaches.
 - 8 Departure Options.

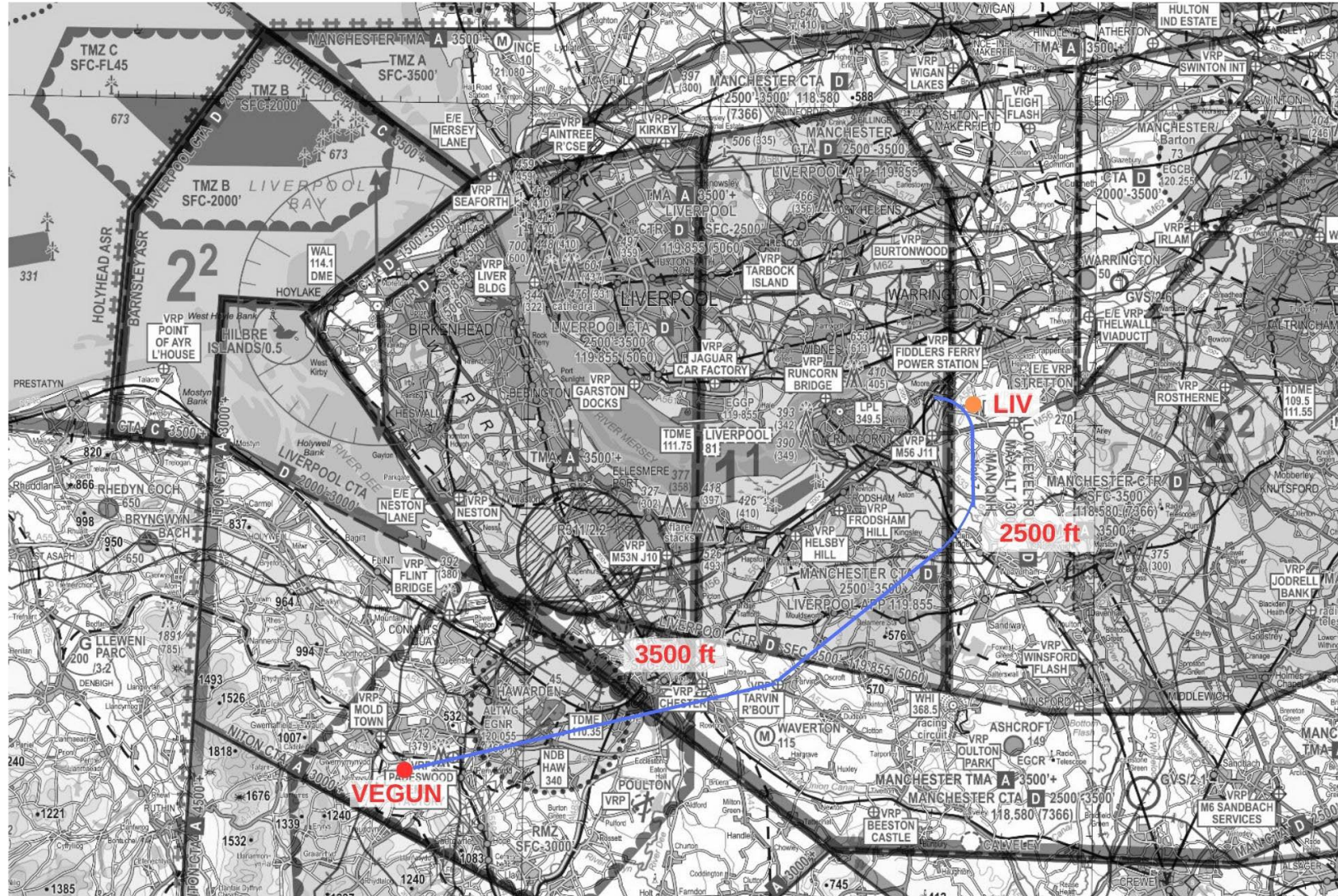
Additional Option- Transition VEGUN S1

Option to shorten Base leg to limit the interaction with Manchester Traffic.



New Option- Transition VEGUN S2

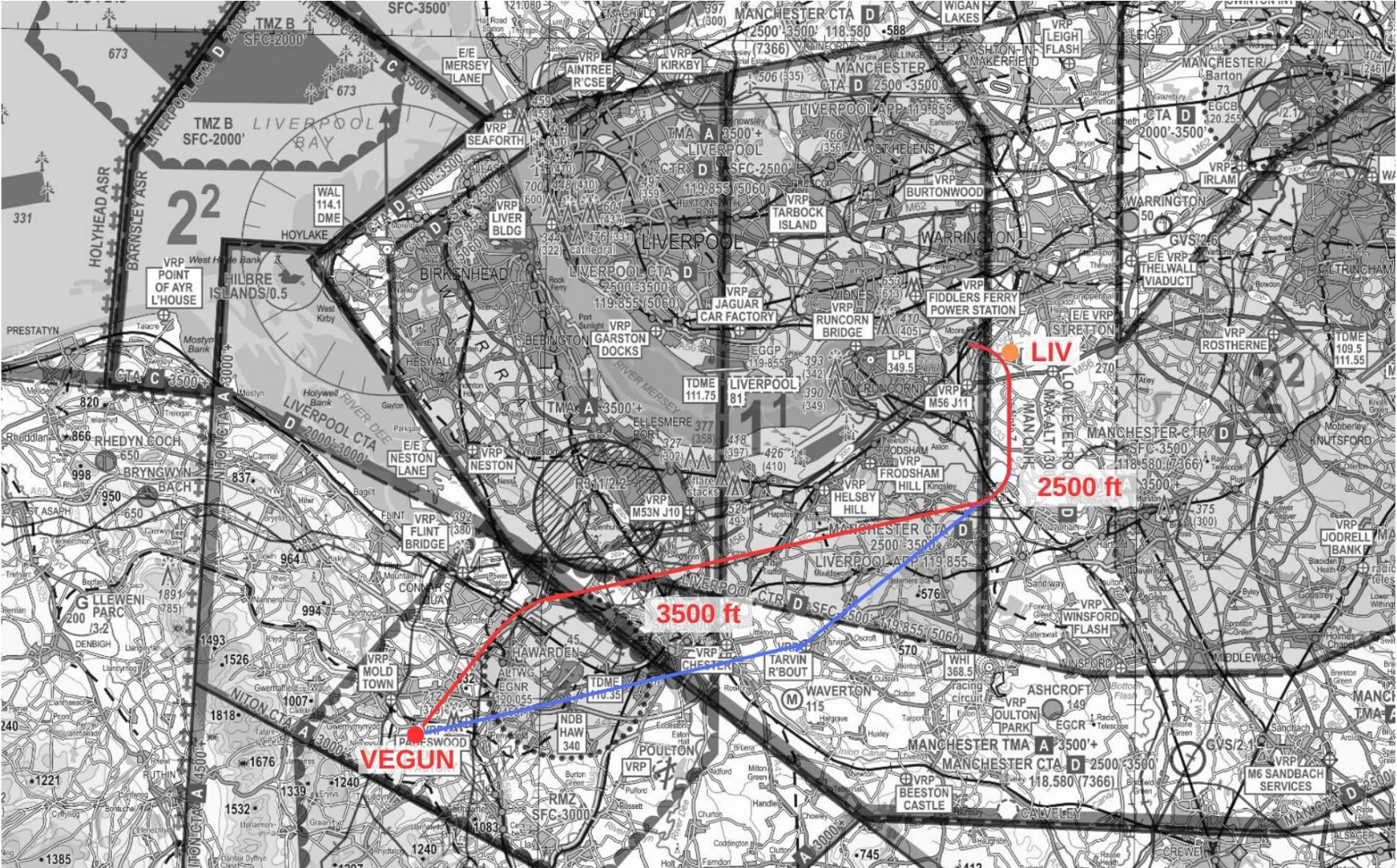
Alternative Option to shorten Base leg to limit the interaction with Manchester Traffic.



New Option- Combined VEGUN S1 and 2



Faster. Easier. Friendlier.

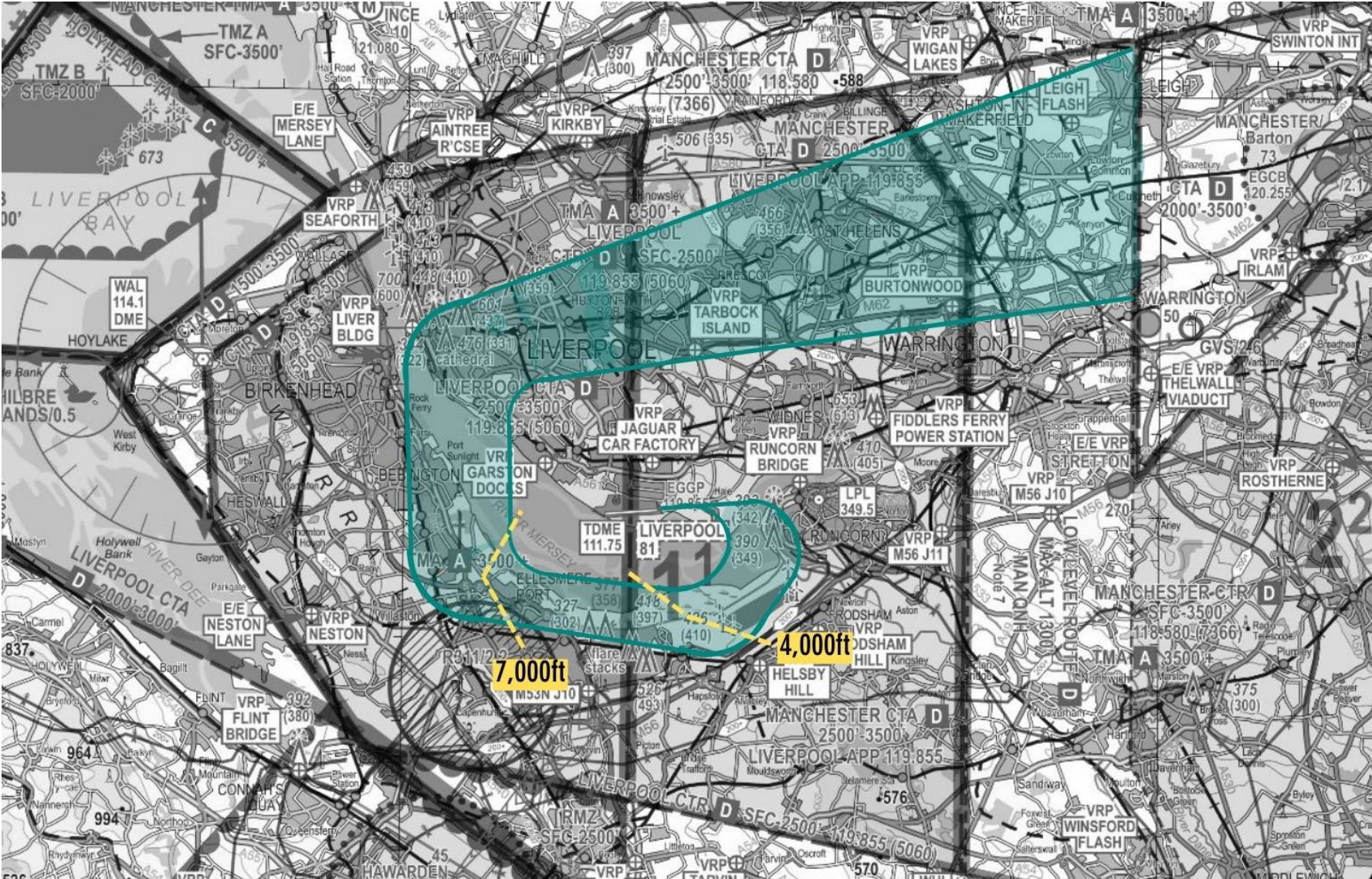


New Option- 09 Departure Right Turn to NE



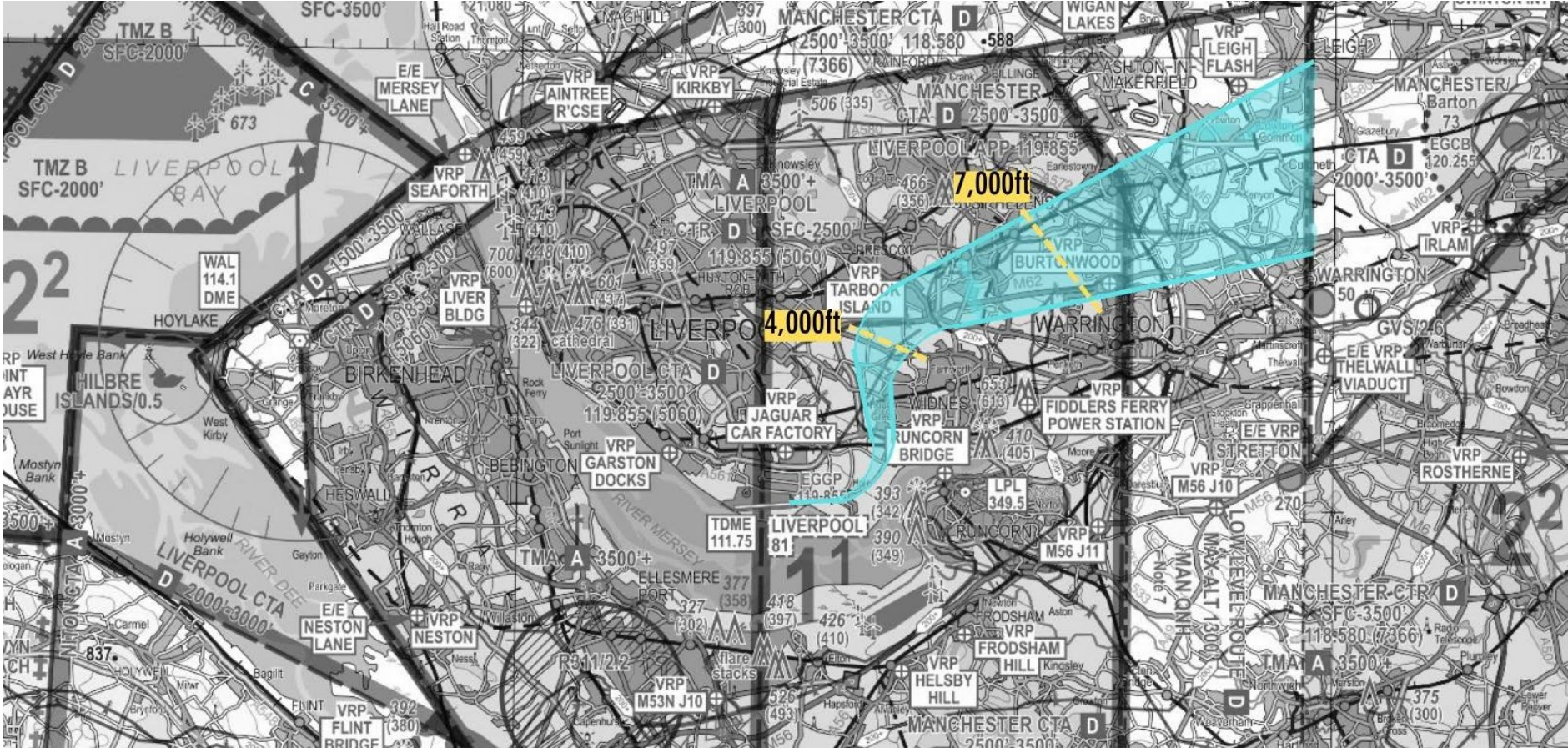
Faster. Easier. Friendlier.

Option to turn right early following a 09 departure to the North East to limit the interaction with Manchester Traffic.



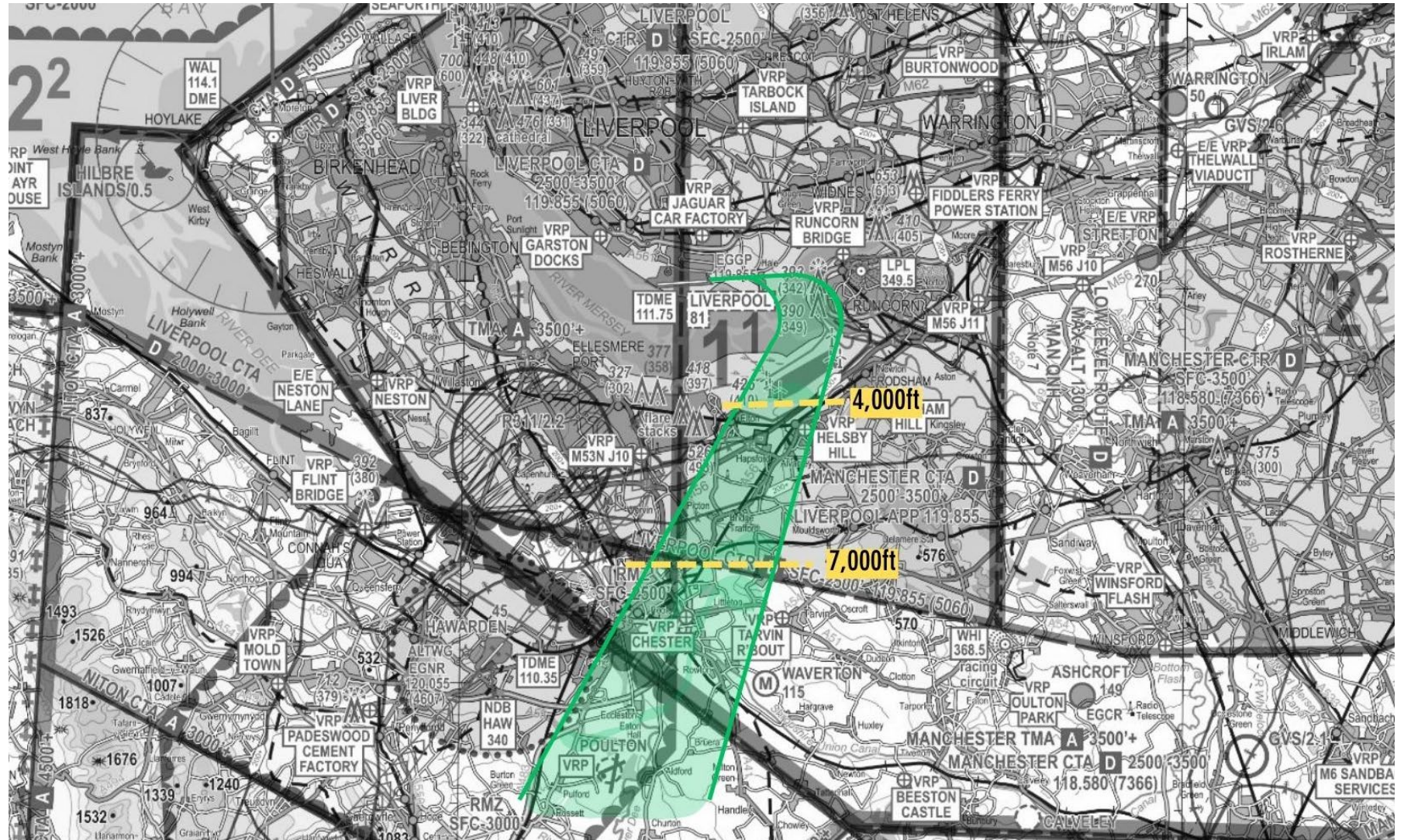
New Option- 09 Departure Left Turn to NE

Option to turn left early following a 09 departure to the North East to limit the interaction with Manchester Traffic.



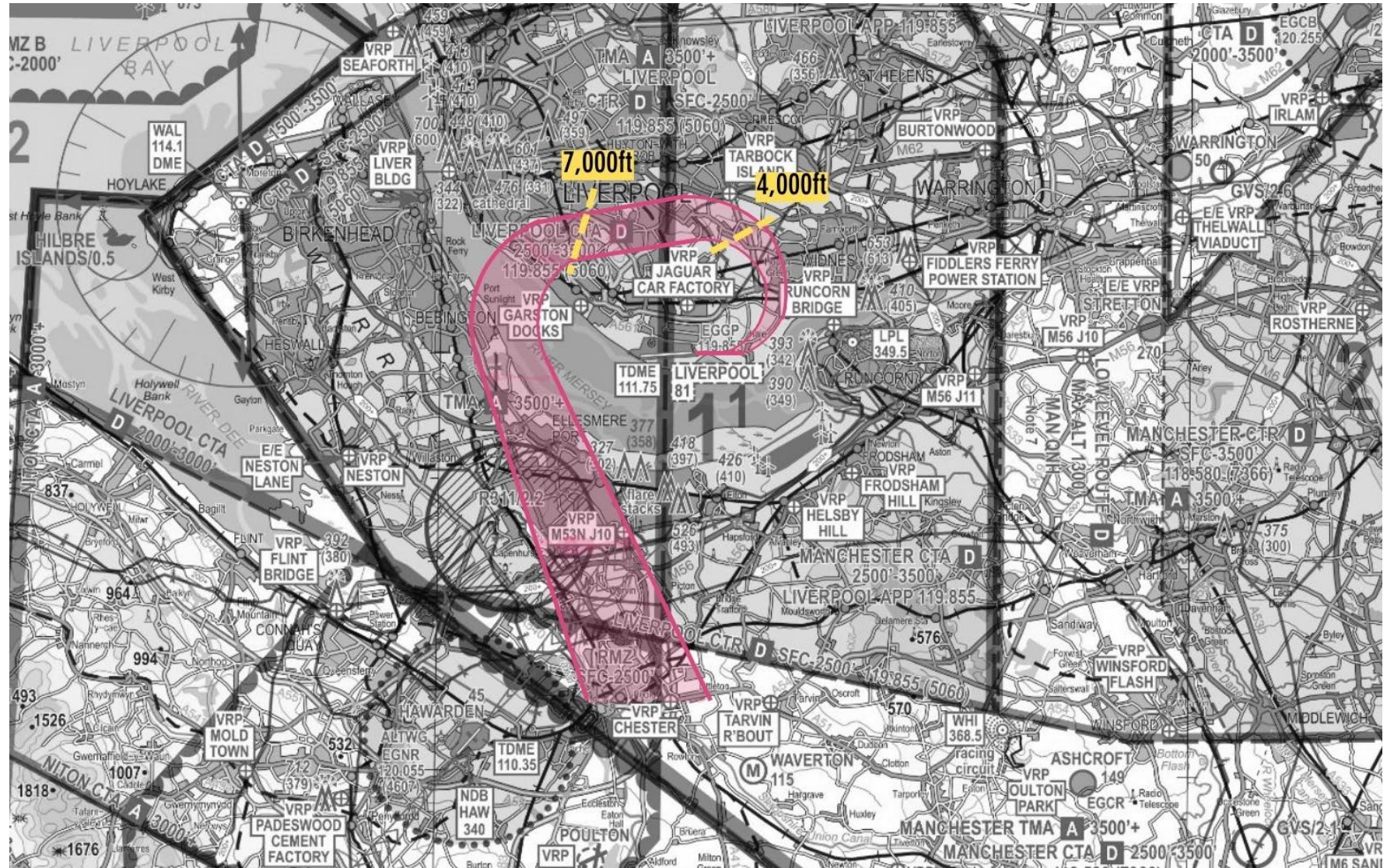
New Option- 09 Departure Right Turn to S

Option to turn right early following a 09 departure to the South to limit the interaction with Manchester Traffic.



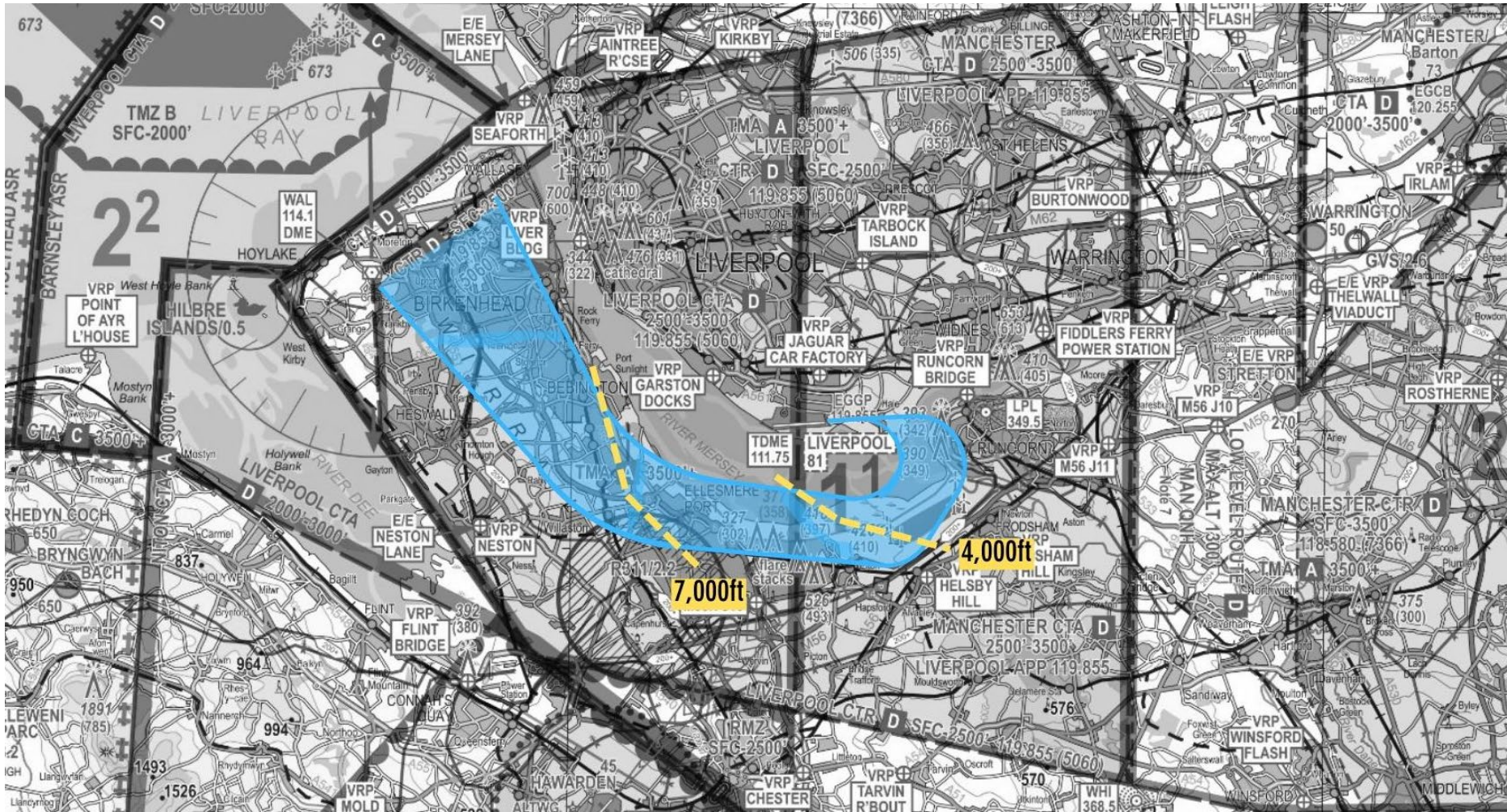
New Option- 09 Departure Left Turn to S

Option to turn left early following a 09 departure to the South to limit the interaction with Manchester Traffic.



New Option- 09 Departure Right Turn to NW

Option to turn right early following a 09 departure to the North West to limit the interaction with Manchester Traffic.

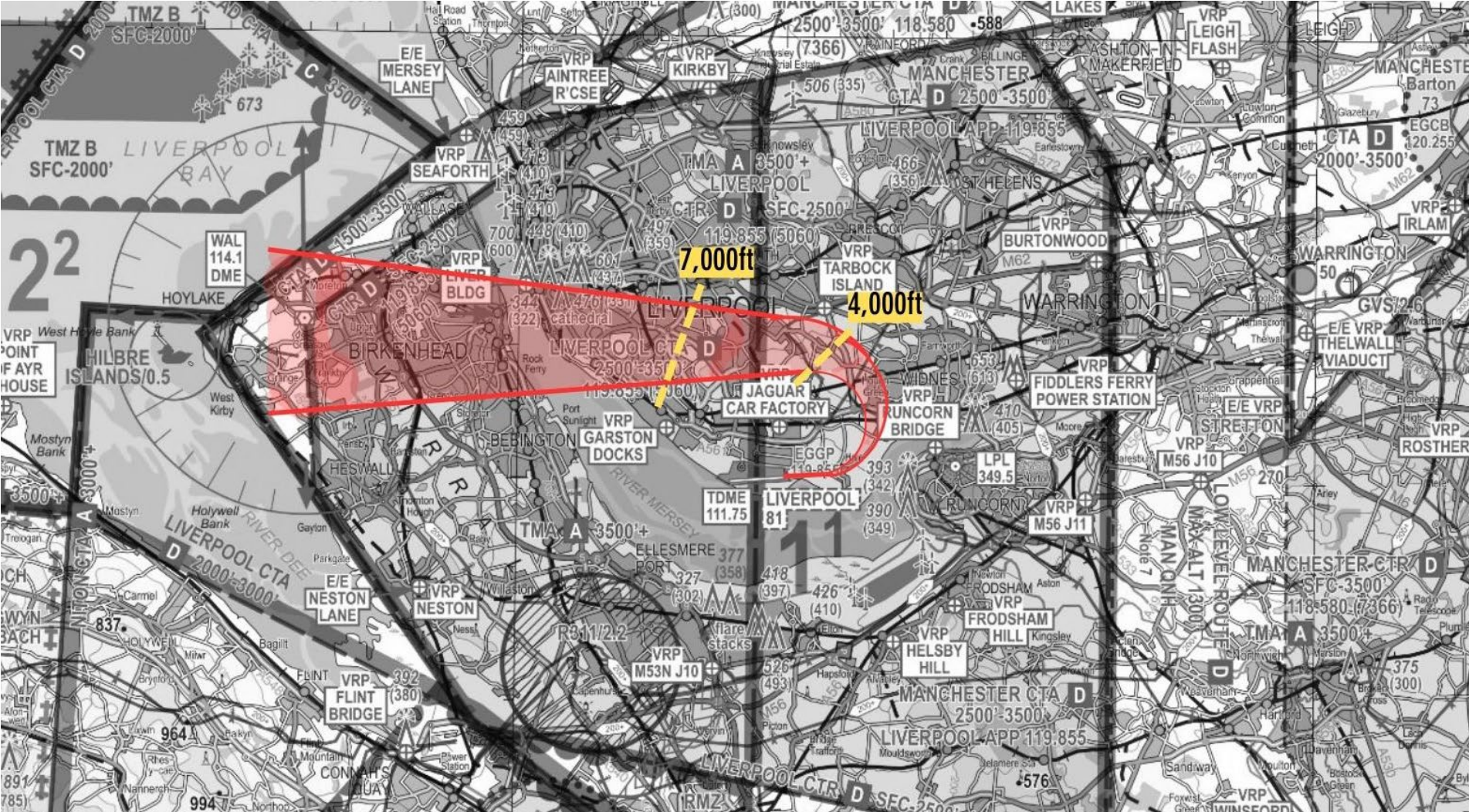


New Option- 09 Departure Left Turn to W



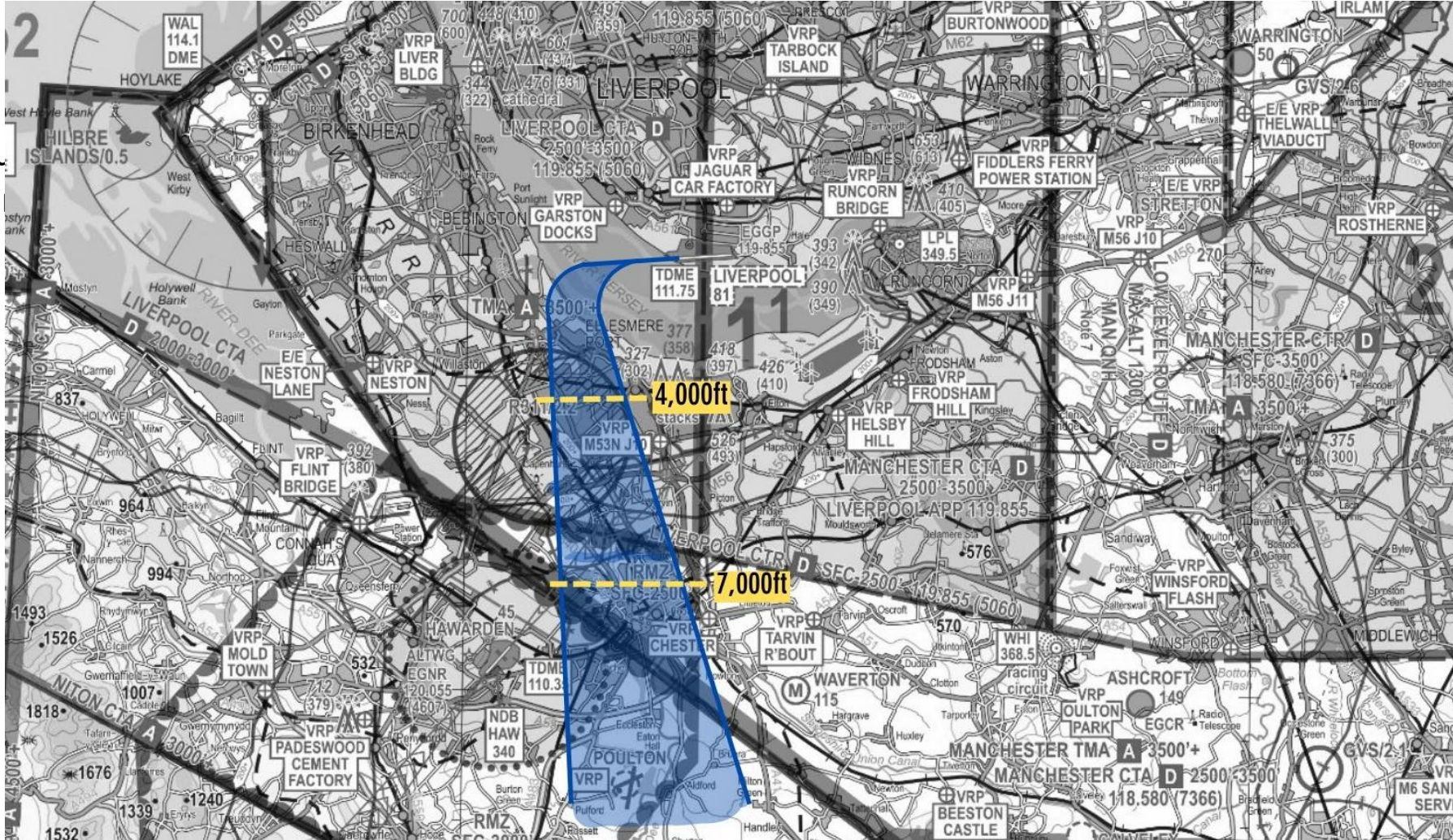
Faster. Easier. Friendlier.

Option to turn left early following a 09 departure to the North West to limit the interaction with Manchester Traffic.



New Option- 27 Departure Left Turn to S

Option to turn left following a 27 departure to the south, integrating with upper airspace designs.

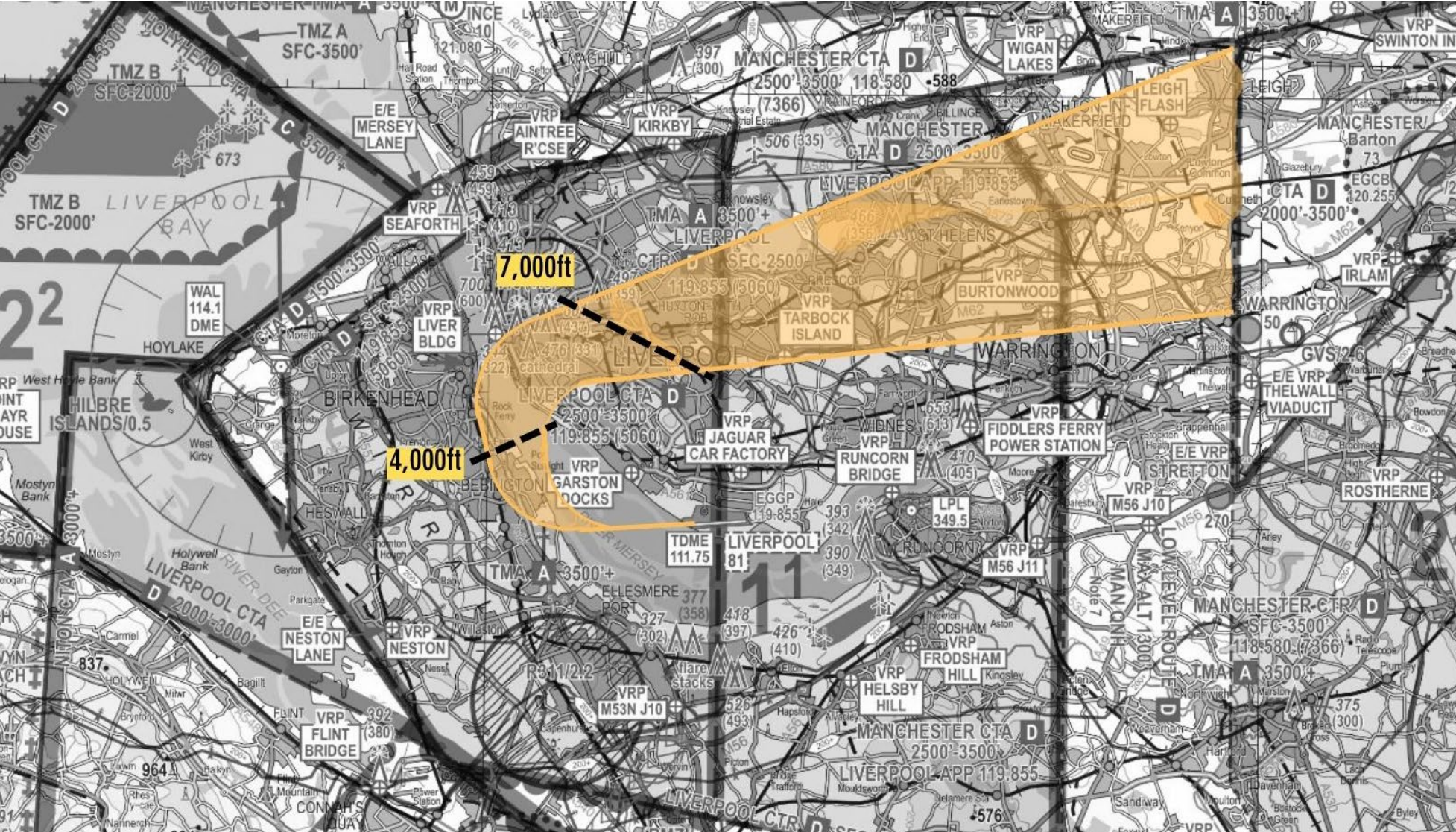


New Option- 27 Departure Right Turn to NE

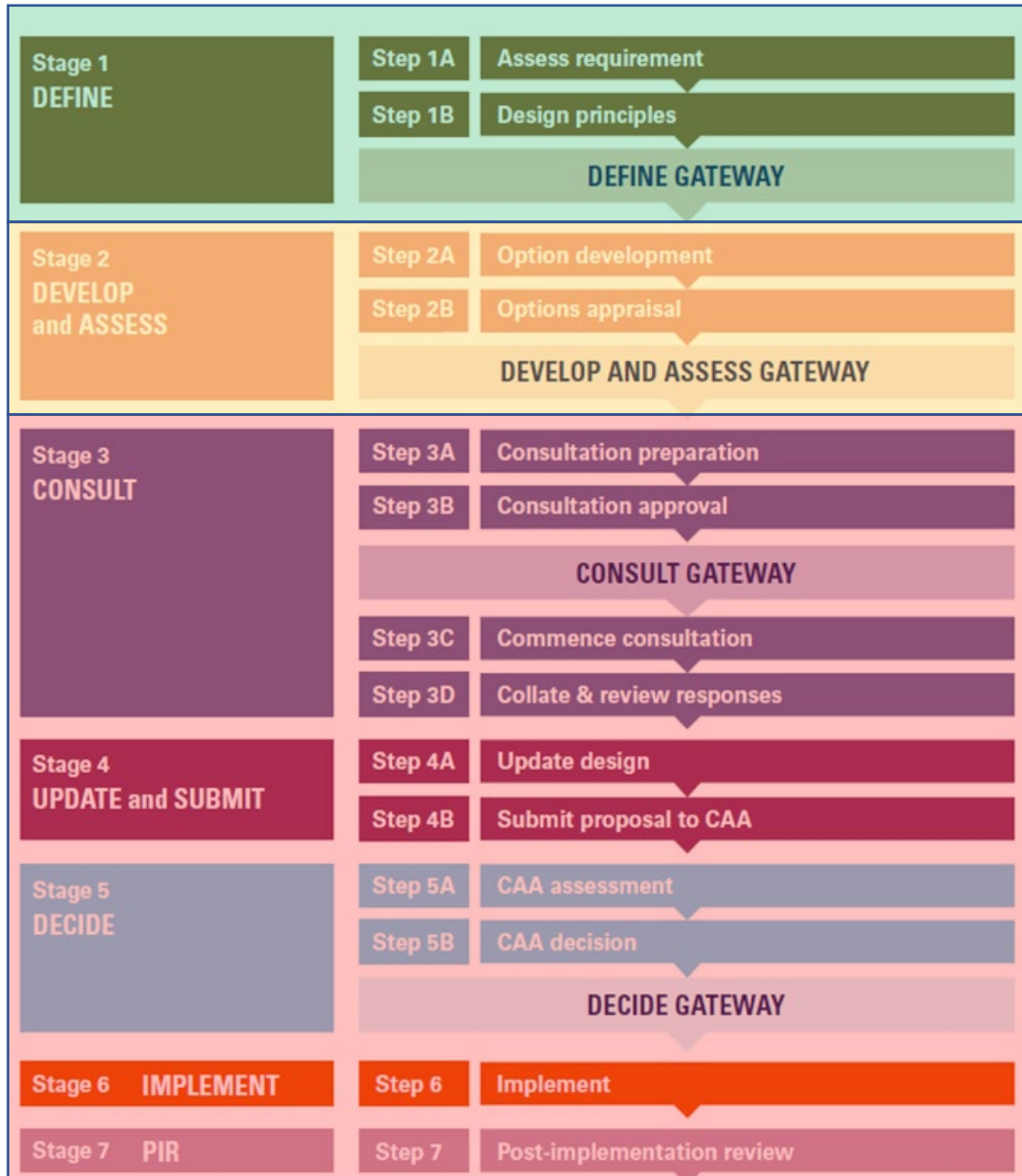


Faster. Easier. Friendlier.

Option
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Next Steps



- Following engagement Stakeholders are requested to provide feedback via the engagement questionnaire (see next slide).
- We will consider your responses in the designs and describe how your feedback has influenced the design options.
- Stage 2 documentation for the new options will be completed and options shortlisted.
- This will be submitted to the CAA for Stage 2 gateway assessment. Stakeholders will be notified.
- Subject to CAA approval for Stage 2 the ACP shall progress through the CAP1616 process where the options will be developed into an holistic design.

How to provide feedback

LJLA Airspace Change Stage 2 Update



- Please provide feedback via the QR code.
- If you are unable to access the questionnaire via the QR code, you can access the questionnaire via the link below:

<https://forms.office.com/e/pTXR7JY1yn>

- Alternatively, send feedback to:

airspacechange@LiverpoolAirport.com

Or by post to:

Airspace Change
Environmental Team
Aviation House
Liverpool Airport
Liverpool
L24 1YD

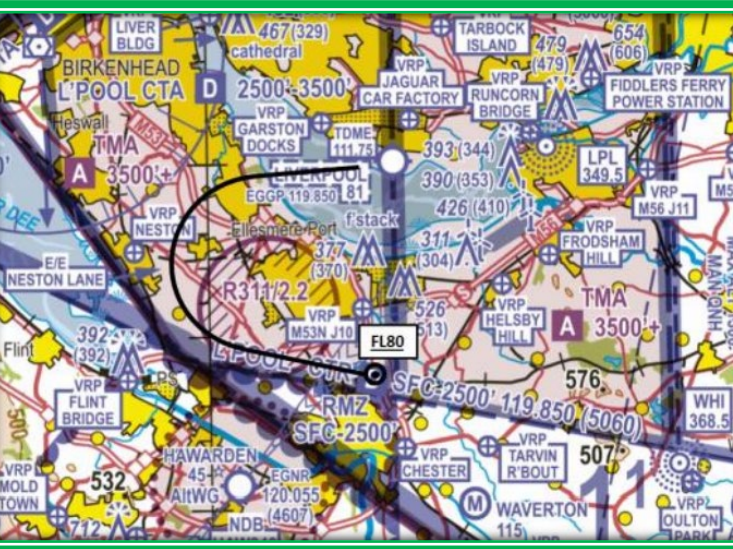
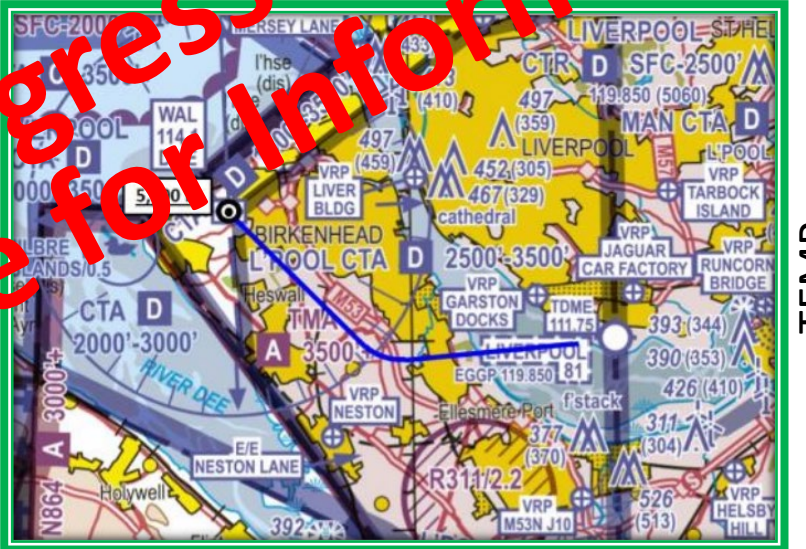
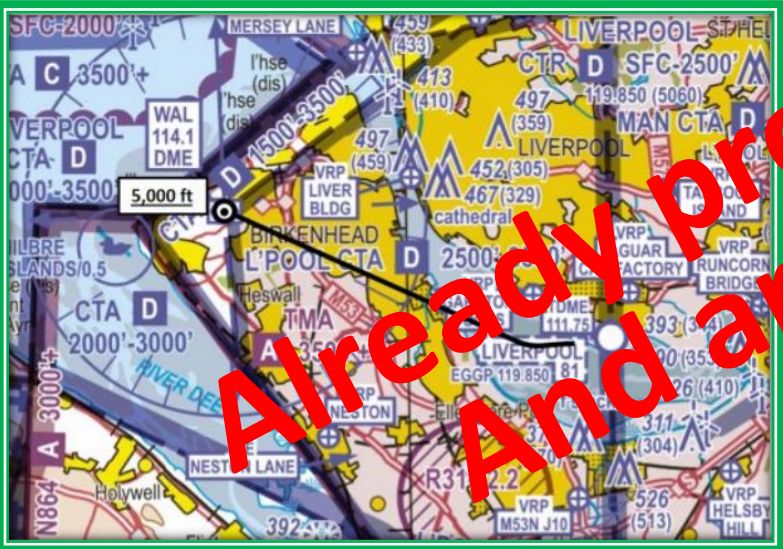
- Please provide feedback by **1700 hrs 1st June 2023.**

Thank you

Pre-progressed designs

Previously Proposed Options- Departures

These Options have already been through Stage 2 of the CAP1616 Process and are not within Scope of this engagement. They are included for information only. For Full Details see the Airspace Change Portal.

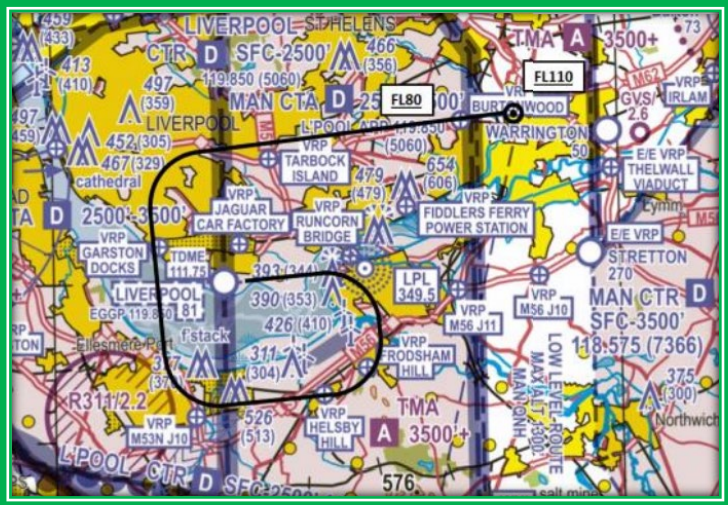


Already progressed through Stage 2
And are for Information Only

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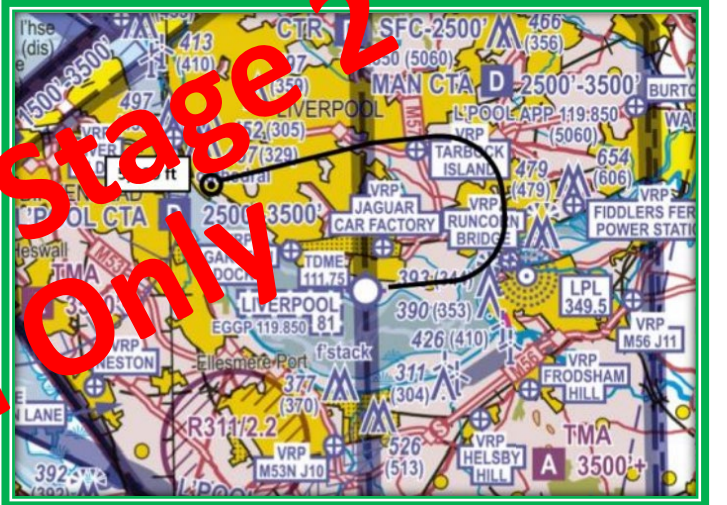
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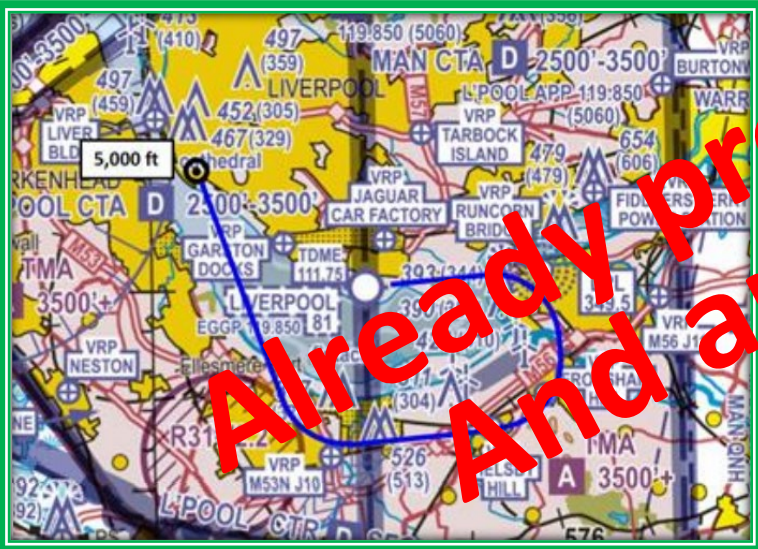
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CAVEN



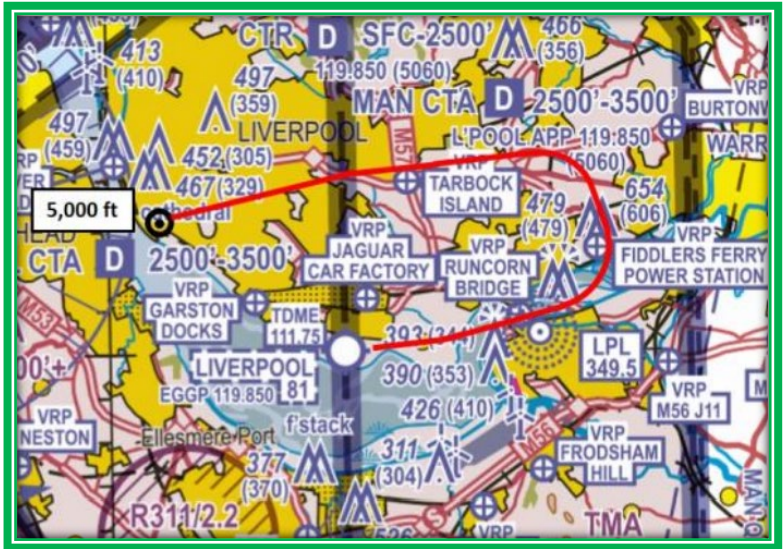
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CAVEN



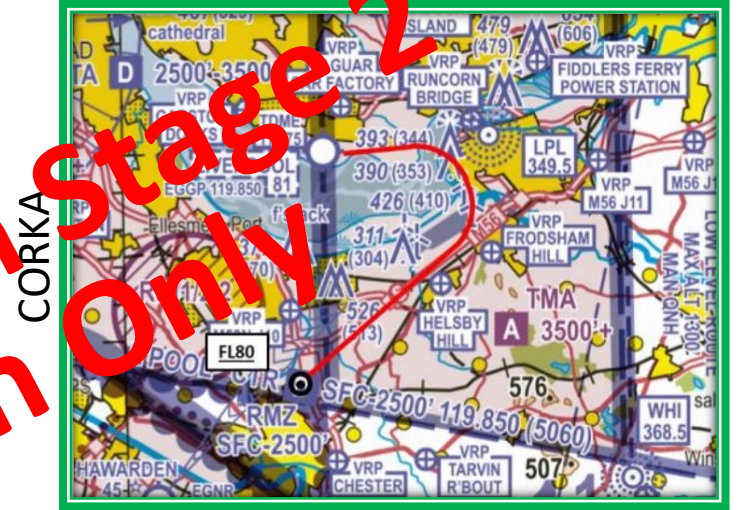
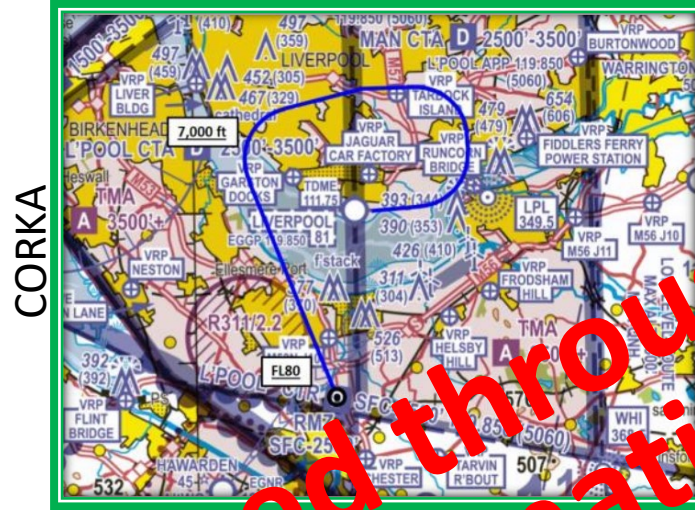
CAVEN



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Previously Proposed Options- Departures

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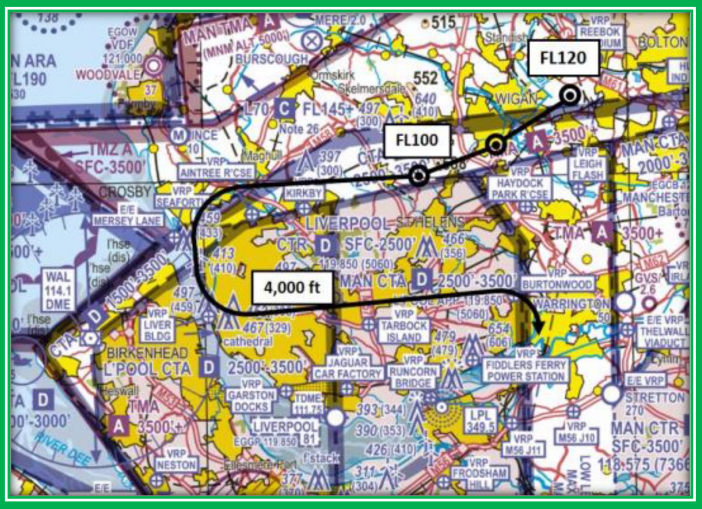
**Already progressed through Stage 2
And are for Information Only**

- A baseline, Do Nothing option was also illustrated but was rejected as it did not address the Statement of Need
- Following DPE these options have undergone an Initial Options Appraisal.
- Following this IOA, the number of SID options shown above were further reduced.
- For full details see the Airspace Change Portal.

Previously Proposed Options- Arrivals: Transitions

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Trans 27 DIOUF



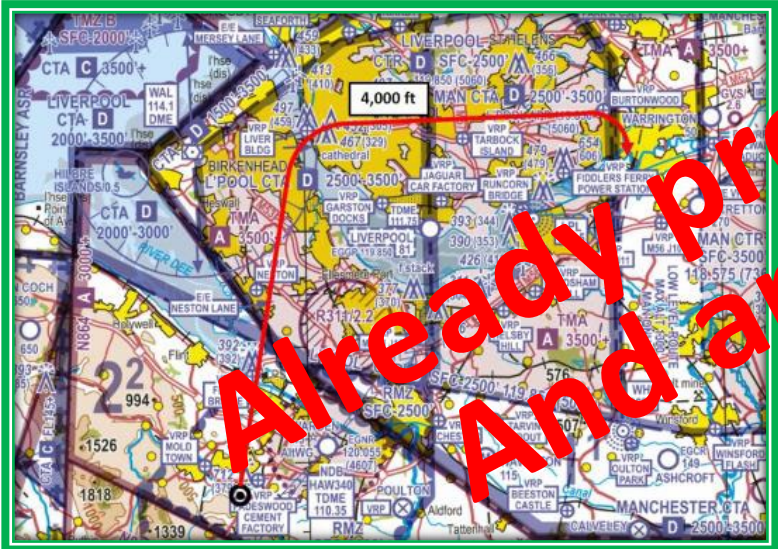
Trans 27 NOMSU



Trans 27 VEGUN



Trans 27 VEGUN CC05



Trans 09 DIOUF



Trans 09 NOMSU

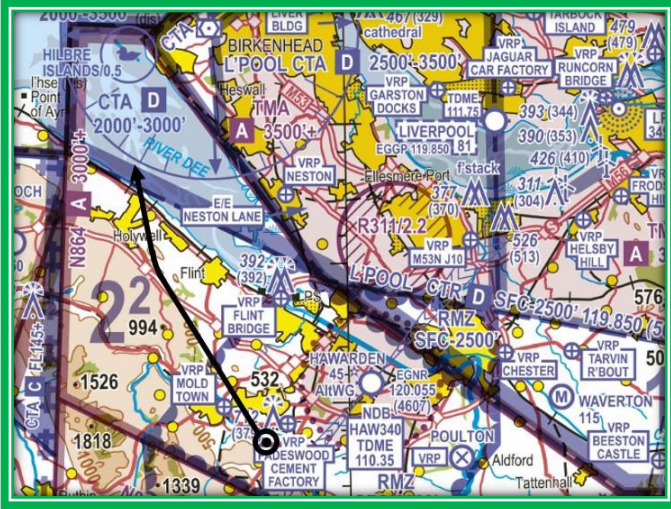


Already progressed through Stage 2
And are for information only

Previously Proposed Options- Arrivals: Transitions

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Trans 09 VEGUN



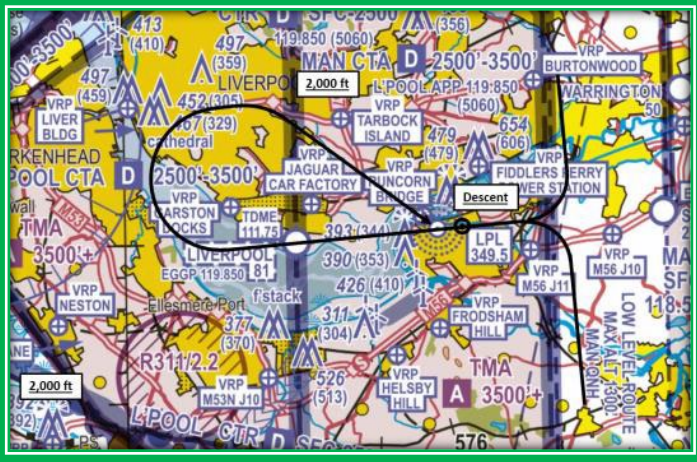
- A baseline, Do Nothing option was also evaluated but was rejected as it did not address the Statement of Need
- Following DPE these options have undergone an Initial Options Appraisal.
- Following this IOA, the number of SID options shown above were further reduced
- For full details see the Airspace Change Portal.

**Already progressed through Stage 2
And are for Information Only**

Previously Proposed Options- Arrivals: Approaches

These Options have already been through Stage 2 of the CAP1616 Process and are not within Scope of this engagement. They are included for information only. For Full Details see the Airspace Change Portal.

Approach 27 Option 1



Approach 27 Option 2



Approach 27 Option 3



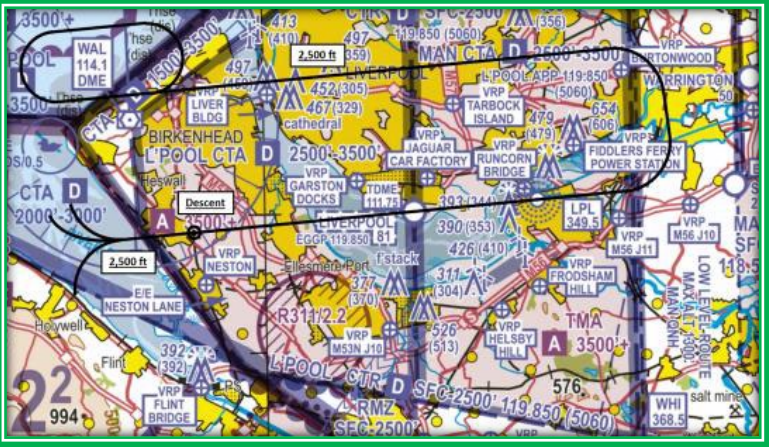
Approach 09 Option 1



Approach 09 Option 2



Approach 09 Option 6



Already progressed through Stage 2
And are for Information Only

Previously Proposed Options- Arrivals: Approaches

These Options have already been through Stage 2 of the CAP1616 Process and are not within Scope of this engagement. They are included for information only. For Full Details see the Airspace Change Portal.

- 2 baseline scenarios were also assessed.
- The first covered the conventional Approach procedure but was rejected as it did not address the Statement of Need
- The second covered the PBN Approach procedure and was accepted
- Following DPE these options have undergone an Initial Options Appraisal.
- Following this IOA, the number of SID options shown above were further reduced
- For full details see the Airspace Change Portal.

**Already progressed through Stage 2
And are for Information Only**