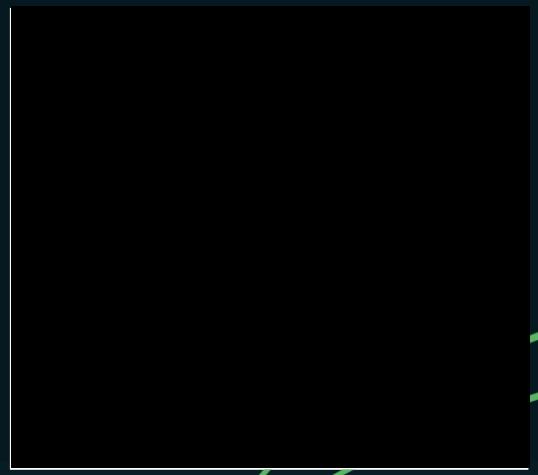
Future Airspace Strategy Implementation (North)

MTMA East Midlands and Manchester - Network Changes (ACP-2019-77)

Stage 1 Assessment Meeting

4th February 2020



NATS

NATS Unclassified

Agenda

- Statement of need
- Background
- Justification
- How to address identified issues
- Provisional indication of the appropriate scaling level and notes re Process Requirements
- Draft Timescales and First Three Planned Gateway Assessments
- Next steps

Statement of Need (ref. 3541, 9-Oct-2019)

5. Statement of Need

Please provide a brief 'Statement of Need' expressing explicitly what airspace issue or opportunity you are seeking to address. Your Statement of Need should clearly articulate the current situation, the issue (and the cause of it) to be resolved or the opportunity to be addressed along with any other factors or requirements. *

This airspace change proposal will make changes to the Manchester Terminal Manoeuvring Area (MTMA) airspace, STARs and ATS route network. The proposed changes will interface with SIDs and arrival transitions serving Manchester and East Midlands airports. Manchester and East Midlands airports are currently in the process of proposing changes to their SIDs/ arrival transitions. The changes proposed to the MTMA by this ACP will be coordinated with, and will complement, the airports' proposals.

Current Situation
The extant conventional SIDs /STARs at Manchester and East Midlands airports are not PBN and will soon be made obsolete by the planned decommissioning of several conventional navigation beacons.

Issue to be addressed
Consideration of interacting traffic flows between Manchester, East Midlands and neighbouring airports (i.e. Liverpool, Warton, Birmingham, Leeds, Doncaster etc). Introduction of improved holding/delay absorption arrangements and ATS routes will reduce conflicts by systemising the traffic, also reducing fuel burn & CO2 emissions for flights using these routes.
New ATS routes and STARs may be required to provide network connectivity for changes as proposed by Manchester and East Midlands airports.
This proposal forms part of the plan for delivering the Airspace Modernisation Strategy.

Cause
Legacy ATS structure requires modernisation in accordance with the Airspace Modernisation Strategy.

Background

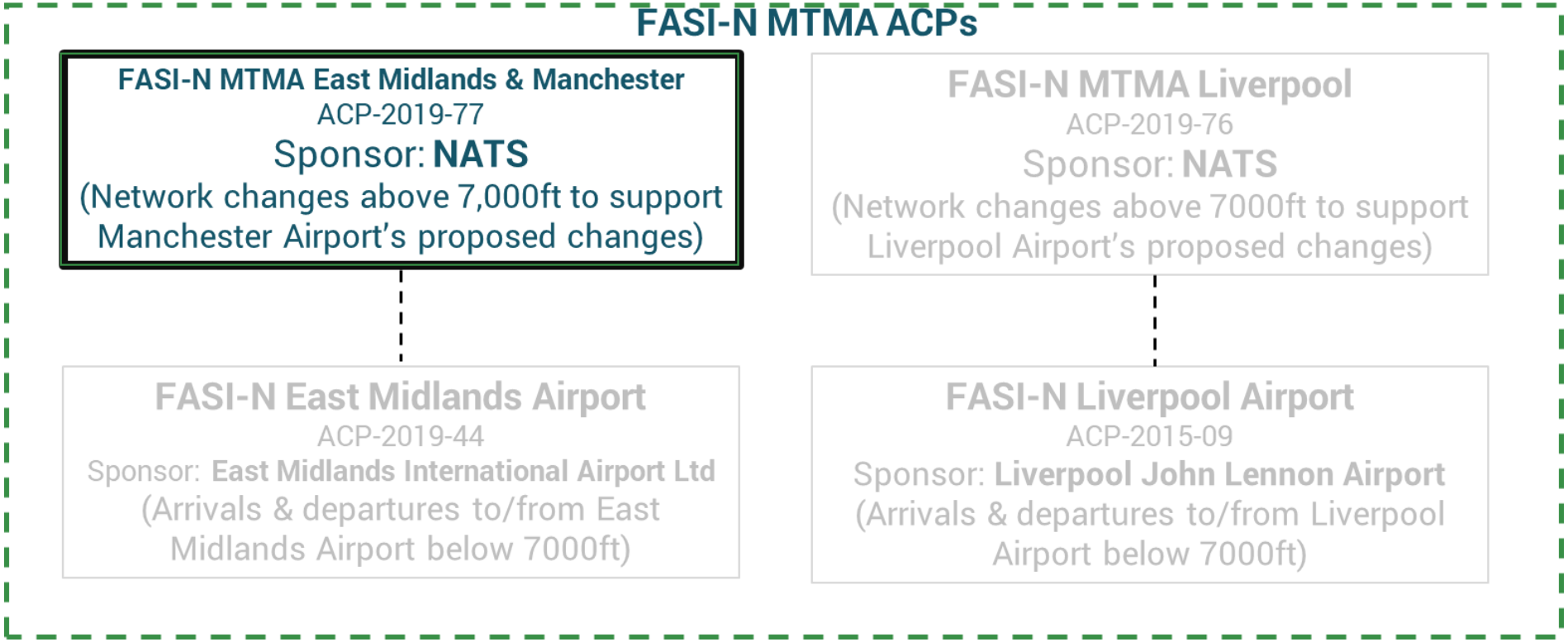
- East Midlands and Manchester airports are progressing proposals to modernise the low-level routes below 7000ft.
- NATS will have to modify the route network above 7000ft to interface with both airport's new route designs.
- NATS will also take this opportunity to make improvements to the en-route network. This will be achieved by considering improved holding arrangements and ATS routes, with the goal of systemising traffic to maximise capacity and resilience, while minimising environmental impacts.
- Manchester Airport is the 4th busiest Airport in the UK; in 2018 there were 200,900 flights p.a..
- East Midlands Airport is the UK's largest dedicated cargo airport and the 8th busiest Airport in the UK, with 76,620 flights p.a. in 2018.

FASI-N Partnership

- FASI-N ScTMA partnership structure
    - NATS is responsible for the ACP for changes to the route network above 7000ft including STARs
    - Manchester Airport Group (MAG) is responsible for the ACPs for routes below 7000ft (SIDs and PBN arrival transitions). As such, MAG will be responsible for engagement and consultation with local stakeholders
- The Airspace Change Organising Group (ACOG) to provide guidance and coordination

FASIN MTMA ACPs

- In accordance with the Airspace Modernisation Strategy the legacy airspace structure in the Manchester Terminal Manoeuvring Area (MTMA) is being modernised and redesigned. The Future Airspace Strategy Implementation (North) MTMA programme of changes includes ACPs by several sponsors as shown below.



Justification

The proposed changes are in accordance with the Airspace Modernisation Strategy.

The changes to the enroute network will enable the low-level changes proposed by East Midlands and Manchester Airports. Together - these three sets of changes - will provide synergies and hence they must be coordinated.

The DVOR rationalisation programme requires that reliance on ground based navigation aids is removed by changing to Performance Based Navigation (PBN).

The existing airspace has latent design safety risks which need to be resolved tactically.

Objectives

- Maintain and improve on the current levels of safety within the Manchester TMA

- Improve resilience in the management and systemisation of East Midlands and Manchester arrivals and departures together with surrounding airports:

  - Reduce controller and pilot workload through systemisation.
  - Minimise impact of interactions between East Midlands, Manchester and neighboring Airports i.e. Birmingham, Liverpool, Leeds etc.
  - Improved holding/ delay absorption mechanisms and ATS routes will reduce environmental impacts
  - Increased capacity

- Utilisation of PBN STARs/ ATS Routes

- Remove reliance on ground-based navigation aids

Impacts / Benefits

ATS Units

- Systemisation will reduce the complexity of interactions between Manchester and East Midlands traffic therefore enhancing capacity through a reduction per flight in ATC workload
- Systemisation will maintain or improve PC Safety Performance
- Systemisation will result in better traffic presentation to/ from Prestwick Centre ATC and a reduction in controller workload
- Create a modernised network capable of handling future growth in line with AMS
- It is recognised that these changes may impact other airports arrival /departure routes

Civil Air Traffic

- Reduction in delays as a result of improved holding/ delay absorption mechanism
- Improved climb & descent profiles
- Reduction in cockpit workload
- Improved utilisation of onboard technology
- Reduction in Fuel burn
- Improvement in 3Di performance

MoD / Operational Air Traffic

- Minimal anticipated impact

General Aviation and Sport & Recreational Aviation

- Changes to some CAS bases possible which may allow release of CAS
- Willingness to evolve low level airspace design
- Relieve infringement risk in relation to low level CAS and deliver simplification of boundaries

Environmental Impacts: CO_2 Emissions

- The proposed changes will improve climb & descent profiles, enabling consistent continuous climb departures (CCDs) and continuous descent approaches (CDAs).
- The target is for a reduction in average CO_2 emissions per-flight.
- A 3DI (3 Dimensional Inefficiency) analysis of the current and proposed airspace will also be performed to quantify the benefit of the proposed changes.

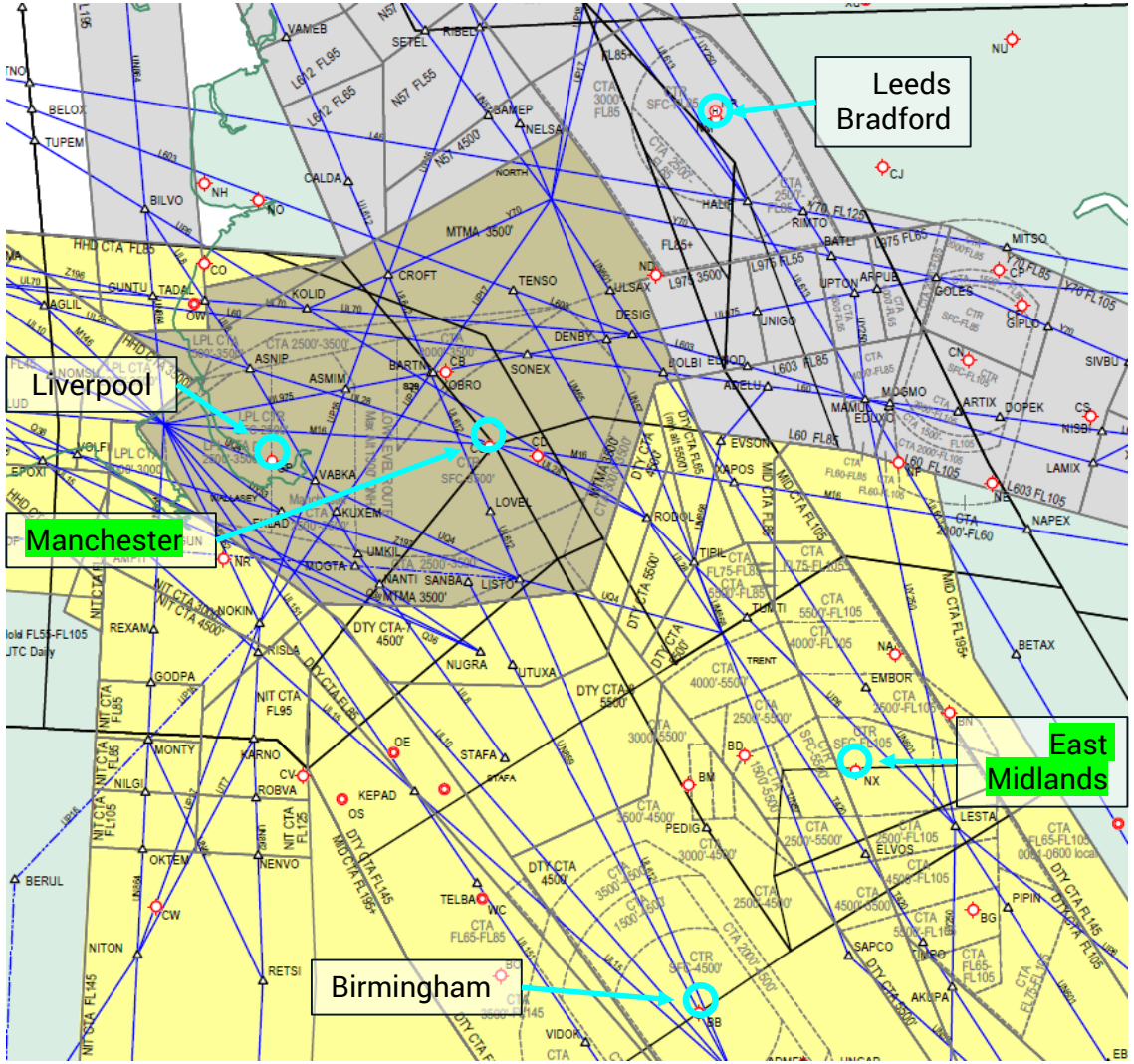
Environmental: Over-flight/ Noise

Analyses required

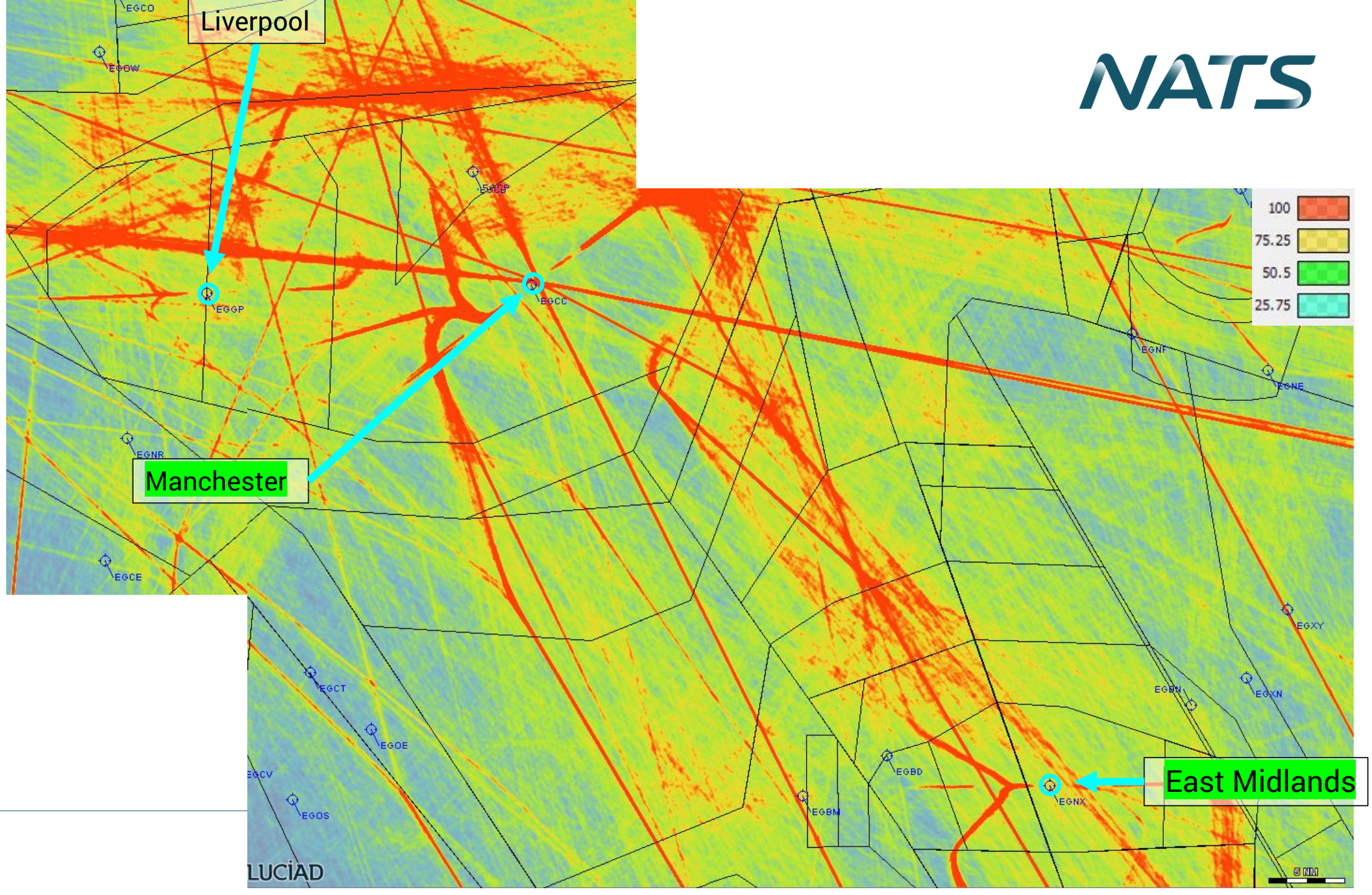
- No noise analysis will be required for changes above 7000ft.

- CO_2 emissions analysis will be performed

Current Routes and Traffic

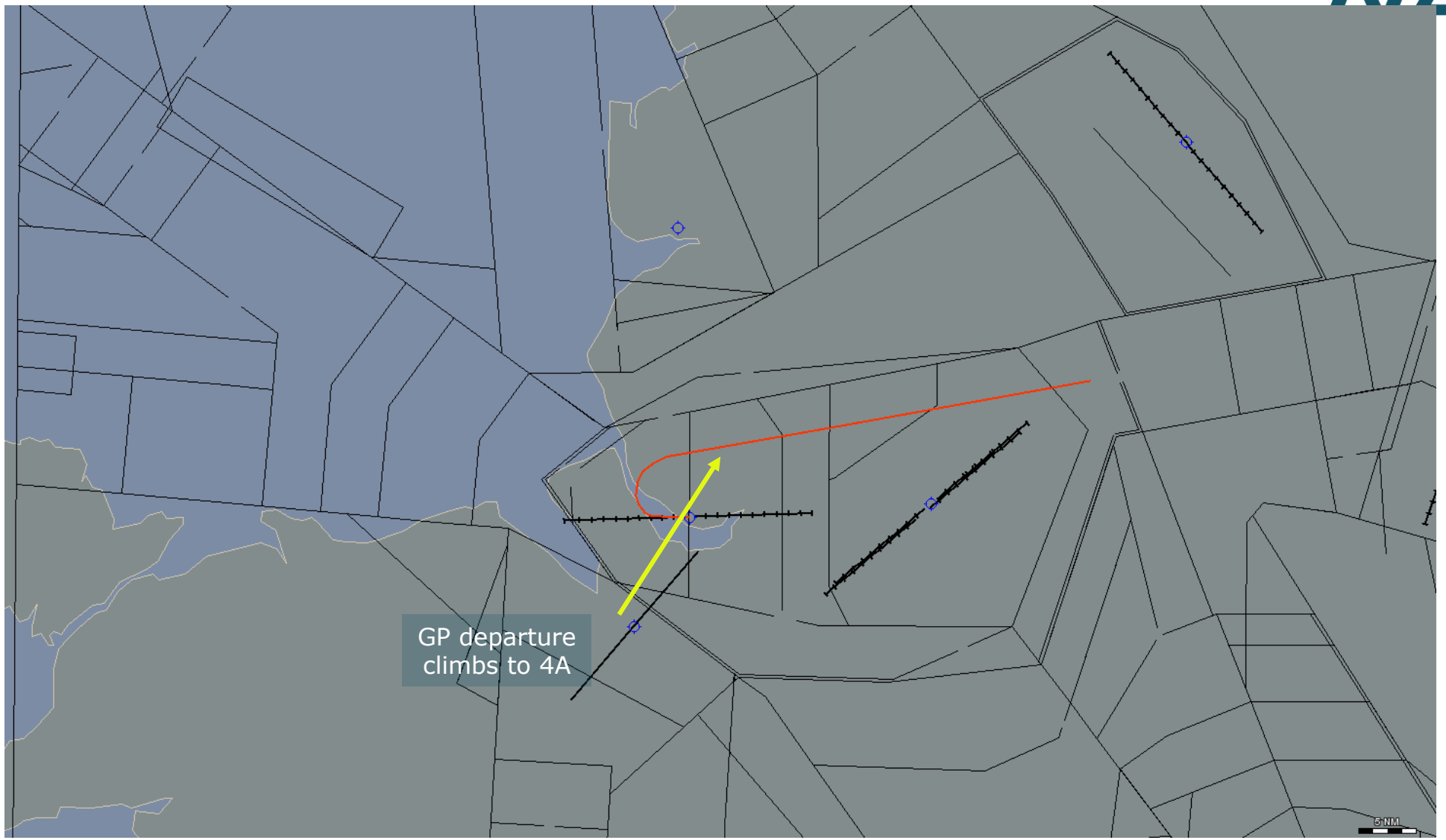


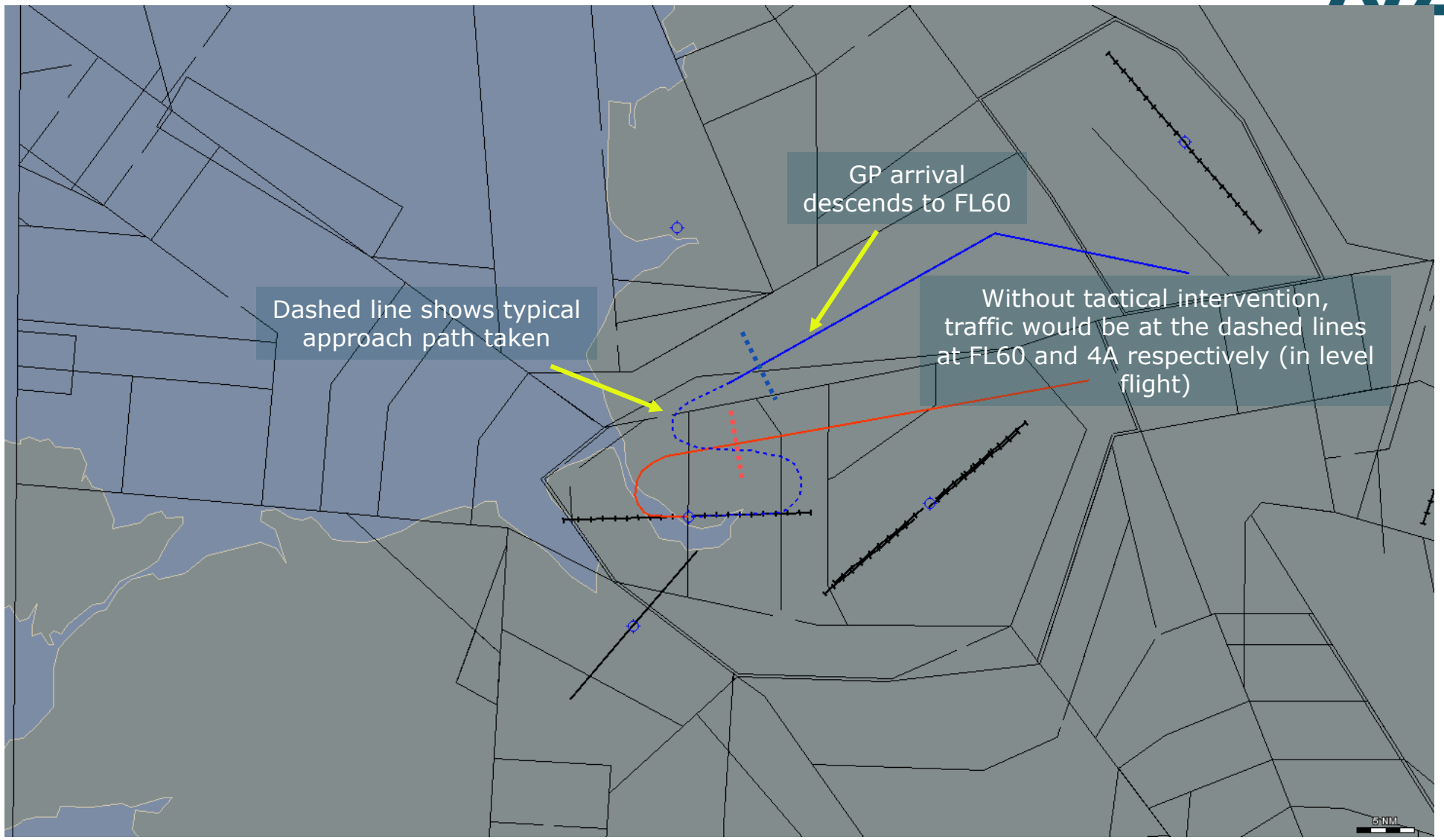
Density Plot above 7,000ft

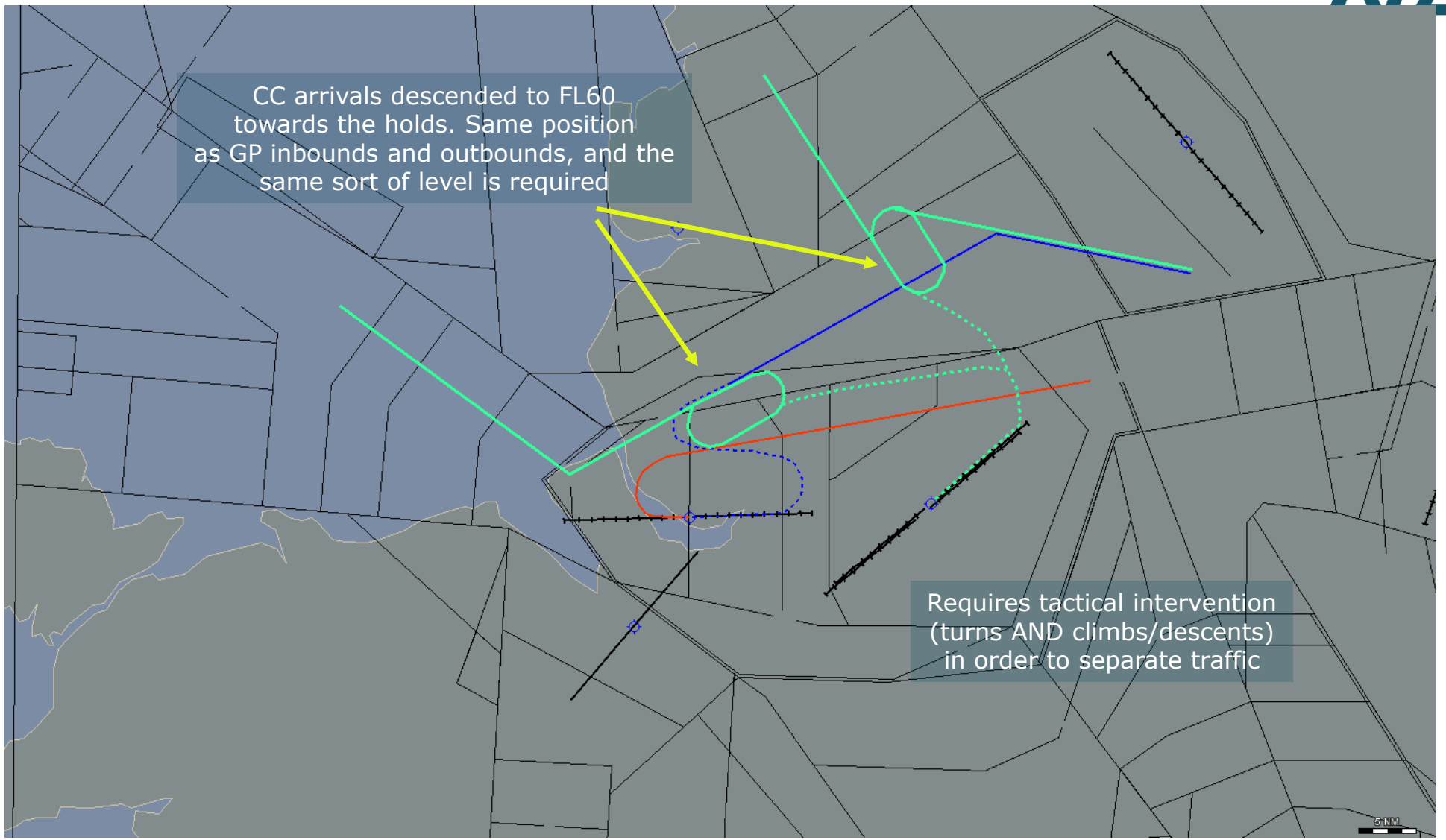


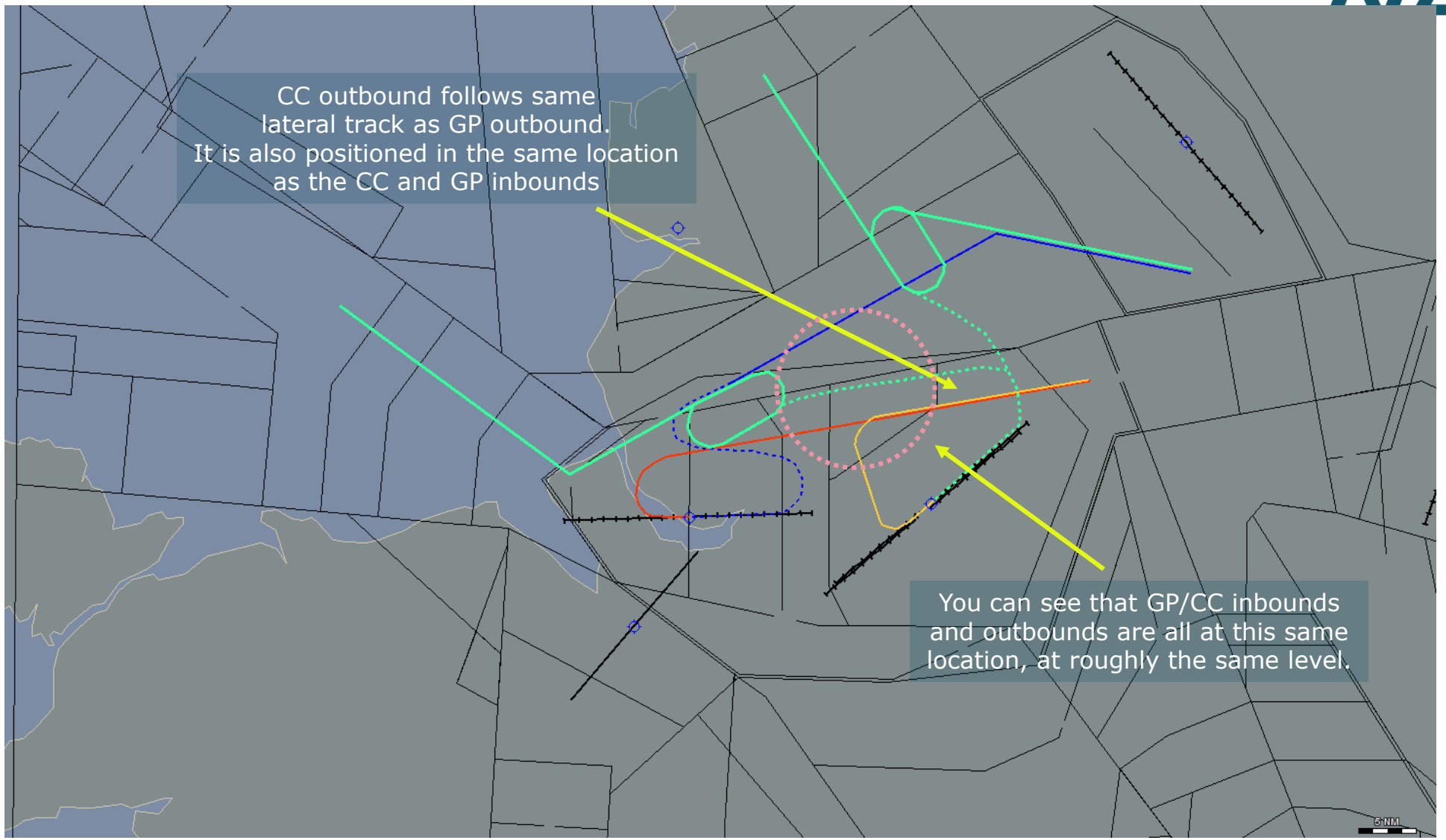
Current MTMA Issues

- Highly tactical sectors, requiring ATC intervention to deliver a safe and efficient service; particularly between Manchester and Liverpool inbounds and outbounds
- Cross-over of tracks to/from East Midlands through ‘north and southbound traffic flows
- Confluence at POL between Leeds/ Manchester/ Liverpool traffic
- Location of Manchester holds does not facilitate CCO/ CDO
- Complexity of CAS base levels which add to controller workload
- Current airspace design would not accommodate the projected traffic demand


GP departure
climbs to 4A
5 NM


GP arrival
descends to FL60
Dashed line shows typical
approach path taken
Without tactical intervention,
traffic would be at the dashed lines
at FL60 and 4A respectively (in level
flight)
5 NM


CC arrivals descended to FL60 towards the holds. Same position as GP inbounds and outbounds, and the same sort of level is required
Requires tactical intervention (turns AND climbs/descents) in order to separate traffic
5 NM


CC outbound follows same lateral track as GP outbound. It is also positioned in the same location as the CC and GP inbounds
You can see that GP/CC inbounds and outbounds are all at this same location, at roughly the same level.
5 NM

Desirable outcome

Through collaboration and cooperation with East Midlands and Manchester Airports:

- Maintain and improve on the current high levels of safety within the MTMA
- Improve resilience in the management of East Midlands and Manchester arrivals through improved holding/ delay absorption management mechanisms
- Reduce controller and pilot workload through systemisation of procedurally deconflicted inbound and outbound aircraft
- Minimise impact of each Airport's tactical situation on the other

Airline Engagement

Engagement with the airlines will take place through the NATS Airspace and Flight Efficiency Partnership and Lead Operator Carrier Panel meetings.

(Attended by BA, BA City Flyer, Easyjet, Delta, DLH , FlyBe, Jet2, KLM, RyanAir, SAS, United, Virgin)

Other Operators - such as LoganAir - will be engaged with directly.

Stakeholder Engagement

The following stakeholders will be engaged with during the CAP1616 process:

Airlines – the main airlines operating from East Midlands and Manchester Airports

Airports – adjacent airports such as Liverpool (EGGP)

MOD - via DAATM

NATMAC - 39 Organisations (unlikely that all will be engaged with)

Other Change Sponsors – of relevant airspace changes e.g. LAMP

Note: it is not intended to engage directly with local stakeholder representative groups.

East Midlands and Manchester Airports will be undertaking consultation on the proposed low level routes and impacts thereof

NATS will provide support where necessary to East Midlands and Manchester during consultation.

Summary

Benefits

- Capacity benefits
- Compatible with AMS and future systemised network (FASIN)
- Improved climb and descent profiles resulting in a reduction in emissions

Issues

- Coordination between FASI-N MTMA ACPs and associated interactions between East Midlands and Manchester (alongside others)
- Dependencies to be identified during Stage 2
- ACOG will assist in brokering resolution of conflicting requirements.

Provisional Scaling and Process Discussion

- FASI-N Airports ACPs will drive the design - and consult upon - routes and traffic distribution below 7000ft.

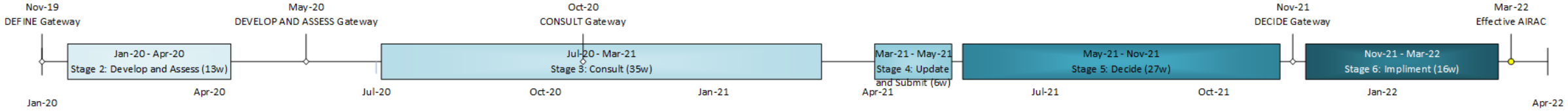
- The NATS network ACP will be coordinated and aligned with these ACPs.

- The Level for the network ACP is to be confirmed.

MTMA – March 2022

[redacted]

Manchester ACP Timeline



East Midlands ACP Timeline

In alignment with MAG

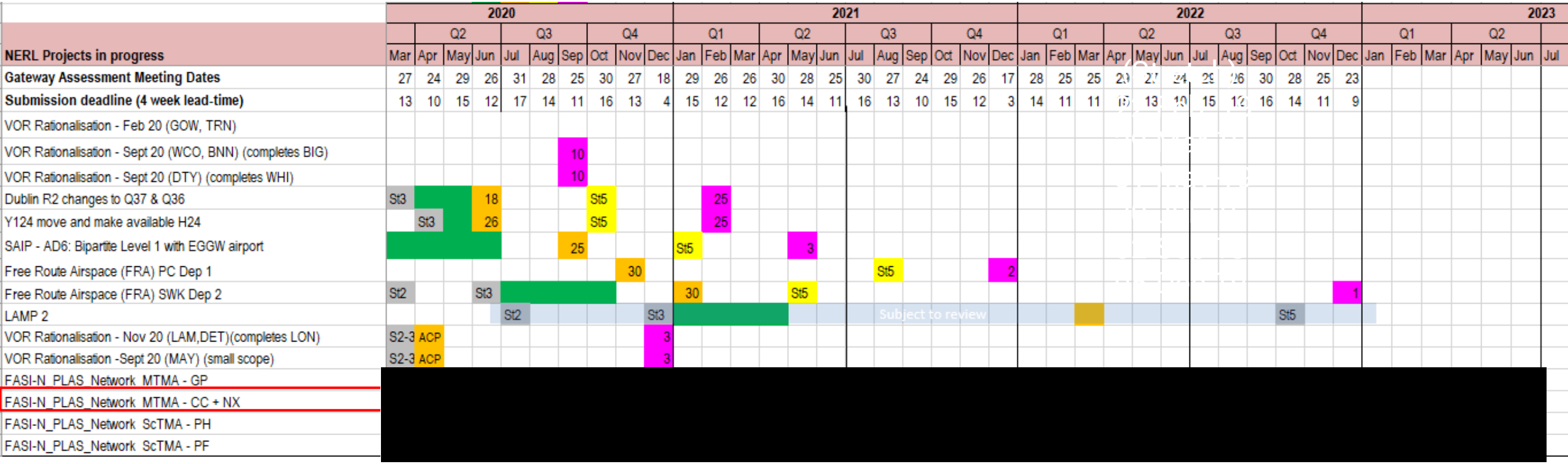
The NATS Implementation date is dependent on the progress of the East Midlands, Liverpool and Manchester ACPs.

Provisional Gateway Timescales

NATS proposed gateway timescales will be submitted via a separate timeline request form to the CAA before being agreed upon.

Manchester Airport is also targeting an implementation date of March 2022 whilst East Midlands Airport is targeting August 2022.

Overview Snap-shot of NATS Gateways

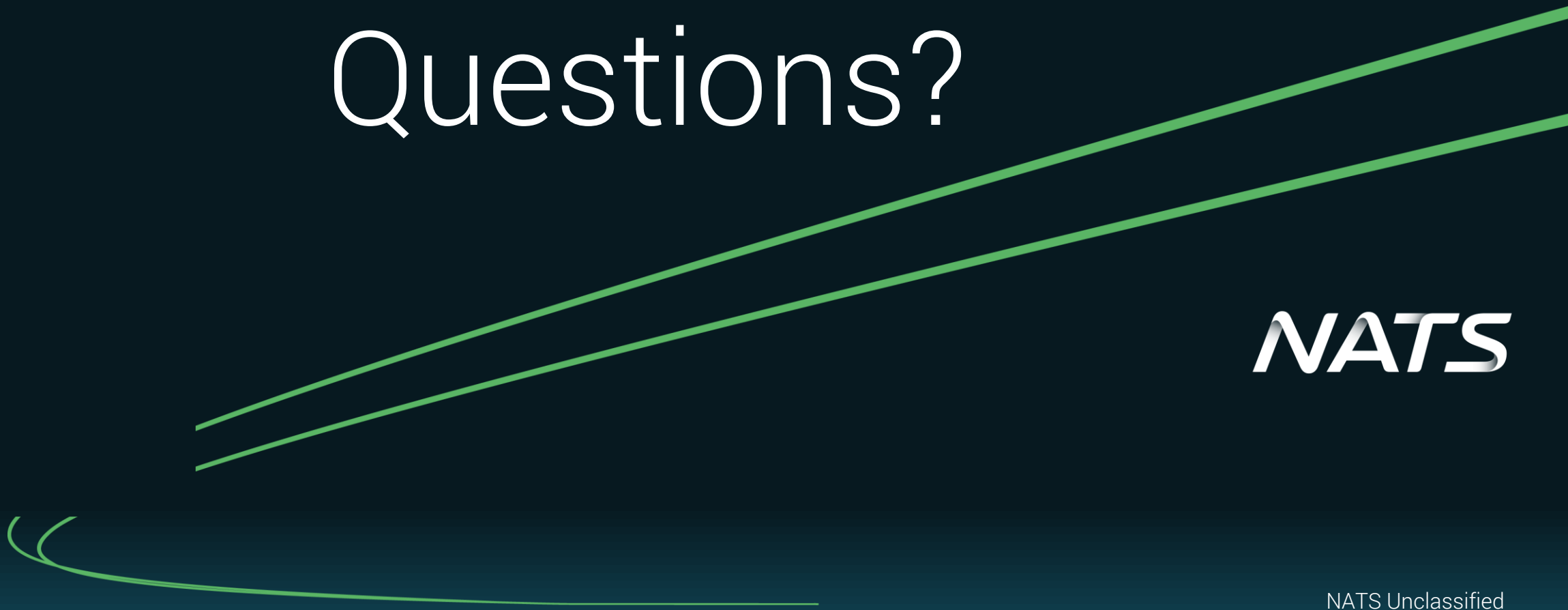


	2020										2021												2022												2023						
		Q2			Q3			Q4			Q1			Q2			Q3			Q4			Q1			Q2			Q3			Q4			Q1			Q2			
NERL Projects in progress	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Gateway Assessment Meeting Dates	27	24	29	26	31	28	25	30	27	18	29	26	26	30	28	25	30	27	24	29	26	17	28	25	25	29	27	24	29	26	30	28	25	23						
Submission deadline (4 week lead-time)	13	10	15	12	17	14	11	16	13	4	15	12	12	16	14	11	16	13	10	15	12	3	14	11	11	15	13	10	15	12	16	14	11	9						
VOR Rationalisation - Feb 20 (GOW, TRN)																																								
VOR Rationalisation - Sept 20 (WCO, BNN) (completes BIG)							10																																	
VOR Rationalisation - Sept 20 (DTY) (completes WHI)							10																																	
Dublin R2 changes to Q37 & Q36	St3			18				St5				25																													
Y124 move and make available H24		St3		26				St5				25																													
SAIP - AD6: Bipartite Level 1 with EGGW airport							25				St5				3																										
Free Route Airspace (FRA) PC Dep 1									30									St5				2																			
Free Route Airspace (FRA) SWK Dep 2	St2			St3							30				St5																			1							
LAMP 2					St2					St3																						St5									
VOR Rationalisation - Nov 20 (LAM,DET)(completes LON)	S2-3	ACP								3																															
VOR Rationalisation -Sept 20 (MAY) (small scope)	S2-3	ACP								3																															
FASI-N_PLAS_Network_MTMA - GP																																								
FASI-N_PLAS_Network_MTMA - CC + NX																																								
FASI-N_PLAS_Network_ScTMA - PH																																								
FASI-N_PLAS_Network_ScTMA - PF																																								

Engagement, and Next Steps

- Commence engagement with stakeholders on Design Principles
- NATS to liaise closely with MAG (Manchester & East Midlands Airports), ACOG and other stakeholders
- NATS to engage with airlines, airports, GA and MoD.
- NATS to support MAG where appropriate

Questions?



NATS