Summary of Feedback Responses and Q&A

Stage 2 Develop and Assess

MAG East Midlands Airport

Appendix 10 contains the feedback received and the questions asked and answers given, during both phases of engagement.

Contents

PHASE ONE ENGAGEMENT FEEDBACK

MAG East Midlands Airport

Phase one feedback – general themes

	Feedback	Response
Respite	The alternative departure envelopes do not appear to present the most efficient means of delivering respite.	The alternative departure envelopes have been removed. New envelopes have been created and some envelopes have been extended to create further opportunities to create respite. Design principle link, Sharing the Load.
Community noise impacts	Managing noise impacts on communities close to the airport is a key concern. Many stakeholders asked us to avoid overflying specific villages, towns and cities.	Options have been included in each envelope that avoid direct overflight of specific areas of population, including those specifically mentioned, wherever possible. Design principle link, Limiting Disturbance.
Community noise impacts	Routes should be placed in areas where they cause the minimum noise disturbance to communities	Options have been included that aim to follow non residential areas, for example by following the path of major road networks, where possible. Design principle link, Responsive Flight Paths.
Community noise impacts	Consideration should be given to varying the initial departure to minimise noise impact on communities that are particularly close to the airport e.g. through tighter turns.	Opportunities to create respite are featured in various ways through the design, for example, by creating as many design envelopes as possible with varied options within them. In addition, some options have been developed that depart with an offset to potentially provide respite to communities that are particularly close to the runway centreline. Tighter turns were explored, however, no proven noise benefit could be identified. Design principle link, Limiting Disturbance.
Community noise impacts	Consider steeper climb gradients	We know from engagement with our airlines that a 6% climb gradient is suitable for the fleet of aircraft in operation at EMA, which is consistent with our technology design principle which outlines our commitment to support technology that is widely available. However, 6% will be a minimum and it is likely that our designs will allow those aircraft that can climb more quickly to do so. Design principle link, Limiting Disturbance, Embracing Technology.

Phase one feedback – general themes

	Feedback	Response
Housing development	Consideration should be given to new/ proposed housing development within Local Plans.	The CAP1616 process requires us to consider local plans. All known committed local plan allocations and large sites with planning consent will be included as part of the overflight analysis that will form part of the Initial Options Appraisal (IOA). Design principle link, Limiting Disturbance.
Sensitive areas	Green spaces and other cultural sites are important. The location of SSSIs and other sensitive sites should be considered.	The location of sensitive sites as defined in the CAP1616 guidance has been included in our route options maps to provide clarity for stakeholders, options that take account of these have been provided. Sites that fall within the definition of tranquil areas will be identified; and considered as part of the environmental appraisal of the route options in the IOA. This will be extended to heritage sites and parks as well as sites with ecological designation such as Ramsar sites and SSSIs. Design principle link, Noise Sensitive Locations.
Night operations	Operations at night are of particular concern.	At this stage of the process we are required to look at the location of route options only, not how each route might be used as part of the system of routes. This will come later in the process after the completion of Stage 2. However, the Sharing the Load design principle leads us to consider how we can create predictable respite or relief, either through the design (where the routes are) or how they are operated and that would include night operations which we understand is particularly sensitive. Design principle link, Sharing the Load.
Training flights	Training flights are most disruptive, these should be considered as part of airspace change.	Our airspace change relates to routes used by aircraft that join the NATS national route network at 7,000 feet. Training flights do not join this network and therefore do not form part of the airspace change process. Training flights are however considered as part of the Noise Action Plan, more detail on how these are being addressed and the progress that has been made can be found in the pre-read material for phase two engagement.
Environment	Consideration should be given to environmental impacts of any changes.	As part of our design principles evaluation, in line with our Limiting our Footprint principle, and as part of the initial options appraisal, each route option will be assessed to estimate the fuel burned and emissions generated. This will enable a comparison to be made between each option to provide a picture of the comparative environmental impact of each. Design principle link, Limiting our Footprint.

Phase one feedback – general themes

	Feedback	Response
Respite	Creating routes that could provide options for respite for areas that are overflown is important as a means of minimising local noise impacts.	We have created a range of options within each of our design envelopes. In addition, for arrivals we have created options that provide different joining points onto final approach which could create a level of noise relief. ATC vectoring onto final approach will also provide some respite. **Design principle link, Sharing the Load.**
Community Overflight	Managing noise impacts on communities close to the airport is a key concern. Many stakeholders asked us to avoid overflying specific villages, towns and cities.	Options have been included in each envelope that seek to avoid direct overflight of specific areas of population, wherever possible. **Design principle link, Limiting Disturbance.**
Route placement	Routes should be placed in areas where they cause the minimum noise disturbance to communities.	The CAP1616 process requires us to consider routes that respond to all design principles, not just noise. However, options have been included that aim to follow non residential areas, for example by following the path of major road networks, where possible. **Design principle link, Responsive Flight Paths and Sharing the Load.**
Descent gradients	Consider steeper approaches for arrival routes.	Stakeholders asked us to consider steeper descent gradients. There is a trade off between descent gradient and noise, so in line with our design principles Limiting our Footprint and Limiting Disturbance we have designed CDAs from 7,000 feet at a gradient that minimises both noise and fuel burn. However for the final approach, landings in poor weather require the ILS to be calibrated at a fixed gradient in line with UK and international regulations. **Design principle link, Keeping the Skies Safe.**
Housing development	Consideration should be given to new/ proposed housing development within Local Plans.	The CAP1616 process requires us to consider local plans. All known committed local plan allocations and large sites with planning consent will be included as part of the overflight analysis that will form part of the Initial Options Appraisal (IOA). **Design principle link, Limiting Disturbance.**

Phase one feedback – general themes

	Feedback	Response
Sensitive areas	Green spaces and other cultural sites are important. The location of SSSIs and other sensitive sites should be considered.	The location of sensitive sites as defined in the CAP1616 guidance has been included in our route options maps to provide clarity for stakeholders, options that take account of these have been provided. Sites that fall within the definition of tranquil areas will be identified and considered as part of the environmental appraisal of the route options. This will be extended to heritage sites and parks as well as sites with ecological designation such as Ramsar sites and SSSIs. **Design principle link, Noise Sensitive Locations.**
Improving technology	Consider the use of Performance Based Navigation (PBN).	All our route options will be designed to utilise Performance Based Navigation (PBN) technology. This will ensure aircraft fly a more accurate route to and from the ground than currently. **Design principle link, Limiting Disturbance, Embracing Technology.**
Environment impacts	Consideration should be given to environmental impacts of any changes.	As part of our design principles evaluation, in line with our Limiting our Footprint principle, and our initial options appraisal, each route option will be assessed to estimate the fuel burnt and emissions generated. This will enable a comparison to be made between each option to provide a picture of the comparative environmental impact of each. **Design principle link, Limiting our Footprint.**
Runway 09	Consider more direct routes that would give an earlier turn towards base leg on Runway 09 when arriving from the south.	We have created a range of options in the 09 South envelope to provide a turn onto base leg at an earlier point. **Design principles Link: Limiting our Footprint.**

Phase one feedback – general themes

	Feedback	Response
Flight procedures	Consider curved approaches.	We have considered curved approaches for our arrivals, but have not designed these as options for two reasons. Firstly our Embracing Technology design principle requires us to design options to the latest widely available navigation technology. Curved approaches require aircraft technology, which is not widely available, and specialist aircrew training, and for this reason these approaches are not in operation at any UK airport. Secondly, to implement a mix of ILS approaches with only a very limited number of curved approaches would not be aligned to our design principle Meeting Demand. This is because the flow of ILS arrivals would have to be paused to enable a curved approach to safely take place. This would cause inefficiencies by delaying arriving traffic and would increase the incidence of arrival traffic holding while waiting to land. This option has therefore been considered but determined as viable but poor fit with our must have design principles.

East Midlands Airport Future Airspace

Stage 2, Develop and Assess
Q&A – Phase One Engagement

June 2022

MAG East Midlands Airport

The following document contains the questions asked during phase one engagement, together with our response. This document was circulated to all attendees after the engagement sessions together with the presentation materials giving all participants access to the same information and supporting them to provide informed feedback to our Stage 2 engagement.

East Midlands Airport Future Airspace

Wider Airspace Modernisation Strategy

Q. How does this fit into the national project and the benefits that could be derived from cross project sharing?

Our airspace project is part of the Future Airspace Strategy Implementation (FASI) programme which covers over 20 major airports in the UK. Whilst airports are driving their individual projects, the wider programme is being coordinated by an organisation entitled Airspace Change Organising Group (ACOG). ACOG is making sure that airports are fully aligned so that we can all capitalise from the benefits.

In addition, the process requires us to coordinate with other airports and NATS via bilateral meetings. These help us understand each other's designs as they emerge and create designs that make the best use of the finite airspace in the Manchester Terminal Manoeuvring Area (MTMA).

Q. As there is already congestion, how will possible expansion of other nearby airports affect the design and has this been taken into account?

Yes, this work is ongoing, and we have already started to work with both NATS and other airports to understand constraints and identify any issues.

We have asked that NATS ensure that their network arrangements at higher altitude do not constrain operations at EMA or cause our air traffic to suffer delays as a result of traffic from other airports. This is in line with our design principles Meeting Demand and A Joined-up Approach.

Q. Has this modernisation process commenced in other countries? Are there any that face similar challenges in terms of complexity? Have you considered/reviewed the modernisation principles/learnings applied to airspace in other countries?

Some limited airspace modernisation has been achieved in other countries, but the controlled London airspace remains the most complex piece of airspace in Europe. To make our changes, we're required to follow the CAP1616 process and the Airspace Modernisation Strategy (AMS) created by the UK CAA and the Department for Transport. This applies to all airports in the UK.

Our technical team has comprehensive experience of airspace solutions, including experience outside of the UK, and if ideas can be brought into the project (within the rules that apply to UK airspace), these will be considered.

Q. How can we find out about changes to airspace above 7,000 feet please?

The airspace above 7,000 feet, which will include the arrivals holds (or stacks) is the design responsibility of NATS. Their work is being conducted under separate ACPs. Information on all airspace changes can be viewed on the CAA portal at https://airspacechange.caa.co.uk/ with the information relating to the airspace in the vicinity of East Midlands Airport expected to fall under ACP-2019-77.

General information on airspace change can also be found at https://airspacechange.caa.co.uk/about-airspace-change

Q. It would be helpful to understand how any change in the holding area would affect these options and what steps have been taken to ensure that a final decision is coordinated between the two determinations.

In designing the hold or holds, NATS will need to take account of the complex patterns of traffic approaching all of the neighbouring airports as well as ourselves. However, we have already started to work with NATS via bilateral meetings to understand constraints and identify where opportunities and constraints might occur. We have also provided NATS with a list of requirements (based on our design principles) which they need to take account of in designing the upper holding areas. The arrivals options reflect both the application of our design principles and those conversations.

Because of the very broad nature of the initial arrivals envelope (at 7,000ft) we are therefore confident that all are viable options from a design perspective. However, if a change is required by NATS we will evaluate this against our design principles in the same way as the suggestion of any other alternative option.

Coordination and working in partnership is a key part of the national programme of airspace modernisation. This is also a requirement of the CAP1616 process, and whilst airports are driving their individual projects, the wider programme is being coordinated by the Airspace Change Organising Group (ACOG), a government funded agency. ACOG is making sure that airports are coordinating with each other and NATS via bilateral meetings. Demonstrating this engagement to the CAA is a requirement of the CAP1616 process that we are following.

Q. If the existing holding areas may no longer exist, or be changed to another area, will there be consultation with those who live in that area?

We will continue to work with NATS and other airports as we develop our proposals, however, any changes made by NATS will be a separate airspace change proposal, for which they will agree with the CAA an appropriate programme of stakeholder engagement and consultation. Details of the NATS airspace change proposals can be viewed on the CAA portal at https://airspacechange.caa.co.uk/ under the reference ACP-2019-77

In some circumstances, if our proposals were to overlap with those of another airport or NATS, it may be appropriate for us to undertake a degree of joint consultation. At this relatively early stage we have yet to determine if this would be necessary.

Q. Are operators expected to do work to ensure they comply with your requirements -or is it standard ops for them?

The EMA airspace project is one part of a wider project of airspace change across the whole UK. Changes that affect airline operating procedures such as climb gradient will (as closely as possible) be aligned with other airports. As part of the process, we'll be working with the airlines that operate in and out of EMA to ensure the changes are as seamless as possible and once implemented, these procedures will become standard operations.

Q. I do think the process is quite lengthy… Is it due to the fact that designs have to be combined across the UK into one overarching airspace design?

As this is a national programme that all major airports are required to take part in, we need to work together with neighbouring airports and NATS (who are responsible for modernising upper airspace) to ensure the overall airspace design is as efficient as it can be. In addition, we are engaging at an early stage so that stakeholders have the opportunity to influence how our designs develop.

Q. How confident are you that the project will run to the timelines above? Is there any contingency built into the project?
We are required to align with the overall Masterplan for airspace change. This is the coordinated implementation plan for the delivery of the national programme which is the responsibility of the Airspace Change Organising Group (ACOG). This means that some of the later Stages of our programme are subject to change.

Q. Please explain 'Respite'?

Respite is either a reduction in the number of aircraft or alternation of departure routes to give residents a break from aircraft noise. We could switch on or switch off routes to give communities periods of predictable respite and we need stakeholder feedback to understand how respite can be implemented to benefit residents. The 'alternative' envelopes could be used in conjunction with a regular envelope, switching the envelopes on or off depending on the time of day or day of the week.

Current operations

Q. What % of departures use each route?

In general, the majority of traffic uses the southbound Daventry SID. This is especially marked during the peak departure period 06:00-08:00 where almost 90% of aircraft are departing to the South

Based on a busy 2019 week schedule the destinations are located as follows:

- 72% South
- 4% West
- 18% North
- 6% East

Q. Do the existing noise monitoring reports of Cole Jarman reveal the climb gradients of the aircraft in question?

No, they do not measure the climb gradients, they do show heights of aircraft at specific locations, which is included in their reports. These reports show that aircraft height varies, which can be due to the performance of different aircraft types, whether air traffic control has given further climb instructions or held an aircraft at a specific level, within the constraints of the current airspace.

Q. Do you have ILS/Final approach minimum join points either for noise abatement or safety?

The ILS joining points are primarily designed for safety. Aircraft using guidance from the ILS require a minimum period of stable flight prior to landing.

Q. Why is the Noise Preferential Route (NPR) 2.4 kilometres wide? With the new navigation aids, flight paths can be far more accurate, so can the new NPRs be reduced in width?
Currently, the SIDs rely on ground based navigational aids which means they do not follow a precise "railway line in the sky" due to variations in the performance of individual aircraft. The NPRs allow for a tolerance either side of the SID. As part of this process, the transition to Performance Based Navigation (PBN) will, as you say, mean that aircraft on each route would be able to follow the route more accurately.

Q. Are these flight lines for all planes or just passenger not including cargo?
Passenger and cargo aircraft.

Q. Does this process assume an increase in aircraft movements, and if so what kind of increase are you looking at?
We are not expecting to return to 2019 traffic levels until at least 2023-24. The airport is intending to grow its business in the future, but any growth must be in line with local planning constraints. The Future Airspace process is not about forecasting growth. Any future airport growth forecasts will be dealt with within the Sustainable Development Plan process.

Q. The East Midlands has a large amount of private flying lower level traffic passing north/south on the East of EMA. In the redesign of these newer envelopes will the 6% climb gradient still mean that there will be flights permitted underneath the East Midlands airspace corridors?
Absolutely, it is very important that GA operations continue in the future. GA access will continue as it does today.

Q. On easterly take offs it did look like a significant number of aircraft were not in the corridors.
Over the last few years, we have noticed magnetic variation has had an impact on the positioning of departing aircraft when operating on the runway 09TRENT SID. To correct this heading to align with the position of the NPR, this degree of change in the ground track of departing aircraft would be classed as an airspace change, so this will be reviewed through the Airspace Change Programme. With the introduction of Performance Based Navigation (PBN) the expectation is that track keeping accuracy will increase.

Q. I do question why so many cargo flights seem to depart at same or similar times in the night, so with more than one aircraft overhead it adds to the noise disturbances?
Cargo operations operate on different schedules to passenger flights to enable the timely arrival of freight to their destination. The main cargo airlines operating at EMA operate using an express freight model. This means that they provide an express next-day delivery service. This is an integrated door-to-door service of time-definite shipments across the world. The type of goods that are transported by the express freight operators are typically small individual packages that are high-value and low weight, such as electrical components, small machine parts, documents, pharmaceutical and medical products. These are goods that need to be transported quickly, and a key part of their business models to bring speed and certainty of collection and delivery to their customers. Because EMA is a cargo hub, aircraft operate in waves, with arriving aircraft landing then being unloaded and the goods then transferred to the outbound aircraft. Therefore, cargo flights tend to cluster into arrivals and departures.

Q. Where can we view the noise action plan?
https://www.eastmidlandsairport.com/community/local-environmental-impacts/noise/noise-action-plan/

Q. Why three NPRs from runway 09_POLE is hardly ever used?
Runway 09 is in operation for approximately 30% of the time due to the prevailing wind direction in the UK. The 09 POL departure is used by airlines and operators infrequently due to its limited connection to the NATS network. This particular connection can only be used by aircraft flying to destinations such as Scotland or Scandinavia. That is why our presentation did not show aircraft tracks within the 09 POL NPR.

Q. Why not have a single NPR on 09 heading north, which is in the middle of the current two, and will ultimately move a lot of noisy traffic further north of the built up areas under 09TRENT NPR?
Current NPRs were designed many years ago. East Midlands Airport can review these, but any alteration would need agreement with the local communities and any amendment to flightpaths below 7,000ft would require a full Airspace Change Proposal authorised by the CAA. We are at a very early stage in our airspace design, the envelopes we shared can be amended and we need stakeholder feedback to help us create a solution that works for all.

Q. Why haven't EMA shown the typical usage of the current NPRs?
The presentation does show radar recordings from a typical 24hr period during our last busy year of operation 2019.

Departure envelopes

Q. Is the climb rate for departing aircraft a constant gradient or does it take into account the variable gradient that aircraft fly?
Our initial design envelopes are designed at a constant 6% climb gradient. However, there are discussions ongoing with NATS to understand how much this can vary and the impact on the network if an aircraft climbs faster than the designed gradient and reaches 7,000ft earlier. This will be incorporated into later designs that we produce through the process for consultation.

Q. What height are you considering as the minimum turn height during departures?
Our design principles require us to align with UK and international rules including International Civil Aviation Organisation's (ICAO) PANS OPS 8168, including the point at which aircraft can make their first turn. The UK rules adapted from ICAO are for no turns below 500ft AGL (above ground level), 848ft AMSL (above mean sea level).

Q. Are the heights you mention above sea level? What account do you take of height above the land you fly over?
Yes, all heights are above mean sea level. The PANS-OPS 8168 rules also give guidance for terrain clearance.

Q. Will operators be given guidance on engine out departure procedures. It's not something we generally get given but I'm curious about it?
In the same way as missed approach procedures, this is not something we are able to consider yet because we are too early in our designs. These will be incorporated into our final designs and engine out procedures will form part of the safety case for the new airspace and Standard Instrument Departure (SID).

Q. Could you please explain at some point the relevance of fuel burn to the considerations i.e. height versus consumption?
In general terms, aircraft engines operate more efficiently at higher altitudes. Therefore, the quicker aircraft can get to a cruise altitude, the lower the fuel burn is likely to be across the total flight and hence lower total CO2 emissions. There is a limit on the optimal climb gradient, and we are working with airlines to understand the impact to their operations and fuel burn of the different design options. At this stage, our fleet survey has given us important base information to inform our designs.

Q. Any idea at present what the percentage split of traffic may be on the use of the various envelopes?
No not as yet. These are just conceptual envelopes as to where routes could be. As the designs develop, and the options start to narrow down we will be in a better position to describe which flights could use which routes.

Q. What are the climb gradients typically of the older cargo aircraft and the heavies?
From the fleet survey, all the cargo operators that responded said they could achieve 6%

Q. Repeated departures over the same location are one of the most annoying noise issues. If there are several departure routes available, can the procedure include that they are used in sequence to spread the noise disturbance?

Yes, the use of multiple routes to provide noise relief or predictable noise respite sits within our design principles. This could be via multiple routes within the same envelope (subject to the rules that apply to the design of PBN routes) or alternatively through other types of respite such as different time periods. How these would operate will form part of the consultation within the later stages of this process.

Q. With PBN and its greater accuracy do you have the ability to use several narrow routes within the wider corridor?
Yes, that is a possibility. This will be however, subject to ensuring we are aligned with the rules that apply to the design and separation of PBN routes. If that is something that is supported, we will look at options for doing that in the work on route design.

Q. Considering current aircraft types, is the 6% cast in stone?
No; this isn't cast in stone. But 6% is the climb gradient that airlines advised they could achieve within our fleet survey. It is also likely to be a minimum requirement from the NATS network.
However, as we continue to develop our designs, there may be scope to develop options which climb more quickly as long as these options align with our design principles.

Q. Do you have maps for planes taking off in both directions as this is likely to look different as they climb quicker?
We can share this presentation with you afterwards. It includes heat maps which highlight current departures from runway 27 and 09.

Q. What overall percentage of departures are projected to employ the Alternative routings?
At this stage we do not know. These envelopes are all conceptual. The loading of envelopes would depend on the adoption of respite as a concept which local residents and stakeholders agree with.

Q. The alternative routes are important to spread the load and hopefully lead to fewer noise issues, will this also mean that aircraft can take off at shorter intervals, or do other factors such as a single runway limit this?
No, the alternative envelopes are designed for the purpose of providing an opportunity to create respite for the corresponding route by splitting traffic going in that direction (that could be by time of day or days of the week for example).

Arrival envelopes

Q. Can I confirm your arrivals CONOPS will include PBN transitions to the final approach? i.e. no radar vectoring.
Yes, our current assumption is that from 7,000ft aircraft will be operating on PBN routes rather than being vectored by air traffic control. This aligns with the design principles on policy and technology, but the final concepts and designs will be dependent on the results of these discussions and consultation in Stage 3.

Q. It was stated in the presentation that arrivals will be PBN routes - does this give any flexibility in the positioning of the approach path.
Yes, it does, however EMA intend to continue to operate ILS approaches for 27 and 09. PANS-OPS rules state the minimum joining altitude for ILS approaches is 2000ft.

Q. For CDAs, are you expecting pilots to manually alter their rate of descent to comply with the CDA or, will it be purely an FMS driven procedure without intervention?
At this stage it is too early to say for sure. Detailed and rigorous simulation and testing must be conducted on any proposed options including scenarios where descent profiles are 'hard coded' into arrival transitions. When considering CDAs, we will also be taking guidance from our airlines, Air Traffic Control (ATC) providers and stakeholders as to what works best for them. Due to the requirement for variable

arrival spacing (for both wake turbulence and runway efficiency reasons) some limited ATC vectoring may however still be necessary.

Q. How is the missed approach routing considered in the new proposals?
Because these are only design envelopes to illustrate where aircraft could fly there are no supporting routes that sit behind these. As a consequence, the missed approach procedures (MAPs) have not yet been developed. The need for MAPs will always be necessary and they will be incorporated in the designs as we move through the airspace change process.

Q. Why does the stack have to be on your 7,000ft line? Surely it could be at any height and out at sea and aircraft brought from there using CDA from a higher point?
At this stage we anticipate holding stacks will be required above 7,000ft and this is where the discussions with NATS come in. In designing the hold, NATS will need to take account of the complex patterns of traffic approaching neighbouring airports as well as ourselves.

Q. I didn't hear if you intended to change the standard 3% glide slope for arrivals?
We are currently designing to a 3-degree glideslope, which is the same as is used today at EMA and most UK airports. During bad weather or low visibility aircraft need guidance from the Instrument Landing System (ILS) which is referred to as Category three (CATIII) operations. In the UK the CAA only permit CATIII operations with a 3-degree glideslope.

Q. Won't the respite routes impact areas that have arrivals?
We must consider our arrivals when designing our departures. Any arrival routes will be designed with a safe minimum distance from our departures to minimise any interactions.

Q. These alternate routes seem to bring aircraft close to the areas shown earlier as restricted areas - ie the village of Diseworth!
All the routes have been designed around the constraints and considerations set out at the beginning of the presentation. We are seeking feedback from our stakeholders to understand whether respite is something that can deliver benefits to our communities.

Q. Your graph of the CDA agrees with my reality, "one in three", which is 7,000 feet at 21 miles - yet you have specified 25-32 miles for your Arrivals Design Area.
The CDAs we are investigating operate within a range of descent angles between 3.5% and 5.25%. The policy guidance from ICAO and the CAA suggest that these are the optimal angles for descent. We also need to consider the Transition Altitude of 6,000ft. In effect, we need to design arrival routes from the first useable Flight Level that exists above the equivalent 7,000ft position. In extreme pressures this could mean a starting point of Flight Level 90. Using the angles we mentioned previously we calculate the distance from touchdown and therefore the largest possible area in order to create the staring positions for our arrival transitions from either 7,000ft or FL70- FL90.

Q. The Birmingham Airport area seems to have undue prominence - no Birmingham traffic will be at 7,000 feet overhead, so that would surely be an acceptable approach direction for EMA inbounds about to start a 21or 25mile descent?
Traffic arriving into Birmingham from the south, landing on Runway 15, may be at 7,000ft as it passes abeam the airfield descending into the radar circuit. This is especially significant if Birmingham ATC are vectoring the inbound for a left-hand circuit.

Q. Straight-in descent from the East for RW 27 always used to be an option, using the uncontrolled airspace with a radar traffic avoidance service backed up by TCAS for safety, it was especially available at night with little military or GA traffic. Has this option been considered?

We are exploring new network connectivity to the east of EMA. NATS are conducting design work to establish the viability of new network connections in this area, but any new permanent routes could only be established if NATS were able to reclassify uncontrolled airspace to the east.

Q. Are Birmingham Airport's arrival envelopes likely to change and would this have an impact on what EMA does?
Birmingham Airport are slightly different as they completed their airspace change in 2019 so their arrival points are not due to change as part of this process. This is why we have considered their airspace as a constraint in our process.

Q. Surely there's an interaction between Birmingham's CDA radius and EMA's to the southwest of EMA, will this be a constraint?
The CDA area takes account of the constraints which is why there is an area missing to the south west.

Design considerations

Q. Are adverse weather conditions or security concerns at EMA considered and the need to divert aircraft to other airports?
All procedures are designed to standard temperature and pressure criteria that all aircraft are capable of flying. To ensure the final options are flyable under a range of weather conditions, the new procedures will need to undergo simulation under a range of weather (temperature and wind) conditions, although this will not take place until much later in the process.

With regards to diversions, these are a separate consideration from the design of these options. Diversion procedures will be put in place and these flights will be managed on a case-by-case basis, by air traffic control, as each situation is different and needs to be handled safely.

Q. How will you address the safety of airspace users not inbound to/outbound from EMA?
Safety is critical when designing procedures. We have a safety assurance process that is already running within the project. As part of our final submission, the CAA require us to produce a full safety case for the airspace change which will detail the safety requirements we need to meet, how we've met them, and the mitigations and assurances we will put in place once operational. This safety case covers the aircraft in and out of EMA and also provides protection to aircraft transiting EMA airspace, which are not taking off or landing with us. This safety case needs to be approved by the CAA before the new routes go live.

Q. Has any consideration been given to the HAP for Helicopter departures?
Our design principles mean we will ensure access for helicopter operations. Helicopters generally operate under visual flight rules (VFR) and feedback during Stage 1 of the airspace change process (Design Principles) was to maintain VFR operations.

Q. Can you send us a link to the CONOPs document?
The CONOPS is a technical document intended for an expert reader. It provides the airspace designers with a brief to work from. It is driven primarily by a description of the current operations (and the limitations with the current route network), the design principles, and the information from the fleet survey. As such, we have shared the majority of the information contained within the CONOPS with you as part of these sessions. In sharing the information, we have been able to make it more accessible. Some aspects of the CONOPS, particularly aspects of the aircraft fleet survey, are provided to us as commercial in confidence, so cannot be disclosed, however, we could provide a redacted copy of the CONOPS, with this information removed. If you think this would be helpful, please get in touch.

Q. Is there any understanding (and if so, what) of the impact of the new emission control?

The current process requires us to give priority to noise below 7,000ft. However, we understand the importance of fuel burn and emissions which is why these are included within the Limiting Our Footprint design principle and our options are seeking to minimise these.

Airport emissions are a complex subject and are a product not only of airspace design, but also airline fleets and the ground transportation using the airport. However, as we are only addressing airspace and the fact that the new controls have only recently been announced, it's not yet clear as to whether these are expected to be applied to airspace design.

Q. What is the understanding of the future demand for travel from EMA airport?

The UK travel industry has been badly impacted by the global pandemic and the last two years has seen a significant downturn in air travel. However, we believe that the situation will stabilise and we expect to fully recover over the next few years.

Q. What system are you operating under, is it demand, or plan led?

Our design principle Meeting Demand states that our "New flight paths must ensure the continuation of services offered today and meet any future demand, in keeping with local and national planning policy, and the Government's policy on 'making best use' of existing runway capacity."

So, the airport will continue to react to market demand from our customers but will plan for an airspace system that is able to accommodate all of the aircraft movements that are permitted.

Q. Do you have in your modelling the effect created and the noise and visual impact?

No, not as yet, as we are so early in the process. At present all we are asking is whether you agree that we have applied the design principles correctly. At this stage we are just sharing envelopes which are 4½ miles wide at 7000ft, so there is the opportunity to create a route (or perhaps multiple routes) within that envelope.

We will start to model noise impact later in the process (towards the end of stage 2) once we have some defined route options (i.e., 'lines on a map'). Full noise analysis comes as we move into public consultation in Stage 3 next year.

Q. What was the biggest change made to the original design after considering the CONOPS criteria?

The CONOPS didn't drive any changes to the designs, rather it responded to the information in the fleet survey and the design principles. It is the design principles that influence our options and our choices, whereas the CONOPS interprets and supports the design principles.

Q. What is the consequence of landing or taking off with a tail wind? Can technology reduce the associated risks to make them acceptable?

The amount of tailwind is governed by safety regulations (which are developed in association with aircraft manufacturers). All aircraft fly as a result of airspeed, i.e., the speed of the air over the wings. The consequence of a tailwind take off is that the aircraft take off run will be longer and the climb out profile is likely to be shallower as the airflow over the wings will be less than if flying into wind. This would mean that the aircraft would climb more slowly.

For landings, the impact is similar; aircraft will have to fly faster on final approach and their speed on touchdown would be higher. This would extend the landing run and has safety implications on touchdown hence the limits imposed by regulations.

Q. What is the contingency plan in case satellite systems go offline e.g., natural malfunction, solar interference, cyber-attack, etc.? What impact would these have on the design principles i.e. no ground based navigational aids?

The contingency procedures covering a failure of the satellite system will all be contained within the safety case that supports the implementation of our new procedures. This safety case is a requirement within the CAP1616 process and the CAA as the regulator will expect this as part of our final submission.

However, in basic terms there are two fallback systems; one is the use of the inertial navigation system on the aircraft which is not satellite dependent, and the other is the monitoring and vectoring of aircraft by ATC. Whilst vectoring will not be routinely used when all systems are working normally, ATC monitoring of all flights will remain as a means ensuring safe operations.

Q. How many of the initial options envelopes do you see becoming a reality?

All of the options envelopes are viable, and routes can be designed within all of them. The next stage in the process is to start designing route options (lines on a map) within these envelopes.

The number of final route options that become a reality will then depend on how well different options fit our design principles, the views we receive at this stage of the process and in public consultation in Stage 3. However, we have deliberately created a set of options that provides as much flexibility as possible.

Q. Would any planned housing developments place any further constraints with regard to noise? Also, could any as yet unplanned schemes have an impact in the future?

As part of the CAP1616 process that we're following, there is a requirement for us to factor the content of local plans into our route development work at Stage 2. We will therefore be liaising with councils that fall within the initial options envelopes developed as part of our engagement at this stage to understand any additional factors of this nature that should be considered. This dialogue will continue as we move through the process beyond Stage 2 so that local councils can in turn factor in any eventual route changes that may influence their future local plans.

Q. Are you taking into account all the potential new housing developments around the area?

Yes, the process requires us to take into account all committed housing and allocated sites within our route development and assessment activities.

Q. Please can you confirm that you have considered the airfield at Husbands Bosworth, Leics. This is used by a gliding club. There is also a gliding club at Saltby near Melton Mowbray, both clubs would appreciate being involved in the discussions.

Yes, we have. Both airfields exist outside controlled airspace and are located some distance away from EMA. At this stage, we consider that any proposed changes to our operations would not impact the two airfields you mention.

Q. Is there a noise prediction chart comparing the current noise situation with the future changes impact?

Noise modelling forms part of the airspace change process. It is too early for us to conduct this activity, but we will be assessing routes in a full options appraisal during Stage 3.

Q. Do your routes aim to reduce contrail formation which contribute to global heating?

The design of our routes is only up to 7,000ft and this is well below the zone within which contrails are formed, so we're unable to address that.

Q. Are you planning to redraw your CTA's surrounding EMA?

Our design principle, "Fit for the Future" states that 'Flight paths should be designed to futureproof our airspace and cannot be constrained by existing arrangements'.

In redesigning both the departure and arrival routes this gives us an opportunity to assess the airspace we need and put forward suggestions to change the boundaries, either laterally or vertically if it is both safe and practical to do so.

The CAA require any change to dimensions to be subject to safety reviews and an associated safety case and this would be expected to form part of our proposals for the final solution at Stage 4.

Q. Why are the beacons being taken away in a few years' time?

The current navigation beacons (also known as DVORs) were established to support aircraft navigation before the development of satellite-based systems. Aircraft technology is now significantly more advanced and in addition many of the beacons are no longer supportable.

In addition, UK and European legislation requires a transition of aircraft flight procedures towards a Performance-Based Navigation (PBN) environment which does not require DVORs. A number are now being withdrawn as part of a UK wide programme that was agreed in 2009 by the CAA as the regulator. Most significantly for East Midlands Airport, this includes the withdrawal of the Trent and Daventry DVOR beacons which are required for a number of our departure and arrival routes.

Q. When new technology is introduced and the new airspace rules apply, will there be older classes of aircraft that can no longer use EMA?

Airlines and operators with modern navigation systems will form the vast majority of aircraft operating to and from EMA.

Q. Where is DSA on the map?

DSA is northeast of EMA and exists beyond the Uncontrolled airspace sector.

Q. What would be the height of climbing aircraft when over Loughborough and Derby?

Aircraft would be between 3,000 to 5,000 feet.

Q. 'which align with one or more of our design principles.' -- but which design principles? Just some of the design principles? But not all?

As a minimum any new route options MUST align with, Keeping the skies safe, A joined up approach and Meeting demand design principles.

Q. Have you taken account of location of tranquil places/environmentally sensitive sites?

Our design principle Noise Sensitive Locations requires us to take note of areas such as SSSIs in our designs.

Q. How wide will the corridors be and who determines where the plane is at any given point in the flight?

The design envelopes start at the runway and gradually widen to be approximately 4.5 miles wide when they reach 7,000ft. The vertical position of the flight at any given point is determined by the climb gradient, and the horizontal is dictated by the placement of "waypoints" that create the path

for the aircraft to fly along. Both of these will be described in the SID and which is coded into the aircraft flight management system in a similar way to a car sat-nav.

Q. With climate change and taking into account prevailing winds are you able to review the % use of each runway end and would this impact on your potential new departure/arrival profiles in any demonstrable or positive way?

This is really dictated by the prevailing winds, which in the UK are more from the south-west. There are safety rules and regulations that mean aircraft have to land and take off into wind so unfortunately, we cannot make large scale changes on this.

Q. The UK and local council as well as businesses are obliged to comply with tackling climate change. You spoke of the technology airlines have on board to be able to safely navigate and manage the new proposed routes. What measures have you taken to ensure the airport, and the aviation industry that serves the airport, comply and invest in increased research and development into zero carbon energy options for aviation?

MAG has a long standing commitment to carbon neutrality and details of which can be found in the current MAG CSR strategy here: MAG CSR Strategy 2020

As a group, all our airports are carbon neutral, and we are now working to reduce remaining emissions so that we can become net zero. More recently, MAG has launched an initiative that is offering five years free landing fees to the first electric aircraft operating at one of our airports. MAG is also supporting research as a founding member of the UK Government's Jet Zero Council.

This is a much wider topic than can be addressed solely by this project, but we are able to make contributions to achieve the aims and the objectives of the strategy. In that respect, our design principles require us to consider both noise and CO_2 emissions and as we move forward with designs, we will undertake analysis that demonstrates the potential benefits in both these areas.

Q. How do you account for CO_2 emissions for arriving and departing aircraft?

Once we have more detailed designs, we will be conducting computer simulations that will provide some metrics on the potential fuel burn which can be translated into CO2 emissions for the various design options. This analysis will be contained in our Stage 3 public consultation.

Q. Do you have an average decibel for aircraft arriving and departing at each 1000ft interval? If so could you issue a sound map for each option?

We do not at the moment as these are only design envelopes that illustrate where aircraft might fly. Once we have more detailed designs, noise contours will be produced to help ascertain the pros and cons of the options being considered. This analysis will be contained in our Stage 3 public consultation and is a requirement of the CAP1616 process.

Q. Do the design principles address air quality impacts?

Our design principle 'Limiting Our Footprint' requires us to seek to implement flight paths that limit and, where possible, reduce emissions.

The CAA CAP1616 process provides guidance on this aspect, and we are only required to produce information on local air quality impacts where there is the possibility of pollutants breaching legal limits following the implementation of an airspace change. The CAA considers that this is only likely to occur at low levels and we are therefore only required to analyse air quality impacts below 1,000 feet.

Q. Does your research take into account predicted changes in aircraft type and number of movements in future years e.g., larger cargo, long haul /more short haul aircraft and would this impact on your selection of route changes given aircraft performance differences?
We have information on future aircraft types and avionics capabilities through our work with airlines on the Fleet Equipage Survey which has helped us in our concept design. This will be reviewed as necessary, as the project progresses.

Q. Is anything being done about the age of the planes being used by the freight airlines - this seems to be the cause for most complaint locally as the planes are older and extremely noisy.
Our airspace modernisation programme has no impact on the aircraft operators who wish to use East Midlands Airport. Older noisy aircraft are subject to financial penalties if they operate to and from our airport and exceed local noise limits. We will continue to work with airlines throughout the process to encourage the use of more modern aircraft as part of the Noise Action Plan.

Q. Are there any new road link proposals yet to allow the traffic to access the airport or will you be using existing routes?
Road design (and the provision of any other airport infrastructure) is out of scope of this project. Our work will only be addressing aircraft routes in and out of the airport.

Q. What are the safety implications in the event of an aircraft having to abort a landing and regain altitude into the path of approaching / crossing aircraft?
All operating procedures for the future airspace, including those related to this type of event will require a full safety analysis. This safety analysis is a requirement of both the airport and ATC and will result in a Safety Case that is a deliverable under the CAP1616 process. This safety case will consider the event, and then detail any actions or mitigation required to ensure safety is maintained. This will translate into the operating procedures used by ATC and the airlines.

However, because we are only at an early stage in the design process there is not yet enough detail to start this work in any detail, but it will be developed as we progress through the process.

Q. Will noise continue to go beyond the flight paths with new routes?

By applying the principles of performance-based navigation (PBN), the expectation is that track keeping accuracy will increase.

Q. Have you considered all elements such as noise at this stage?

We have considered all the design principles, which include noise impacts, however at this stage it is too early for us to undertake any detailed analysis, this will come later in the process.

Over the summer, we will be developing routes and once we have these specific proposals, we will assess how they align with the design principles. The results of this will be shared and will ultimately inform which options are short-listed and taken forward.

Q. What element of vectoring after 3-4000 feet is being assumed?

Our Embracing Technology and Meeting Demand design principles covers the need for us to provide 'systemised' airspace which will mean that ATC vectoring in the future should be minimised. However, until we have some detailed route options it is difficult to state what amount of vectoring will be required for each option.

On departures the assumption is that it should be minimal. For arrivals, the need for arriving aircraft to be spaced according to their wake turbulence category may require some ATC vectoring to both ensure we align with our design principle on Demand and Safety and meet the rules and regulations relating to final approach spacing.

Q. Is there or will there be any analysis between the options on the effect on overall flight distances and the related environmental/energy effects.

Yes, we will evaluate all of our routes against the design principles. Fuel efficiency is supported by the design principle that relates to Balance DP and this also covers CO_2 and this will form part of our analysis.

Q. Should all (suitable) planes try and use the 6-mile limit as the main point they start their descent / line up for landing? It seems planes currently start this process some 9 -10 miles away which affects several villages that it may not need to.

The ILS joining points are primarily designed for safety. Aircraft using guidance from the ILS require a minimum period of stable flight prior to landing. As part of the design process, we are investigating various joining points that can deliver benefits and align to our design principles.

During busy periods, when large numbers of aircraft arrive simultaneously, air traffic control may need to vary the point at which they turn aircraft onto final approach. This is a normal procedure called 'vectoring'. It takes place at all airports and is partly to avoid delays (which would result in aircraft burning more fuel) and to ensure the legal distance behind other aircraft on final approach, also known as wake turbulence separation.

Under the new airspace, much of this vectoring will reduce, although some may still be required in order to ensure compliance with these wake turbulence rules, which in turn ensure safe operations.

Q. Why should continuous descent be more fuel efficient than keeping the aircraft at high altitude for longer (where it burns less fuel) and going for a more rapid descent, which would mean fewer villages are affected by the noise?

The process of descending aircraft in busy airspace is complex. Air traffic control (ATC) need to descend aircraft to certain heights that ensure they remain within controlled airspace, whilst also maintaining a safe distance from other air traffic. This means that it is currently seldom possible to provide a CDA from cruising levels unless it is quiet.

The scope of the East Midlands Airport ACP concerns flights below 7,000ft. As aircraft descend below this altitude the trajectory of the Continuous Descent Approach is calculated by the aircraft to provide the most fuel-efficient profile. This generally means without significant engine thrust and it is this that reduces the fuel burn.

In terms of steeper descents, there are recommendations applied by the International Civil Aviation Organisation (ICAO) and overseen by the UK Civil Aviation Authority (CAA) which advise on descent gradients. These cover both the initial approach and the final approach phase (when the aircraft is in line with the runway) where the standard is 3 degrees.

In line with our design principle on Safety we have said we will comply with national and international industry standards, and the arrivals design envelopes we are outlining in this phase are in line with these recommendations.

That said, a more rapid descent does not necessarily equate to less noise. In fact, in some cases a steeper initial descent gradient may increase noise on the ground due to the need to apply speed brakes to create a safe and stable approach. There are examples of significantly steeper final approaches at some airports, London City being an example, but these procedures are limited to

certain types of aircraft and are not flyable by the majority of the aircraft that fly into EMA. Because they are not widely useable, the implementation of these procedures would not align with our design principle on Technology.

Q. Keeping the noise and pollution measures down is a great significance to local people, but would this impact much of local historical, environment, and other places of interest. Who is responsible in deciding which aircraft can land quicker or slower than others?

With regards to the decision on landing preference, this is made by air traffic control and this involves a consideration of the aircraft position, approach speed and size. However, in general terms, aircraft are landed on a first come first served basis and would not usually be delayed to give preference to another flight.

Q. As far as I can recall, there has been no mention of night flights. I wonder whether they would be spread over all the options identified or restricted to certain design envelopes?

The options we have developed so far have been created to identify the broad areas where we could create routes. At this relatively early stage, we have not considered how each route might be used as part of the system of routes that we operate. We can only start to do this once we have a more detailed idea of actual routes, which will come later in the process (at Stage 2 and into Stage 3).

Q. What is a typical noise level (on the ground) for an aircraft at 7,000 feet?

This depends on a number of factors including the aircraft type, the engines and the weight.

We will start to model noise impact later in the process (towards the end of Stage 2) once we have some defined route options that we can analyse. Full noise analysis comes as we move into public consultation in Stage 3 next year.

Q. Reducing noise nuisance to the occupants of MoJ sites i.e., prisons, should be taken into account. Excessive noise can significantly impact prisoner behaviour. Gartree and Leicester Prisons should be consulted.

Noise modelling forms part of the airspace change process. It is too early for us to conduct this activity, but we will be assessing routes in a full options appraisal during Stage 3.

Q. Is there any possibility that the areas that have been avoided because of potential conflict with other airports may be freed up with their airspace change activity?

Yes, that is a possibility. We are already talking to NATS to identify how any new route options may integrate with flows of traffic to and from adjacent airports. Birmingham airport has recently completed their own airspace change and will not be required to change their flightpaths as part of the wider airspace modernisation programme.

Q. In developing the design envelopes what consideration has been given to the impact on night flights

At present we are not looking at the "how" we operate but just whether we have created envelopes that align with the agreed design principles. Therefore, we have not looked at night-time operations specifically.

That said, our 'Sharing the Load' design principle leads us to consider how we can create predictable respite or relief, either through the design (where the routes are) or how they are operated and that would include night operations.

Q. Has any estimate been made of the number of people under new flightpaths? Secondly, does noise relief take priority over fuel efficiency?

At this stage it is not possible to make an estimate of the people being affected as the envelopes are so wide. However, once we start to get more detail, yes, we will provide that as we will have more specific routes to analyse. With regards to noise versus fuel, the Government rules require us to priorities noise over fuel burn in our designs below 4,000ft.

Both of these aspects will be considered in our design principles evaluation which will consider all design principles equally. We are currently developing the design principles evaluation material which will provided as part of our Stage 2 submission to the CAA.

Q. Will PBN allow for multiple routes thus giving respite

Yes, there is the opportunity to provide multiple routes within the design envelopes, subject to ensuring we are aligned with the rules that apply to the design of PBN routes.

Q. You mentioned that your ACP for EMA will link into other airports and their ACP considerations. Have you therefore considered (or will be considering) the ACP for the Red Arrows at RAF Syerston in your design principles?

Yes, we must consider other airspace users including the changes to RAF Syerston. When we look at route options later in the process then any potential interactions with other ACPs must be addressed. We are very early in the whole process, and we must co-ordinate with Military airspace users before our proposed routes can be assessed.

Q. Looking at your timeline for implementation, will we have to wait until '26 for RNAV SID's at EMA? As you mentioned, the capabilities of our aircraft are not being utilized with conventional SIDS. Thank you.

Any changes must align with the Airspace Modernisation Programme. The AMS dictates the speed at which any changes can be implemented.

Q. Area H did not show for long. Interested in knowing more, please.

Area H was due east of EMA and could be used to connect to the NATS network in the future. This would only be possible for very limited times of the day and only if NATS could consider a change to the classification of airspace out to the east. Any flights in area H would only be possible IF NATS are able to accommodate new flights in this direction. This means that NATS would have to change the airspace out to the east into 'Controlled Airspace'. Although unlikely, NATS are conducting further work to establish if this airspace classification change is possible within the timescales for East Midlands.

Q. Do these routes include TRAINING flights?

I'm afraid not. Training flights are out of scope for this project. They are conducted visually close to the airport below 3,000 feet and are not part of our airspace design. Pilots under training are required to practice 'hand flying' their aircraft in circuits and practice multiple landings and take-offs. Our airspace design process relates to routes used by aircraft to 'plug in' to the NATS national route network at 7,000 feet. Training flights do not join this network and therefore do not form part of the airspace change process. However, they are considered as part of the airport's Noise Action Plan. Noise Action Plan | East Midlands Airport

Q. North and northwest departure routes overflies parts of Nottingham and Derby has a sector/envelope that falls between them, has this been considered in detail?

Yes, it has. At the moment we believe this sector will be required to connect our arrival aircraft from the NATS network - this may change in the future, if so, we will reassess the envelopes.

Q. Do impacts take account of new / proposed housing e.g. Fairham / Clifton?

Re-housing development, yes, the process requires us to take into account all committed housing and allocated sites within our route development and assessment activities.

Q. Do designs take account of helicopters from Costock?

Our design principles mean we will ensure access for helicopter operations. Helicopters generally operate under visual flight rules (VFR) and feedback during Stage 1 of the airspace change process (Design Principles) was to maintain VFR operations.

Q. What defines when alternative routes are used and for how long?

We are seeking feedback from our stakeholders to help us understand how we should interpret respite and how/when we could implement respite routes.

Q. Training flights cause the most annoyance to local people - why are these not included? Are there any controls on such flights - duration / time of day / days of week?

There are controls in place for circuit training at EMA. These are outlined in our Noise Action Plan.

Noise Action Plan | East Midlands Airport

Q. Are there air corridors of approach from North, South, east and west of UK towards East Midlands above 7000ft? for aircraft landing at EMA.

Yes indeed. Above 7,000 feet is a network of flightpaths operated by NATS. Our routes must 'plug in' to these routes in the future. NATS are also making changes to this network therefore we must work together to ensure the new network works for all of us.

Q. Are there any changes to holding areas?

Maybe, the holding areas operate mainly above 7,000 ft which falls under the responsibility of NATS. Together we are exploring new holding locations which align with our Design Principles.

Q. Can respite include TRAINING flights / and routes they take? Need very clear rules on respite that we can share.

Training flights are out of scope for this project. They are conducted visually close to the airport below 3,000 feet and are not part of our airspace design. Pilots under training are required to practice 'hand flying' their aircraft in circuits and practice multiple landings and take-offs. Our airspace design process relates to routes used by aircraft to 'plug in' to the NATS national route network at 7,000 feet. Training flights do not join this network and therefore do not form part of the airspace change process. However, they are considered as part of the airport's Noise Action Plan.
Noise Action Plan | East Midlands Airport

Q. Leicestershire County Council is formulating a bid for areas of Charnwood Forest to be designated a UNESCO Geopark (with attendant tourist potential). I assume that the areas of the proposed Geopark may influence proposed flight paths?

Yes, later in the process when routes have been designed, we must assess the impact of any proposed routes in a Design Principal Evaluation. At Stage 3 then a Full Options Appraisal must be conducted which includes detailed environmental analysis. Additionally, the statutory agencies and NGOs will be consultees at the public consultation stage.

Q. It is completely unacceptable for TRAINING flights NOT to be covered by these guidelines / rules. They have a major impact on local communities due to their frequency and altitude which seem to be contrary to what you have set out today.

Training flights are out of scope for this project. Training flights are conducted visually in circuits close to the airport below 3,000 feet and are not part of our airspace design. Pilots under training are required to practice 'hand flying' their aircraft in circuits and practice multiple landings and take-offs. Our airspace design process relates to routes used by aircraft to 'plug in' to the NATS national route network at 7,000 feet. Training flights do not join this network and therefore do not form part of the airspace change process. However, they are considered as part of the airport's Noise Action Plan.
Noise Action Plan | East Midlands Airport

Q. Can Kings Newton expect any improvement as it is in exact line East to West of runway?

We believe that your location would be mostly overflown by today's arrivals to runway 09. In the future, EMA intend to continue to operate the current ILS for runway 09 which unfortunately means that the current overflying arrangements will continue.

Q. Any of these corridors will concentrate air pollution/GHG emissions (and any contrails) along these routes. I fully appreciate that the atmosphere is dynamic and 3D and will 'move'. However, you can see how much the current operation of Radcliffe On Soar power station effects downwind weather/cloud patterns. Therefore, could the principle of 'respite' be extended to associated air pollution/emissions?

Yes indeed. By extension, respite occurs when aircraft are not overflying a particular location. Please provide feedback on areas where respite is important to you.

Q. Would you only take into account future housing sites shown as allocations on a Policies Map in an Adopted Local Plan? Would you also have regard to emerging sites in new draft Local Plans?
The CAA in CAP 1616 requires that the development and assessment stage of an airspace change process considers future residential developments in the airspace change area. As part of the development and assessment phase of our airspace programme, we will be undertaking a review of all of the Local Plans in our airspace change area to identify (and to include in our assessments): residential sites that are under development or with a permission yet to be commenced; sites that are allocated in adopted development plan documents; proposed sites in emerging development plans; and sites identified as contributing to a local authority's 5-year housing land supply.

Q. How many of the envelopes will be in use at a time?
This is unclear at the moment, but for comparison East Midlands Airport currently operates with four Standard Instrument Departures (SIDs) on six NPRs – Trent (x2), Pole Hill, Daventry(x2) and Brookmans Park. We are early in the process and CAP1616 dictates that we must develop a long list of options which will be reduced in number as we conduct further analysis.

Q. A growing concern is the use of airspace below 7k feet for training purposes. The noise and emissions issues combine to add a significant load to current schedules. Are airlines looking at other methods to minimise load & design principle contravention?

Thank you for that - training has been mentioned previously. These flights are managed locally and subject to regulations agreed by East Midlands Airport and local residents. These regulations can be found in the Noise Action Plan on our website.

Q. How is the 6% minimum departure climb gradient arrived at? What is it based on and why can't it be higher?
These initial envelopes have been designed to 6% as this is the gradient that we know all aircraft, including older & heavier aircrafts, can fly based on the responses to our fleet survey. Within this envelope the design assumes a constant climb gradient, but actual aircraft performance varies depending on multiple factors including weight and weather conditions.
There are discussions ongoing with NATS to understand how much this can vary and the impact on the network if an aircraft climbs faster than the designed gradient and reaches 7,000ft earlier. This will be incorporated into later designs that we produce through the process for consultation.

Q. Cargo is a growing industry and load. They typically use older aircraft. Do the principles of modernisation of aircraft apply to them as rigorously as Commercial Passenger Aircraft?
Yes, the principles of modernisation apply equally to passenger and cargo aircraft. Cargo operators are also increasingly purchasing new aircraft.

Q. Has EMA looked at combining with Birmingham into a single infrastructure at Birmingham site?
No, EMA and Birmingham are two distinct airport companies. Both providing services to their local populations and bringing economic benefits to their regions.

Q. Swanwick is just 5 miles from the M1 and 1 mile from the A38 (as the crow flies) there is no ambient sound from these busy roads at night or during the day. Was the North envelope created on the assumption that these roads are noisy anyway?

The North envelope was created to align with a number of design principles including the need to consider the ambient background noise. At this stage it is only conceptual and may not be developed further if no benefits are found when comparing it to our design principles. This analysis takes place at our Design Principle Evaluation stage.

Q. How does the 6% gradient compare to other UK airport Stage 1 criteria?
6% is a standard climb gradient for the vast majority of airports engaged in airspace change.

Q. The red hatched area on an earlier chart shows the area where ICAO Rules dictate that departure routes are not possible (turn radius). This appears to rule out a lot of the departure envelopes. The wrap-around ALT routes are not viable. Where is the discrepancy?
The hatched area represents departures from both runway 27 and 09. As the wrap around envelopes climb, they fly above the hatched area which corresponds to departures from the opposite runway end.

Q. Will the new routes, within the design envelopes be wide tracks like the existing NPR's (if so, how wide) or will they be single tracks that all aircraft will follow?
We intend to develop single PBN tracks.

Q. How has the design principle of avoiding noise sensitive spaces been integrated? What sites have been identified as being 'noise sensitive'? Is there a map showing how the noise envelopes map onto these sites?
Noise sensitive areas will be considered in the next stage when we apply the design principles to potential routes.

Q. How wide will the PBN tracks be – we understand PBN routes will be concentrated, but how close will this concentration be. No one has informed us of this.

The transition to PBN will enable greater accuracy of track keeping by aircraft. The tracks themselves will be single lines over the ground which aircraft navigation systems can follow. For RNAV-1 and RNP1 the tolerance is that an aircraft must remain within 1nm of the track for 95% of the total flight time.

Q. The future use of cargo and delivery drones has been reported in the press. Could these operate from EMA? These could be numerous and noisy and I wonder if routes for these have been considered in the airspace design? If not, will this be the subject of a separate consultation?

The airspace change proposal relates to aircraft operations connecting to the NATS network. Unmanned drones are not envisaged to operate in this way therefore do not fall within the scope of this project.

Stakeholder engagement

Q. Are there a number of sessions like this at this stage?

At this stage we are engaging with a range of representative stakeholders. Full public consultation follows at Stage 3 - which is likely to take place in 2024. All councils within and around the envelope areas have been invited to one of these sessions. We will update all stakeholders who were invited but did not attend, prior to the second phase of engagement in Autumn 2022.

Q. Will it be appropriate that you circulate a list of attendees/bodies etc please?

Full details of all stakeholders engaged will be published on the CAA portal at the end of Stage 2 when we submit details of the work we have completed at this Stage to the CAA for approval.

Q. Are we going to receive the mapped design envelopes for us to review and consider the local constraints and any other matters that we would wish to comment on?

The slides including the questions posed have been provided with this document. Please provide any additional comments by 21st July. To be meaningful, the information we have provided to you needs the context and explanation that we have provided. We would not want the material to be shared without the accompanying explanation and therefore we ask that it is not to be shared outside of your organisation or with any third party without prior consent. At this stage we are engaging with a range of representative stakeholders. Full public consultation follows at the next Stage 3 - which is likely to take place in 2024.

Q. Are we able to have copies of the flight paths you have under consideration?

The presentation that we talked through in the session is provided with this document. This shows the initial design envelopes that we presented to you. You will be invited to another session in the autumn where we will present specific route options for discussion. These will be developed after we have completed this phase of engagement so that we can incorporate stakeholder feedback on the design envelopes into that next stage of work.

Q. Will the public be able to keep up to date with developments via the East Midlands Airport website?

Yes, we will regularly update the airspace section of our website and members of the public can also sign up to receive email notifications of progress updates. See link here https://www.eastmidlandsairport.com/community/future-airspace/

Q. How much influence does public opinion have on the plans? Are the same groups consulted again after any changes have been made?

At this stage (Stage 2) we are engaging with representative stakeholders as defined by the CAA process we are required to follow. As this stage is still early in the process, we're gathering views on our early design work from a wide range of stakeholders (such as airlines and councils - as well as some members of the public) to help inform how the options develop. We'll be engaging again in the autumn (with the same stakeholders) to update on how we've incorporated feedback from this phase into the next part of design work. Full public consultation will follow on the developed options at Stage 3 of the process.

Q. Is the slide pack being sent out?

Yes, it will be sent out together with an FAQ document with questions that have been asked previously and it will include the questions asked in this session. As explained in the session, at this stage (Stage 2) we are gathering views from a broad range of stakeholders on our early design work. Developed options will be subject to full public consultation when we reach Stage 3 of the programme. To be meaningful, the information we have provided to you needs the context and explanation that we have provided. We would not want the material to be shared without the accompanying explanation and therefore we ask that it is not to be shared outside of your organisation or with any third party without prior consent.

Q. Will there be an opportunity for local authorities to respond to these consultations by reporting to our elected members and allowing them to record their views through Committee resolutions?

Yes, we are very early in the process (Stage 2A) and wish to engage with our stakeholders to understand their views. Full public consultation on our proposed designs will take place at Stage 3.

Q. There's a four-week lead-in for reports to Committee. Will responses be accepted beyond the consultation deadline?

Please let us know if you know when you would expect to be able to provide feedback. This part of the process requires stakeholder engagement with representative stakeholders rather than consultation. Full public consultation takes place at Stage 3.

Q. Who can I contact if I need further information?

Please email futureairspace@eastmidlandsairport.com or call 01279 663 482 and leave a message, a member of the airspace team will call you back.

STAGE 2 – PHASE TWO ENGAGEMENT

Combined feedback

November 2022

MAG East Midlands Airport

Combined phase two feedback

	Feedback	Response
Departures	Consider different routes for different category aircraft with different climb gradients	The use of 6% climb gradient is based upon the airline fleet survey and the ability of all aircraft to use this gradient. This has been designed to provide safe separation and ensure containment and provides the basis from which to separate interactions with other route options or those from other airports. This climb gradient will remain our design baseline but it's likely that those aircraft that are able to climb more quickly will be permitted to do so, unless there are tactical reasons for constraining their climb (e.g. other aircraft).
Departures	The routes referred to as PBN replications of existing departure routes do not match the current routes and in some cases these would pass closer to communities close to the runway. These should be matched more closely.	The replicated routes were designed to ICAO PBN standards, and replicated as closely as possible to the current departure routes. However, because there are different design standards for PBN compared with conventional procedures, in some cases it isn't possible to match them exactly. In response to this feedback, we have designed new replicated routes which include amendments that allow them to match more closely to the current SIDs. These do not fully meet the first turn distance described in the UK CAA document, CAP778 but are within ICAO PANS-OPS design requirements and are included as they have a proven safety case based on being operated safely currently. These are included in addition to the replicated routes previously presented.
Departure route options	The new routes Runway 27 East and Runway 09 West fly over areas already heavily overflown by Training Flights, as well as passing over major SSSIs at Attenborough Nature Reserve and Holme Pit. These route options are therefore in contravention of design principles of 'sharing the load' and protecting 'noise sensitive locations'.	We have designed a number of route options that respond to the design principles in different ways. Each option will be assessed within the Design Principle Evaluation to determine how well each of the options align with each design principle. However, it is important to note that SSSIs are not designated on the basis of noise sensitivity, they are designated as a result of being ecologically sensitive. Therefore, no additional options have been designed as a result of this feedback. The effect of the airspace change process on biodiversity will be considered at Stage 3.
Departure route options Runway 27	Some routes are too close or pass over Melbourne or Kings Newton, so need to be modified or with offsets either to the north or south.	An overflight cone has been produced using the CAA's definition of overflight for all the route options presented at engagement. This tells us that we already have options in each R27 envelope that avoid direct overflight of Melbourne and Kings Newton. In addition, new options have been created in R27 south and south west envelopes with an enhanced southerly offset which subsequently track further away from these communities. It is not possible to design enhanced offset routes within the R27 East envelope as options 2 and 5 are already designed with the maximum offset possible of 15 degrees.
Departures Runway 27 South	The southerly turn needs to be further from Melbourne	Three additional options have been created in the Runway 27 South envelope. Each has been designed with the maximum possible southerly offset of 15 degrees , taking each further away from Melbourne.

Combined phase two feedback

	Feedback	Response
Departures Runway 27 South	R27 South Option 6. This route around the north of Melbourne and King's Newton is currently shown too close to King's Newton, and would generate much more disturbance to these communities. The route needs to be designed further to the north, approximately midway between King's Newton and Weston. This could potentially follow or be close to the line of the existing Trent departure route.	An additional option has been created in the Runway 27 South envelope which departs with the maximum possible northerly offset of 15 degrees.
Departures Runway 27 South	It may be possible to design a route turning south close to the runway and flying east of Wilson and Breedon.	This feedback was explored however, it was determined that the design of such a turn would not be within the design rules as required by ICAO and CAA. In particular the first turn cannot commence before 1nm from Departure End of Runway. The discounting of this option is in line with our Keeping the Skies Safe Design Principle.
Departures, Runway 27 South	Runway 27 South. Consider an option that combines a southerly offset followed by a continued turn which then follows the routes shown as 2, 3, 4 or 5.	Three additional options have been created in the Runway 27 South envelope in response to this feedback (RO8, 9 and 10). Each has been designed with the maximum possible southerly offset of 15 degrees to track further away from Melbourne. Option 8 then follows the track of option 7 to avoid Ashby de la Zouch before routing between options 2 and 3. Option 9 departs at an enhanced offset before following option 4 to avoid Ashby de la Zouch then routes towards option 3. Option 10 mirrors option 7 but with an enhanced offset.
Departure Runway 27 South West	The option with the early southerly offset turn should ideally continue that turn in order to pick up the track currently given as option 2. In the other case, where there is a northerly offset turn, we think it would be better to route direct towards Tamworth from a point near Foremark. Both of these options would offer respite to Melbourne and Smisby.	Two additional route options have been created in the R27 south west envelope in response to this feedback (RO6 and RO7). Route option 6 follows option 5 initially departing at a 10 degree northerly offset before following the edge of the envelope to meet option 3 heading towards Tamworth. Route option 7 begins with a southerly offset before following the track of option 2.
Departures Runway 27 South East	It would better still if Option 7 were modified such that the initial slight northerly was then followed by a continuous turn to pick up the route shown on option 1 near Breedon. That modified suggestion would take account of likely wind-drift and minimise nuisance	This feedback was explored however, it was determined that a number of routes in this envelope have already been designed that are in close proximity to option 1 when close to Breedon some of which already depart at an offset. It was therefore considered that the suggested addition would not offer any additional benefit.

Combined phase two feedback

	Feedback	Response
Departures Runway 27 North West	Variations on Runway 27, North West, Option 1 would be worth considering. This takes traffic between Weston & King's Newton and follows the Trent Valley, so limiting noise exposure, which is an issue with most of the other North and North West routes.	Within the Runway 27 North West envelope there are already a number of options that route between Weston and Kings Newton, including options 6, 7, 8 and 9 which all depart with an offset taking them between the two communities which also follow close to the Trent Valley. The potential for additional options was explored however, it was determined that these would closely resemble options already included in this envelope and would therefore not deliver additional benefit.
Departures Runway 27 North and North West	The Trent departure route was designed to run midway between King's Newton and Weston, specifically to cause minimum disturbance to both communities. The optimum route would be midway between the two and that all routes to the north and north-west need to follow this route to cause minimum noise disturbance.	There are a number of route options within both the R27 north and north west envelopes that track between Kings Newton and Weston. The overflight cones produced for these options using the CAA definition of overflight demonstrate that we already have options that track between the two communities that do not overfly either Melbourne or Kings Newton. For this reason, we have not designed additional options in response to this feedback.
Departures Runway 09 South	Many of these options such as 3, 7, 8 and 9 include an initial South offset acceptable to Kegworth if enhanced slightly and they appear to limit disturbance to highly populated areas in Leicestershire together with opportunities to share the load.	Additional options have been created within the R09 South envelope which depart at the maximum possible offset of 15 degrees (R09 South RO14, 15, 16 and 17). These will mirror RO3, 7, 8 and 9 but with an enhanced offset to track further from Kegworth.
Departures, Runway 09	Departure options taken forward on Runway 09 should avoid overflight of areas heavily affected by final approach onto Runway 27 (East and West Leake).	Options have been included that aim to avoid both communities as far as possible by departing at an offset. However, the rules relating to procedure design mean that we can only design within certain parameters. Additional options have been created within some of the R09 envelopes that depart with the maximum possible offset of 15 degrees. If these options progress through the DPE and the IOA then these will be further assessed at Stage 3.
Departures, Runway 09	Easterly departures should take a tighter turn to the south to avoid Kegworth. North and north westerly departures then need to perform a wide loop to the east to turn north – similar to R09 North west Option 7 but with a tighter initial turn.	Additional options have been created with the maximum designable southerly offset in order to take them as far away from Kegworth as possible. In the north west envelope four new options have been created (RO8, 9, 10 and 11) these all start with a 15 degree southerly offset before joining RO4, 5, 6 and 7. In the north envelope, one new option will be created (RO6) this will depart with a 15 degree southerly offset before following the path of RO5. In the east envelope, one new option will be created (RO5), this will be created with a 15 degree southerly offset before following the path of RO4. In the south envelope, four new options will be created (RO14, 15, 16 and 17), all will depart with the most southerly offset possible before following the path of RO3, 7, 8 and 9.

Combined phase two feedback

	Feedback	Response
Arrivals	The use of single IAF point will reduce the opportunity for respite from arrivals	Each IAF will be designed with at least two PBN transitions to final approach. Relief is provided by joining points at 2,000/2,500/3,000ft.
Arrivals	An ideal CDA should not only be continuous descent but also continuous deceleration in order to minimise noise and emissions. Longer routes involve prolonged periods of shallow descent and/or higher thrust ie more noise and emissions nuisance. So I strongly favour shorter routes.	We are designing our arrival routes so that they are capable of achieving a CDA to either runway end from 7000ft. Introducing shorter distances would introduce several problems: • Higher descent rates would be required to achieve the required height to establish on the ILS • Moving the Initial Approach Fix closer to the airfield will have an impact on departure routes and may potentially reduce continuous climb opportunities • Greater noise impact from steeper descent gradients • Introducing the potential for an unstable approach which will result in a missed approach which then requires additional vectoring and so increases emissions.
Arrivals	Expand the scope for starting points for CDAs to enable more direct routes from the east.	As this area would fall outside of the common CDA area, we have not proposed additional options in this area. However, an additional IAF has been created north of Leicester (close to Syston) with a transition to both runway ends to provide an option with a shorter track for arrivals from the east.

East Midlands Airport Future Airspace

Stage 2, Develop and Assess

Q&A – Phase two – departure route options

November 2022

MAG East Midlands Airport

The following document contains the questions asked during phase two engagement, together with our response. This document was circulated to all attendees after the engagement sessions together with the presentation materials giving all participants access to the same information and supporting them to provide informed feedback to our Stage 2 engagement.

Engagement and CAP1616 process

Q. How do the options relate to neighbouring licensed aerodromes?

We are briefing other local aerodromes through bilateral engagement and working with NATS at the same time so that the network works for everyone. This engagement is also part of that process, so if there are options that anyone feels could impact their operation, this is the opportunity to raise the issue. We can then work together to identify and resolve the interactions at an early stage.

Q. Do you have forecasting traffic data for consultation?

We will look at a 10-year plan of forecasting traffic.

Q. Will you share information with Birmingham Airport?

We will continue to engage with Birmingham Airport as we develop our route options and systems of routes. We are looking at how we can create a more direct routing to the south-west which is in high demand and which would free up the capacity to the south. This is in line with our Meeting Demand design principle.

Q. What does sharing the load mean?

At this point we are only looking at individual routes, but when we start to put the routes into systems, we will look at how best to apply the sharing the load design principle. For example we could alternate which route is used, or it could be that the routes themselves are able to be placed in different ways to affect different areas. We will also work with NATS and other stakeholders to make sure that the ideas we have to share the load work safely and efficiently within the UK airspace network.

Q. In CAP1616 it does not mention creating design envelopes?

CAP1616 is not prescriptive about how you design your options. We have sought to make the process easier to understand by creating the design envelopes and lots of airport have followed a similar method. The CAP1616 process ensures we apply logical criteria to our designs, and don't just select the route option we think are best. It lets stakeholders see all the route options that could be feasible and then they are narrowed down over each stage. It is an iterative process and we understand the end result is important for the community, and CAP1616 ensures these communities have a voice in the selection of the options. All feedback will be considered at this stage and Stage 3.

Q. Is the number of aircraft movement planned to be increased?

Although we need to be able to meet future demand, increasing aircraft movements is not what is driving this airspace change. This change is part of the airspace modernisation strategy for the whole of the UK that the CAA has set out. We are 1 of over 20 airports that are currently going through this process which is seeking to modernise the entire UK airspace system and bring the benefits of modern technology. Meet the future demand for flights is one of our design principles and we are required to analysis our designs against future traffic forecasts. However, figures have not yet been updated, and whilst the last two years have seen a significant impact on the industry, we expect a return to pre-covid levels around 2023/24.

Q. How widely can the information shared today be shared with other members of the public?

At this stage we are engaging with a range of representative stakeholders and full public consultation follows at Stage 3. We do ask that the material is not shared wider than your committee members in order to provide feedback as a representative. The material needs the narrative around it to be able to explain why and how we have done it which is a complex process and merits explanation to provide context.

Q. These questions seem to be all about the procedure?

At this stage the process requires that we engage with stakeholders on the process we have followed, and in particular whether the route options align with the design principles, whether there are any additional local factors that we should consider and whether there are any improvements we could make to feed into our design process. Full public consultation on the refined routes will follow at Stage 3.

Current operations

Q. Do you have a figure of how many aircraft currently take off from the airport?

Total air transport movements are 77,000 per year so approximately 38,500 are departures. This figure is pre-covid.

Q. How many runways are there?

At East Midlands Airport we have one runway with two directions, which is orientated in an east and west direction.

Q. Why is it called Runway 27?

The runway names include the compass bearing. So Runway 27 has a bearing of approximately 270 degrees and Runway 09 a bearing of approximately 090 degrees. Aircraft take off and land into wind to help create lift, and because the prevailing winds in the UK are westerly the majority of movements will use Runway 27.

Q. What percentage of aircraft keep to the current routes?

On average today 93% of aircraft keep to the current SIDs. However, the main exception to this figure is the Runway 09 TRENT which routes to the north-west and has been affected by the normal shift of the earth's magnetic variation. Over the last few years, this has resulted in some aircraft not being able to follow the route exactly as designed on the published charts. As a result, some fly outside of the established noise corridor, so the compliance for that route is around 25%. If we take the Runway 09 TRENT departure route out of the overall track keeping percentage, aircraft achieve around 97% track compliance. This compliance is expected to increase as a result of this process because of the application of more modern satellite based technology.

Q. Can we have usage figures for each runway direction?

In today's operation, Runway 27 is used 75% of time as the wind travels to the east. This runway is known as westerly operations. Runway 09 is used around 25% of the time and is known as easterly operations. Overall departing traffic, regardless of runway direction, routes to the north of the airport 30% of the time and routes south of the airport 70% of the time.

Q. What percentage do you expect future track keeping being?

At this stage we are looking at individual route options and not how these route options will operate. We will perform flyability tests later in this process. However, London Stansted Airport has already upgraded two departure routes to PBN standard, and are seeing track compliance on those routes of around 99%. The small variance is generally due to aircraft types which are not equipped to PBN standards or weather conditions.

Q. What restrictions do you have on the use of nosier aircraft and training flights?

Both these areas are covered by the Noise Action Plan (NAP). Training flights do not follow the Standard Instrument Departure (SID) routes or connect to the upper airspace network so the procedures they follow are not within the scope of this airspace change.

Q. What are the permitted hours of operation and days for training flights?

The permitted hours of operation are at weekdays only (excluding bank holidays), 07:00 - 20:00.

Q. How will you take account of training flights in 'Sharing the Load' Design Principle which refers to any noise impacts?

Training flights do not fly any of our Standard Instrument Departure (SID) routes and as such the procedures they use and the routes they fly will be unaffected by airspace change. At this stage we are only looking at the routes in isolation, not how they might be used together to create a system. We have designed lots of route options which in turn provides ways of delivering noise respite for communities close to the airport, including those that experience training flights, in line with our Sharing the Load Design Principle.

Q. Why are you putting training flights to one side?

Training flights are not being put to one side, but as the CAP1616 process does not capture training flights; instead these are dealt with within the Noise Action Plan (NAP). Our airspace design covers flights that are entering and leaving the main airspace network and because training flights don't do this they are outside the scope of this airspace change.

Q. How far away is 7000ft from the airport?

It varies according to the route that the aircraft take. For example, a straight-line route will result in an aircraft reaching 7,000ft at a different point to one with lots of turns. However as a rough measure, and as the crow flies it is between 15-20 miles from the airport.

Design

Q. Who set the 6% gradient and how many planes can achieve this?

One of the first steps in our design process was to understand aircraft climb performance 7,000ft, so we conducted airline fleet survey. This told us that all aircraft currently operating from EMA can climb on a gradient of at least 6%. So, we used this and the rules and regulations set within the ICAO PANS OPS documents, as the basis to create all of our route options.

Q. What is the tolerance under the 6% climb gradient?

The 6% is the procedure design minimum gradient that will ensure safe obstacle clearance and climb out. However, we have had conversations with the NATS network and the expectation is that aircraft will not be constrained to that and will be able to free climb wherever possible unless depending on a number of things including ensuring there are no interactions with our own arrivals and flights from other airports.

Q. So, the minimum climb gradient is 6%, can most of the aircraft achieve higher than this?

The 6% climb gradient is the baseline for our designs which provide a safe environment for all aircraft to operate and is based upon our fleet equipage survey. Those that can achieve a steeper climb gradient may still be able to do so.

Q. Why is there a variation on gradients?

It depends on load factors, wind speed and direction, temperatures, and also the type of aircraft.

Q. To get to that level of altitude with engine thrust, will there be more emissions over specific areas?

At this stage we are only looking at individual route options and have not completed any detailed fuel burn calculations.

Q. Is there any immediate obvious impact when comparing climb gradient with fuel economy?

Again, we are looking at individual route options and have not yet completed any fuel burn calculations. As aircraft engines perform more efficiently at higher altitudes, our routes have been created with an efficient gradient and continuous climb profile. This avoids the additional fuel burn associated with levelling off, which is in line with our Limiting our Footprint Design Principle.

Q. What are the envisaged number of SIDs in the final design?

This will depend on a number of things, including connectivity to the NATS upper airspace network, the creation of a system that meets the design principles and the results of the public consultation process. However, we are anticipating there will be more routes than there are today.

Q. Will you have one route per design envelope?

At the moment we are looking at the routes in isolation so we have designed multiple route options going in several directions to create a longlist of viable options. We cannot take forward all of these routes because of safe separated. However, it is possible to have more than one route in an envelope but until we get to the point where we look at them as a system of routes and we have worked with NATS to understand how this would work safely within the wider UK network, we cannot give an exact number.

Q. There are 4 new design envelopes, is it the objective to have as many envelopes as possible to spread the load?
This engagement process will gather feedback from stakeholders, communities, airlines on the envelopes and routes we've created. Sharing the Load is an important design principle but we also need to consider how these routes will work as a safe and efficient network.

Q. If you had 20 routes, but only 8 become viable, will you then be looking within those eight, would you then be looking to do one within those 8?
The CAP1616 process requires us to take all of these options and your feedback, and then undertake two stages of evaluation before we can pass through to the next stage. This evaluation will be done in accordance with the CAP1616 criteria, and the design principles.
We expect this process to produce at least 3 options within each envelope, and we will then start the process of creating systems of options which will involve conversations with NATS and other airports on how to connect to the upper airspace network.

Q. It is quite difficult to see from the presentation where exactly those routes will be.
The slide pack will be sent to you so you can zoom in and look in more detail.

Q. Do you anticipate all these route options being used at various times? Or are you looking for our comments as to which are the most or least preferable?
At the moment, we are only looking at where routes could be placed, not how they could work together to operate as a system, this will come as we develop a system of routes in Stage 3. As the designs develop, the number of route options start to narrow down and the NATS upper airspace network is clarified we will be in a better position to describe which flights could use which routes.

Q. Have you engaged with the companies that make the avionics for example the aircraft flight management computers?
We have completed a fleet equipage survey to determine the capabilities of the aircraft but this considered airlines not the avionics companies. The detailed designs, the flyability checks and confirmation on how these are coded by the flight management system providers do not come until much later in the process. The design principles incorporate the need to align with PANS OPS design criteria and we therefore do not consider that there will be any issues with incorporating the designs into the aircraft systems.

Q. Is there a dep route option for heavies (CAT H) b747/md11/an124 in the new proposals?
The SIDs will be designed to facilitate all codes of aircraft, this would include the code D (MD11), code F (B747) and code F(AN124) they would need to be able to make the 6% climb gradient to be able to fly the routes.

Q. What weighting do you put against fuel saving, as opposed to not going over population, green areas?
Our options respond in different ways to different design principles and feedback from stakeholders. In the next part of Stage 2 there are two assessments, the first one is against the design principles. In the Design Principle Evaluation (DPE), we will look at each route

option against each of the design principles individually. Options that perform well at the DPE will go through the Initial Options Appraisal (IOA). This is the first of three-impact assessment which looks at a range of impacts including overflight and fuel burn. Later in the process, there will be two more impact assessments and they will become more granular. It is going to end up being a balance of the different priorities but this process will include a period of public consultation in Stage 3.

Q. Do you treat each impact as equal when you do the analysis? I.e., noise and fuel.
Some initial fuel and overflight calculations will be done as part of this process and will be treated equally. Moving forward we will conduct future analysis in line with the CAP1616 process.

Q. If one route affects 10x as many people as another route, you will put a tenth on that route?
It is too early to say how we will operate each route, as we need to understand how each route or combination of routes operate within a system. We will look at different options for this as we go through the process.

Q. What is the timescale you will look at for aircraft modernisation/ performance?
We can only look at aircraft types that are in existence at the moment. We have spoken to our aircraft operators about equipage of current fleets and their plans for purchase of new aircraft for 5 years' time but these plans are not fixed and in some cases are commercially sensitive.

Q. The envelope showing the west, why don't you fly off to the west?
Those routes are specific to Runway 09 which are easterly operations, so when the weather predicts that we go on to Runway 09, then that is the runway direction we need to use. Aircraft must take off and land into wind.

Q. Why do the military only use the east?
The military have areas all over the country, but there are a lot of military airfields at the east of us. By being close to their bases, the airspace to the east facilitates their operations and is aimed to reduce interactions with civil air traffic.

Q. Why do the departures route slightly south when departing on Runway 09?
Currently we have noise abatement procedures for Runway 09, and that is to avoid Kegworth.

Q. Will you need to use holding patterns?
Holding patterns will be included in the new designs, but these will be in the airspace above 7,000ft and designed by NATS and are not part of our airspace change. The current holds are not often used, and when they are it is typically because of low visibility or capacity. These holds are north of Derby and south of Leicester but conversations with NATS on the upper airspace network will determine the position of the future holds above 7,000ft.

Q. Will some of the routes be discarded?

The presentation shows our comprehensive list of route options. This is a high-level set of route options that theoretically are viable but we are looking at them in isolation. We will go through a process that evaluates them against the design principles and the criteria set out in CAP1616. We also consider the feedback from this process. We expect this process to produce at least 3 options within each envelope, so that will result in some options being discarded. We have to provide clear and justifiable reasons for why the routes have been discarded and these will be recorded in our submission to the CAA. As we get to the end of Stage 2 we will have a smaller number of options which we will consult on.

Q. In terms of the noise nuisance, is there a link between height and noise on the ground?

Yes, however at this stage we are not undertaking any detailed noise calculations. Instead we will be looking at people being overflown. The detailed noise calculations will be undertaken as part of public consultation in Stage 3. In general terms, the higher an aircraft is above the ground, the less noise there is. However, the quicker an aircraft departs the more engine thrust may be needed and this could potentially increase the noise heard initially. Our climb gradients have therefore been designed at a gradient that all aircraft can reach and which will reduce the need for additional take off thrust.

Q. What percentage of flights would use each option?

Typically, 70% of our aircraft go to the south and 30% to the north. However, if additional envelopes/routes are implemented there would be a change to the distribution of flights. We expect the demand for flights heading south to remain but the route taken may well be different from that today. So for example we may have multiple routes instead of just one supplying aircraft to the south and north. We will look at how the future system will operate later in the process and at this stage it is very high level. When go out to public consultation we will have a better idea on the level of usage on the new options. It is important to note that this will depend on airline and destination demand.

Q. Do you have estimates of how many flights would be expected to use each route envelope, and at what times of day?

At the moment, we are only looking at where routes could be placed, not how they could work together to operate as a system, this will come later in the process.

Q. Some southerly and south-westerly departures look tighter than the current route, can larger aircraft achieve this?

We have designed the routes in accordance with both UK and International (ICAO PANS OPS) design standards. These set out a range of bank angles and design speeds and our airspace procedure designers have made sure all are within the PANS OPS standards. This is a requirement of the Keeping our Skies Safe Design Principle. However, we will work with the airlines throughout this process to ensure routes are flyable by all types of aircraft and at safe design speeds.

Q. Is there a procedure for when an aircraft experience engine failure?

This is not part of this work but all airlines have a procedure for engine failure after take-off. That is managed by that pilot in that situation and is a standard operating procedure.

Q. How does a quicker turn make the aircraft less noisy?

All the turns will be according to what PANS OPS specifies and will all be compliant to that standard. Creating a turn doesn't reduce aircraft noise but by creating a turn shortly after departure it may have the potential to avoid the overflight of a particular community or reduce the noise footprint to some of the areas.

Q. Are the SIDs going to become shorter in length?

For an airline, the longer the SID, the more planned fuel is needed to have for the length of that SID. By creating a constant climb we are seeking to shorten the SIDs to a more realistic distance, that enables the airlines to reduce that fuel load and reduces fuel burn.

Q. With new methods of navigation, the flight envelopes would be smaller and much more confined? Why have you widened the envelope to cover much greater areas?

The envelopes are the areas designated as part of the design process where the flight options could be, however the envelope is not an NPR. Whilst the SIDs are much more accurate, the potential flight path routing options (as shown by the different coloured lines) need to demonstrate how we can route through the envelope by applying different design principles.

Q. Why do certain aircraft favour certain swathe when going down the southwest route?

Currently, the SIDs are based on ground-based navigation systems, and there are different factors when airborne that affects that. With PBN this will be more accurate but we do understand the issues with some of the routes of today. We have spoken to some of our operations to try and correct some of these path issues that we have, but that is ongoing management of airline route keeping and a separate issue than what is happening to the airspace change.

Q. Will this increase traffic out of EMA which will create high slot time? also the distance will it increase the travel time by how much?

The aim of this is to create a more efficient network of routes to reduce delays. Meeting demand is a key design principle in this respect. In terms of travel time and the track distance of routes, we have the Limiting our Footprint Design Principle that aims to ensure routes are fuel efficient. When we go through the evaluation of routes towards the end of this stage, we will look to balance all of these factors out.

Q. How likely is it that any of the SIDs that route toward Birmingham impact upon any of Birmingham's existing SIDs and inbound routes?

The location of Birmingham Airport operations have been considered as part of the design process and we will continue to work with both Birmingham and NATS to ensure routes can be operated safely and efficiently.

Q. What design principle address General Aviation users and the potential impacts of Class G?

The designed route options have been created within the current confines of EMA Airspace and our Airspace for All Design Principle will consider GA users. We will fully

address this principle in Stage 3 once the routes have been placed into operating systems and this will form part of the public consultation process.

Q. What are the chances of NATS creating controlled airspace to the East to accommodate your Easterly departures?
We are exploring new network connectivity to the east of EMA but NATS are conducting the work to establish the viability of new network connections in this area by engaging with the military. Any new permanent routes could only be established if NATS were able to reach an agreement to reclassify this airspace to the east.

Q. Will conventional departures solutions be based on TNT and DTY or will they consider the eventual reduction of VORs?
The design envelopes include where possible overlays to the current SIDs but are not based on the VORs. One of the drivers for this project is the NATS rationalisation of the DVORs as many of these are being taken out of service.

Q. Are there considerations for separated day/night departures and different departure routes for specific noise category aircraft? Also taking the different climb gradient capabilities into account.
At the moment we are just looking at where the routes could be placed, not how they might operate. That will come later in the process.

Q. Will RNAV SID/STAR's be designed during this airspace restructure? If not, are there plans to create RNAV's after the restructure is complete?
Yes, the route options are all designed to be PBN compliant, so departures are either RNAV1 or RNP1.

Q. When will the new RNVAV's be published?
The project needs to go through a number of stages yet. This is only Stage 2 and implementation comes in Stage 6. We also need to align our changes to other airports in UK and ensure that our designs fit with the NATS network who are also making changes. The expectation is that we are at least 3 - 4 years away from implementation.

Q. Re Runway 09 East, how likely is it that NATS will allow you flights to the east of Melton Mowbray?
The discussions with NATS are in the very early stages. We have not had an indication either way at this stage.

Q. Given that noise to residents is the principle concern for the majority of those here, what restrictions will be placed upon aircraft types using these envelopes?
The route options are designed to accommodate aircraft currently operating at EMA.

Q. Why are you looking at SSSIs and not conservation areas?
At the moment we put SSSIs, national parks, AONBs there because that is what CAP1616 requires. As we get into much more detail of the assessment of the preferred routes, as we get into Stage 3, the environmental analysis we will get much deeper into that, we will start to pick up national trust properties, large parks, potential conservation areas as well. At the moment it is very high level.

If you have further questions please email futureairspace@eastmidlandsairport.com or post to Pathfinder House, East Midlands Airport, Castle Donington, Derby DE74 2SA.

East Midlands Airport Future Airspace

Stage 2, Develop and Assess

Q&A – Phase two - arrivals

November 2022

MAG East Midlands Airport

The following document contains the questions asked during engagement, together with our response. This document was circulated to all attendees after the engagement sessions together with the presentation materials giving all participants access to the same information and supporting them to provide informed feedback to our Stage 2 engagement.

Engagement and CAP1616 process

Q. How do the route options relate to neighbouring licensed aerodromes?

We are engaging with local aerodromes through bilateral engagement and working with NATS at the same time to ensure that the overall network works for everyone. Our discussion sessions also form part of that process, so if there are options that stakeholders feel could impact operations at other aerodromes, we'd welcome that feedback as part of this process.

Q. Will stakeholders be involved in the process or the results of the Initial Options Appraisal? If not, how do we know whether our comments are considered?

The comments that we gather from you through engagement will form part of the next stage of design work and will be used to modify route options or design envelopes if needed. We need to keep records of all comments received and the CAA process ensures we take account of your comments.

The IOA is part of step 2B and the IOA itself is not subject to engagement. However, it will be available to view on the CAA's airspace change portal as part of our Stage 2 submission. Any comments we receive after gateway approval will be considered at Stage 3.

Q. Will there be a glossary of terms for participants?

Yes, that will be included with the materials we'll circulate.

Q. Do Birmingham and Manchester have the same strategy to follow as EMA?

Yes, Manchester Airport are currently going through their ACP as part of the same process. Birmingham Airport completed their airspace change a few years ago so are not part of the wider Airspace Modernisation Strategy. In the next part of the process, we will put our arrival and departure route options together to create a system, then we will work with all our surrounding airports and with NATS to see where there are interactions between our options and their options. There is a process that we need to follow to work together to resolve any interactions there might be. The interactions between EMA and other airports like Manchester and Birmingham may be above 7000ft, and whilst NATS will have to resolve these in their upper network, the solution may require us to modify our options below 7,00ft to ensure the system is safe.

Q. What are the traffic forecasts over the next 5 to 10 years?

EMA has a long-term master plan or Sustainable Development Plan (SDP) that sets out the airport's long-term plans. The current plan is available on our website. Our planning team are working on the latest version of the Sustainable Development Plan and that will include some updated long term air traffic forecasts. The SDP will be subject to public consultation early next year. Also, at Stage 3 of the airspace change programme our environmental assessments will use forecasts of future aircraft activity.

Q. Will the future house building estates that are currently planned be considered when deciding these new routes?

The CAP1616 process requires us to consider local plans. All known committed local plan allocations and large sites with planning consent will be included as part of the overflight analysis that will form part of the Initial Options Appraisal (IOA). As we proceed through the process these will be regularly reviewed to take account of changes to local plans.

Current Operations

Q. What is the mix between day flights and night flights at EMA?

Currently, year to date, the split is roughly 55% day operations, 45% night.

Q. Do you know the mix of freight?

Currently, cargo operations account for around 60% of all operations.

Q. The traffic patterns that you have shown, are they pre-COVID and have they changed since then?

Yes, they are traffic patterns pre-COVID, they would not be much different now.

Q. There seems to be a lot of change with arrivals routes and where they bank when coming over Quorn, why is this happening?

For arrivals, there are two holds, one to the north called ROKUP and one to the south called PIGOT. How aircraft get from there to the runway end is determined by ATC who turn and descend arriving aircraft onto final approach. Generally, aircraft follow very similar patterns when going to final approach, but they do not follow set routes like departures. Runway direction is determined by wind direction, and we have had long periods of easterly operations, especially in the summer, which could explain this pattern.

Design

Q. Runway 27 from the south is by far the most important in terms of total usage. Last week's departure routes proposed potential expansion of airspace in conjunction with NATS to provide increased efficiency. The CDA envelope for arrivals is contained within the current airspace. Consequently, your common starting point on the southern outskirts of Leicester seems very constraining. Many of our arrivals only come in from the south because there is no airspace to the east. is there no scope for optimising arrivals more directly from the east where population intensity is also much lower?

The starting point for the arrivals at 7,000ft has been driven by both our Limiting our Footprint and Limiting Disturbance design principles. Both of these and the UK Airspace Modernisation Strategy (AMS) are seeking to create environmental improvements, so our starting point for arrivals at 7,000ft has created an overlapping area where a more efficient Continuous Descent Approach (CDA) would be possible. These starting points ensure we can provide a CDA to both runway ends at a gradient that is both safe and flyable, but for safety reasons we cannot provide one set of starting point options for runway 27 and a different set for 09.

If we created a starting point directly to the east, the result may provide a CDA compliant approach to runway 27, but not for runway 09 because the distance involved would result in too shallow a gradient. This would result in additional fuel burn and additional noise.

What we have therefore created are starting points with the best possible balance for both runway directions, and which also align to the NATS network as it is currently designed.

As we progress through the design process, and in line with the Limiting our Footprint Design Principle, we'll continue to work with NATS to support their discussions on the possible use of airspace to the east (which may provide more direct routes in the upper airspace from that direction). This will include looking at how we can optimise any changes to this airspace to best link with our arrival options below 7,000ft.

Q. The IAFs do not reflect the general geometry of where aircraft have arrived from?

Whilst aircraft arriving at EMA do so from around the world, they are routed through a NATS airspace network that needs to take account of other airports and users including the military. Because of this, the network routes aircraft towards EMA via a Standard Arrival Route rather than a straight line based on their origin airport.

The CAP1616 process requires us to consider a comprehensive list of options that is aligned to our design principles, and as we have said, our IAFs are aligned to the ability to create a CDA.

To the north of EMA, we have IAFs in the same position as the current holds and link to the NATS network that supplies aircraft from this direction. However, we have also created additional IAFs as different options.

To the south, the current PIGOT hold is outside of the CDA area so the IAFs have been created in an area to the west of the current position, but which will still align to the NATS network and the flow of traffic from the south.

NATS are a stakeholder within this process, and we will continue to work with them as part of the ACP to fit in with the route structure above 7,000 feet and the general traffic flows within that upper airspace.

Q. Does the airport have a preferred solution, is this not public at this time?

At this stage we are presenting a comprehensive list of individual route options. We do not have a preferred option at this early stage.

Q. Will the current southerly arrivals DTY / HEMEL through waypoints VELAG, UPDUK & PIGOT change? Or will your start point remain from VELAG?

We are currently discussing this with NATS as part of the ACP. We need to fit in with the route structure above 7,000ft and the general traffic flows within that upper airspace. However, the position of PIGOT as an IAF is likely to change as the current position is not consistent with achieving a CDA to both runway directions.

Q. Do London MIL still give coverage to the East?

That type of service is not readily available from the MIL currently and so cannot be relied upon. We are planning to design route structures that fit in with the NATS route structure.

Q. Within the new design envelopes will there be any room for future expansion at EMA without creating problems?

The design envelopes were created based on the current runway in line with our Meeting Demand Design Principle. This states that we must ensure the continuation of services offered today and meet any future demand, in keeping with local and national planning policy. However, this ACP is being driven by the need to modernise airspace, rather than airport expansion.

Q. How many route options are you expecting to assess further? And how many routes will finally be selected for operation?

At the end of this Stage 2, all options will undergo a Design Principles Evaluation to see how well they align. Those that pass through this stage will undergo an Initial Options Appraisal which will reduce the number of options. However, we are not able to say how many routes will be implemented. This will depend on a number of factors, including

connectivity with the NATS upper airspace network, the creation of a system that meets the design principles, feedback from this phase of engagement and the public consultation process, and the results of the impact assessments at both Stage 2 and Stage 3.

Q. Is it possible to identify in writing the key design principles that each of the individual route options are intended to meet? I appreciate that this was explained verbally, but it was difficult to note it all down during the presentation.

We have provided some additional slides that break down the options further so they're easier to view. In addition, we've provided a recorded version of the presentation if you wish to listen again to the narrative that accompanied the slides.

Q. Are stepped descent approaches ever envisaged, or is it expected that continuous descents will always be used? Does the arrivals work include hold patterns?

It is optimal to design a CDA (Continuous Descent Approach) for less noise, fuel burn and emissions. However, there will always be the potential for stepped approaches to maintain safety and to provide ATC with a means to increase separation for arriving aircraft as necessary.

The design of delay absorption holding patterns will be at higher levels above 7,000ft and is the responsibility of NATS.

Q. So precision navigation brings aircraft down exactly the same descent route prior to engaging the ILS localiser, rather than a spread of descent routes, as now? If so, this is not great for those under these precision descent routes, is it?

Yes, it is expected that the approach path will be more precise with Performance Based Navigation than is the case currently. However, we are exploring the potential to implement one arrival hold to the north and one to the south in association with NATS. In addition, we are also exploring how we can provide more than one arrival route from each of these holds at 7,000ft to align with our Sharing the Load Design Principle.

Q. Approach routes over cities are much less intrusive than over sparsely populated areas, no? I think this was discussed in Stage 1? What's your thinking on this?

We have designed a comprehensive list of route options that respond to the design principles in differing ways. This includes routes over cities and also areas of lower population.

Options will be refined following the feedback received from this phase of engagement and the Design Principles Evaluation (DPE) and Initial Options Appraisal (IOA) which follow later in Stage 2.

Q. You mentioned final approach being at 2000ft, does that mean every plane will hit 2000ft at the same point, at about 5 miles out? Or will there be fluctuation?

The minimum ILS intercept point is at 2,000 feet which is where an aircraft needs to be in line, fully configured for safe landing. That distance will vary, and our options consider a range of joining points in line with our Sharing the Load DP, but the minimum is 5 miles from the airport. In addition, to ensure safety between aircraft it is likely that ATC will continue to vector aircraft onto final approach when it is busy or in adverse weather conditions and this will create an element of dispersal.

Q. Why can't you do the curved approaches if they only come every 13 minutes?

Aircraft are not scheduled to arrive every 13 minutes, they come in waves. The schedule has to work for the airport and the scheduled time slot of the aircraft. This slot takes into consideration airspace, origin, and time among other factors. It is a very complex picture as described previously, it would not be efficient to implement a mix of ILS and a curved approaches and this in turn would not be aligned with our design principle on Meeting Demand.

Q. You mention that you will go from CDA to final approach, at what distance does that take place?

The final approach is still CDA because it is on a 3-degree glide path. What I think you are referring to is the point where the aircraft intercepts the ILS.

Our options show at least two different intercept points onto the ILS as part of the designs. However, there will be occasions when ATC are required to use conventional vectoring techniques to maintain safe separation between arriving aircraft. The minimum intercept point is at around 5 miles from the airport but will vary depending on how busy it is and the number of aircraft in the arrival stream.

Q. The angle of landing could vary, is that an option?

In terms of steeper descents, there are recommendations applied by the International Civil Aviation Organisation (ICAO) and overseen by the UK Civil Aviation Authority (CAA) which advise on descent gradients. These cover both the initial approach and the final approach phase (when the aircraft is in line with the runway) where the standard is 3 degrees.

In line with our design principle on Safety we have said we will comply with national and international industry standards, and the arrivals design option we are outlining are in line with these recommendations.

That said, a more rapid descent does not necessarily equate to less noise. In fact, in some cases a steeper initial descent gradient may increase noise on the ground due to the need to apply speed brakes to create a safe and stable approach. There are examples of significantly steeper final approaches at some airports, London City being an example, but these procedures are limited to certain types of aircraft and are not flyable by the majority of the aircraft that fly into EMA. Because they are not widely useable, the implementation of these procedures would not align with our design principle on Technology.

Q. Is the angle of landing affected by the weight of the aircraft?

Whilst the final approach is fixed at 3 degrees, the first part of the approach may be affected by the weight and size. The weight of an aircraft determines at what speed it needs to 'fly clean' which means flying with no flaps and no gear down. Applying speed brake or flaps to slow aircraft down creates airframe noise which is not beneficial to reducing noise on the ground. We have designed approaches to create a noise and fuel efficient CDA but a number of factors including upper wind speed will influence the exact angle that each aircraft flies the route.

Q. Is it not possible to create an IAF from the south that goes to both runway ends?

There are options to the south. I think the point you are referring to was in relation to the replicated route based on the position of the current PIGOT hold.

We are required as part of the process to have options that would replicate the current pattern of arrivals as closely as possible. It is not in line with our Policy design principle to replicate closely the current pattern of arrivals from the south because that point would be outside of the CDA area. We have therefore moved it slightly west, so it falls within the CDA area and have created a route option that then seeks to fly a similar route as the current arrival, but from this new point.

Q. When the final approach kicks in, is it based on air speed or distance from the airport, or the height or the combination of all?

It is a combination of height and distance. The final approach is the point where the aircraft intercepts the Instrument Landing System, and this is a straight line from the extended centreline at an angle of 3 degrees. Once on final approach, aircraft adjust their speed to descend at this angle

Q. When does the NAP converge with the airspace change in terms of when noisier aircraft will get phased out?

The phasing out of aircraft takes longer than we would hope. Aircraft generally have a lifetime of between 20 and 30 years. The Noise Action Plan outlines the noise abatement and operating restrictions we have in place to encourage the use of quieter aircraft.

Q. What are the opportunities for respite for communities on the black lines?

I believe that the black lines that you are referring to are the final approach lines to each runway. These are the tracks that aircraft will fly when they are established on our Instrument Landing System (ILS). We have shown on earlier slides where the aircraft need to be established on these lines with the minimum distance from landing being around 5 miles. We have several different joining points for both Runway 27 & 09 which have been created to give some form of relief.

Q. Currently there is some variation in angle of approach to the runway which spreads the load over Melbourne. The proposal for R09 suggests that all aircraft will approach over Melbourne on a single easterly path which offers no respite for those people under this line. This does not appear to "share the load".

When we are on Runway 09, Melbourne will have ILS traffic flying over due to the proximity of the area to the airport. This happens today. It is not possible for us to route traffic on to finals for Runway 09 to the east of Melbourne

Q. Is there provision within these routes for holding, or does that happen somewhere else?

We are exploring the potential for there to be two outer holds, one to the north and one to the south. As these holds are above 7,000 feet, they are managed by NATS and as part of the CAP1616 process we are discussing with them where these holds should be.

Q. I can't see any relief for East Leake and West Leake unless the runways switch. This must make it more important that there are no departures over this corridor. (And same for other direction.) Is there any opportunity to move towards more equal traffic on each runway?

The runway direction is determined by the wind with aircraft taking off and landing into wind. The predominant winds in the UK are west/south westerly and that means that around 75-80% of the year we are on runway 27.

Q. Green spaces and SSSIs are being considered as sensitive areas, but it seems schools are not. Can you explain this decision?

It is expected that the Design Principle Evaluation will consider noise sensitive buildings such as sites of education.

If you have further questions please email futureairspace@eastmidlandsairport.com or post to Pathfinder House, East Midlands Airport, Castle Donington, Derby DE74 2SA.