Edinburgh Airport: Airspace Change Programme
Stage 1: Define Gateway submission
ACP-2019-32

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Executive summary

Background
Edinburgh Airport is to the west of Edinburgh close to the Firth of Forth and only eight miles from Edinburgh city centre. We have several communities close to Edinburgh at each end of the runway, and our flight paths up to 7,000ft fly over a number of communities within Edinburgh, Lothians and Fife.

In 2018, we helped 14.3 million passengers on their journeys putting us in the top 10 UK airports, in position six behind the three big London airports - Heathrow, Gatwick, Stansted plus Manchester and Luton.

This is the second time we have run an Airspace Change Programme, with the previous programme running between June 2016 and October 2018. During the previous programme, we held three public consultations and other engagement events. We put in an Application for Airspace Change under CAP725 in Summer 2018, and were advised in November 2018 that this application was rejected. The application was rejected on a number of technical points. At the end of 2018, we determined that we would run a second Airspace Change Programme under CAP1616 beginning in 2019.

Introduction
Edinburgh Airport is growing fast. Our long-haul connectivity is increasing with the Middle East and China being two recent additions to our services – our long-haul growth rates are one of the fastest in the UK, from one long-haul service in 2012 to 14 in 2018. Our growth targets continue to be ambitious, with more long-haul routes to new destinations, as well as increased short-haul and European services on our short-term and long-term plans. Our Masterplan, which sets out how the airport thinks we will grow in the decades to come, and poses questions around future growth, projects passenger growth to 20 million by 2035 and you can find it here: https://s3-eu-west-1.amazonaws.com/edinburghairport/files/2016/11/Edinburgh_Airport_Masterplan_15112016.pdf

With this growth comes the need to maximise the frequency at which aircraft can depart Edinburgh Airport in succession. Currently, due to the design of the departure flight paths, the standard departure interval between successive departures is two minutes – meaning our departure capacity is 28 movements per hour. However, this figure is only achieved when 28 identical aircraft depart in succession. As our fleet is a mixture of aircraft, some departure intervals can be up to five minutes, depending on aircraft performance which is impacted by a variety of factors, including type, age, weight, and passenger load.

These departure intervals often result in delays at busy times, especially during the first wave of departures in the morning, usually between 0600 and 0700. Hence the initial portion of the departures is a bottle-neck, which limits the airspace capacity and causes delays on the ground.

The current declared runway capacity is a maximum of 42 mixed movements per hour.

Purpose
Edinburgh Airport is running this Airspace Change Programme to modernise our airspace in line with the UK Government's modernisation strategy, as well as to increase Edinburgh Airport's airspace capacity.

Following CAP1616 and reviewing the existing situation, we believe any changes to flight paths will take advantage of improved navigational capability, which will allow better planning and increase the airspace capacity, particularly in peak times. This should also minimise the environmental impacts of flights in terms of the total number of people overflown, as well as when and how often they are overflown – while also reducing aircraft CO_2 emissions on a per-flight basis due to reductions in hold times on the taxi way and shorter flight paths.

We are working with Glasgow Airport, NATS Prestwick and NERL, and participating as part of FASI North work for a coordinated airspace above 7,000ft. This includes an opportunity to review current airspace usage around Edinburgh Airport with the potential to open up the Forth Estuary to traffic.

We believe that an improved airspace, with the right flight paths and technology for Edinburgh Airport, will ensure that our airport can meet existing and future demand by increasing the capacity of its runways and allow flights to depart with fewer delays and reduce aircraft CO_2 emissions on a per-flight basis.

Approach
Edinburgh Airport has followed the CAA's CAP1616 Airspace Design: Guidance on the regulatory process for changing airspace design including community engagement requirements and provides this submission for the approval gateway for Stage 1: Define.

Step 1A: Assess requirement
We submitted our Statement of Need (CAA reference DAP1916-2788) to the CAA on 12 April 2019 and published this on the CAA's airspace change portal on 14 April 2019 in accordance with the requirements of 'Stage 1, Step 1a: Assess requirements' [see Appendix E: Statement of Need].

We had our 'Stage1, Step 1a: Assess requirements' Assessment meeting with the CAA on 17 June 2019 and met the pre-meeting requirements of CAP1616 by agreeing an agenda with the CAA and publishing this one week before the Assessment meeting on 10 June 2019 [see Appendix F: Assessment meeting agenda].

Our Assessment meeting on 17 June 2019 at Gatwick House was attended by the Edinburgh Airport Airspace Change Project team and a number of experts from the CAA. As required by CAP1616, we drafted and agreed minutes within two weeks of the Assessment meeting with the CAA and published these on the CAA's portal on 1 July 2019 [see Appendix G: Assessment meeting minutes] as well as an updated version of the Statement of Need [see Appendix H: Statement of Need v2].

We were advised of our successful pass of 'Stage 1, Step 1a: Assess requirements' on 1 July 2019 [see Appendix I: Step 1a pass].

Step 1B: Design principles
The output of this programme of work was our design principles consisting of core principles for safety, environment and technical standards, as set by CAP1616 and related legislative, regulatory and statutory requirements, and desired design principles developed through this engagement programme.

Our objectives of the engagement in this process were to ensure:
- a fair representation of stakeholders was involved in the design principle development;
- we received a broad representation of views;
- we could combine local context with technical considerations;
- our design principles were influenced by stakeholders; and
- we comply fully with CAP1616 guidance.

Stakeholders
It was important that we had an inclusive approach to Stage 1, Step 1B, including:
- equality representation: getting the right people with an equality perspective to attend the workshops by using learning from previous consultation about equality impacts and inviting organisations relevant to these aspects e.g. Autism Scotland;
- seldom-heard voices: ensuring that quiet voices are heard in the consultation (people who may not feel confident/empowered/able to participate for a range of reasons);
- future-proofing those we engage with to ensure that from the beginning we have conducted a wide stakeholder identification process to ensure a fair representation of those impacted and those not yet impacted but who may be in the future.

We looked at three types of stakeholders: aviation stakeholders, stakeholder representatives and community stakeholders.

To ensure there was a fair representation of communities impacted or potentially impacted by flight paths, we included engagement with people from:

- communities currently flown over within noise contours;
- communities currently flown over outwith noise contours;
- communities currently not flown over but could be in future.

Workshops

We conducted five 2.5-hour workshops, with 15-20 attendees at four of the workshops and six at a specialist workshop, including, community, aviation and stakeholder representatives. We had initially only planned four workshops to cover these stakeholders, though through the invitation process, a strong sense of interest from Edinburgh Airport's Noise Advisory Board (EANAB) was shown. EANAB complained that they had insufficient opportunity to comment and we considered this complaint. It was decided as this group of individuals has an existing relationship with us, are more knowledgeable on this topic and already has a strong opinion, that it would be beneficial to the wider piece of engagement that we offer this group a separate workshop to allow participation.

Focus groups

To test the views of the general public and ensure they have an opportunity to be involved at the earliest of stages we recruited and ran three 1.5-hour focus groups of 8-10 people. These were representative of the views of people currently overflown within noise contours, currently overflown outwith noise contours and potentially overflown.

Longlist of design principles

Stakeholders taking part in the workshops and focus groups provided a significant amount of insight to Progressive Partnership. Through their analysis and collation of this information, they then determined 50 draft design principles (DDPs). We were also approached by Glasgow Airport and NERL (NATS Prestwick Centre) to include two design principles that were consistent across the Scottish Airport Network. They are listed in order of importance, determined by times mentioned within the workshops and focus groups. The additional two design principles from Glasgow and NERL were added at the end in no particular order.

Shortlisting of design principles

To evaluate the longlist of 52 DDPs developed through engagement with stakeholders, we held an evaluation workshop on 21 October 2019.

The attendees at this session were brought together for their expertise in technical, aviation, air traffic, environment, noise, health and operational areas. This session was observed by The Consultation Institute as part of the Institute's evaluation of our engagement activity.

Each DDP was read out to the group and discussed, including with a view to identifying DDPs that were out of scope of an Airspace Change Programme. The longlist was then divided into the two groups – 'for consideration' and 'not for consideration'.

Then the 'for consideration' group was reviewed. Each DDP was discussed, and similar draft design principles were grouped together, leading to theming design principles. This made it easier to discuss the large number of design principles when looking at the same types of comments.

Within individual themes, duplication and similarities were identified and it was appropriate in these instances to merge similar design principles. Once all design principles and themes were considered and either adopted or merged, the 'not for consideration' group was re-reviewed, and each DDP was then discussed again as to the full reason why it would not be considered.

Recall workshops
The shortlisted proposed design principles (PDPs) were tested by going back out to representatives from the original workshops through two 1.5 hour 'recall' workshops. The membership of this final group of representatives was determined by the market research agency from all of the attendees during the initial round of workshops, ensuring fair representation from community, aviation and general stakeholders.

Our methodology was designed to include a wide representation of views. We invited representatives from action groups such as EANAB and Extinction Rebellion, as well as community councils known to be opposed to the airport's growth or development. People with protected characteristics and those representing equalities groups were included and supported.

Attendees were sent a copy of the shortlist of design principles prior to attending the workshop.

A short presentation was made to attendees which set out the shortlist of PDPs, issues that respondents to the first wave of workshops thought important but were not design principles, and the longlist of DDPs derived from the first wave workshops.

Through the recall workshops, the stakeholders provided insights and opinions to Progressive Partnership.

Final design principle development
We gathered the information collated from the recall workshops from Progressive Partnership, plus the supplementary information provided by community groups outwith the process. We used this information to review each of the 16 PDPs.

Each PDP was considered individually in light of the comments provided at the recall workshops to determine whether a revision was warranted or whether a comment should be noted. Some further comments were made that went beyond the PDPs and addressed possible solutions. These were noted and would be shared in Stage 2: Design and Assess.

Conclusion
This Application for Stage 1: Define Gateway Approval details the communication, engagement and activities we conducted through CAP1616 Stage 1 for Edinburgh Airport's Airspace Change Programme. Starting with a blank page and running five initial workshops and three focus groups, we developed a longlist of 52 draft design principles. We then held a shortlisting workshop with a number of experts who provided advice as we shortlisted these draft design principles to a shortlist of 16 proposed design principles.

These 16 proposed design principles and the process we followed to determine them were then presented at two recall workshops to test our process. This recall workshop feedback combined with feedback collected from supplementary activity was used to determine the list of 16 final design principles. Our work as detailed throughout this document involved a number of stakeholders in varying industries and locations.

We have met our Stage 1 engagement objectives which were to ensure:
- a fair representation of stakeholders was involved in the design principle development;
- we received a broad representation of views;
- we could combine local context with technical considerations;
- our design principles were influenced by stakeholders; and
- we comply with CAP1616 guidance.

Our final design principles are:

Category	Number	Design principle
Safety (core)	FDP1	The airspace design and its operation must be as safe or safer than it is today.
Safety (core)	FDP2	Flight paths must be flyable and technically supported by air traffic control and airport technical management systems.
Operational (core)	FDP3	Flight paths must be designed to allow modern aircraft to use performance-based navigation (PBN) in line with CAA's modernisation strategy
Operational (core)	FDP4	Routes to/from Glasgow and Edinburgh airports must be procedurally deconflicted from the ground to a preferred level in coordination with NATS Prestwick.
Operational (core)	FDP5	The predictability of flight tracks must be maximised for consistency of operations.
Operational (core)	FDP6	Collaborate with other Scottish airports and NATS to ensure that the airspace design options are compatible with the wider programme of lower altitude and network airspace changes being coordinated by the FASI North programme.
Health and wellbeing	FDP7	Flight paths should be designed to minimise the total adverse effect on health and quality of life created by aircraft noise and emissions.
Health and wellbeing	FDP8	For flightpaths at or above 4,000ftto below 7,000ft, the environmental priority should continue to be minimising the impact of aviation noise in a manner consistent with the government's overall policy on aviation noise, unless this would disproportionately increase CO_2 emissions.
Health and wellbeing	FDP9	Flight paths should be designed to minimise population overflown below 4,000ft and, between 4,000ft and 7,000ft, taking into account any potential adverse impact, due to those overflown having protected characteristics, as defined by the Equalities Act 2010.
Health and wellbeing	FDP10	Flight paths should be designed to minimise overflying sensitive locations and noise-sensitive receptors (for example, the zoo, retirement complexes, green spaces, historic heritage sites, and others).
Health and wellbeing	FDP11	Flight paths should be designed to include track concentration and/or track dispersal options to provide noise respite.
Operational	FDP12	Flight paths should be designed with routes that minimise track miles and fuel burn.
Operational	FDP13	Flight paths should be designed to ensure efficient and effective route management.
Technical	FDP14	Requirements of airspace users should be taken into account when designing flight paths.
Environment	FDP15	Flight paths should be designed to minimise adverse local air quality impacts.
Economy	FDP16	Airspace should be designed to maximise capacity in order to contribute economic benefits to Scotland, including tourism.

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Full report

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3. Background

Edinburgh Airport is to the west of Edinburgh close to the Firth of Forth and only eight miles from Edinburgh city centre. We have several communities close to Edinburgh at each end of the runway, and our flight paths up to 7,000ft fly over a number of communities within Edinburgh, Lothians and Fife.

We have a single runway (06/24) with six conventional Standard Instrument Departures (SIDs) routes and three Standard Terminal Arrival Routes (STARs):

- SID: GOSAM1C departure 24 for jet aircraft only;
- SID: GOSAM1D departure 06 for jet aircraft only;
- SID: TALLA6C departure 24 for jet and non-jet aircraft;
- SID: TALLA6D departure 06 for jet and non-jet aircraft;
- SID: GRICE3C departure 24 for jet and non-jet aircraft;
- SID: GRICE4D departure 06 for jet and non-jet aircraft;
- STAR: STIRA1A;
- STAR: TWEED2B/2C/2D/EDN2E; and
- STAR B-RNAV: TWEED 3A/EDN 3A.

Aircraft departing to the north of Edinburgh occasionally fly a non-SID route via PIPAR/airway N864.

The pattern of traffic on any day depends on the direction of the wind since this determines which direction of the runway is used. The prevailing wind is from the south west. In 2018 runway 24 was used 69% of the time and runway 06 was used 31% of the time – and the split has followed this trend of approximately 70/30 for a number of years. See Table 1: Runway usage at Edinburgh Airport.

Table 1: Runway usage at Edinburgh Airport

Figures for runway usage at Edinburgh Airport Air Traffic Movements (ATMs), Runway 06 (RW6), Runway 24 (RW24)								
	2015		**2016**		**2017**		**2018**	
	ATMs	**% of use**	ATMs	**% of use**	ATMs	**% of use**	ATMs	**% use**
RW6	23,365	**20.6**	38,692	**31.9**	27,761	**21.8**	39,969	**30.9**
RW24	89,842	**79.3**	82,629	**68.1**	99,667	**78.2**	89,437	**69.1**

Edinburgh Airport is Scotland's capital city airport. The strong demand for services makes it Scotland's busiest airport, flying to more destinations that any other Scottish airport. In 2018, we helped 14.3 million passengers on their journeys putting us in the top 10 UK airports, in position six behind the three big London airports - Heathrow, Gatwick, Stansted; plus Manchester and Luton.

Table 2: Airport sizes

Table 2: Airport sizes
Size of Reporting Airports February 2018 - January 2019
Comparison with previous year

	2019		2018	
	Terminal passengers (000)	Percentage of Passengers at all airports	Terminal passengers (000)	Percentage of passengers at all airports
Heathrow	80,223	27.4	78,053	27.4
Gatwick	46,187	15.8	45,603	16.0
Manchester	28,373	9.7	27,773	9.8
Stansted	28,124	9.6	25,958	9.1
Luton	16,889	5.8	16,027	5.6
Edinburgh	14,374	4.9	13,465	4.7
Birmingham	12,489	4.3	12,952	4.5
Glasgow	9,599	3.3	9,877	3.5

source: https://www.caa.co.uk/Data-and-analysis/UK-aviation-market/Airports/Datasets/UK-Airport-data/Airport-data-2019-01/

4. Introduction

Edinburgh Airport is growing fast. In 2016 we commissioned an independent economic impact study conducted by Biggar Economics. The key finding of the analysis is that the economic benefit of having an airport in Edinburgh amounts to £955.4 million Gross Value Added (GVA)/year to the Scottish economy of which £507.1 million/year is retained within the City of Edinburgh. The analysis also found that this level of activity supports almost 23,340 Scottish jobs, including around 12,330 in the City of Edinburgh. The analysis further suggests that by 2020 the value of these benefits to the Scottish economy could increase to between £1.1 billion and £1.6 billion GVA/year, of which between £594.9 million and £767.8 million GVA/year could be retained in Edinburgh. It was estimated that this level of activity could support between approximately 26,000 and 40,280 Scottish jobs, of which between around 13,940 and 19,920 could be in Edinburgh. We are running an update on this economic study in early 2020 to include in our Airspace Change Programme communications in CAP1616's Stage 3: Consult.

Our long-haul connectivity is increasing with the Middle East and China being two recent additions to our services – our long-haul growth rates are one of the fastest in the UK, from one long-haul service in 2012 to 14 in 2018. Our growth targets continue to be ambitious, with more long-haul routes to new destinations, as well as increased short-haul and European services on our short-term and long-term plans. Our Masterplan, which sets out how the airport thinks we will grow in the decades to come, and poses questions around future growth, projects passenger growth to 20 million by 2035 and you can find it here: https://s3-eu-west-1.amazonaws.com/edinburghairport/files/2016/11/Edinburgh_Airport_Masterplan_15112016.pdf

Table 3 Passenger number projections from Edinburgh Airport's Masterplan

Passenger (pax) and air traffic movement (atm) forecasts									
	2011	2017	2020	2025	2030	2035	2040	2045	2050
PAX	9m	12.5m	14.3m	16.6m	19.2m	22.3m	25.8m	29.9m	30m
ATM	110k	124k	134k	149k	166k	186k	208k	233k	261k

The benefits of this network to Scotland's position in world markets, and therefore to our economy, are substantial. That growth is itself reflective of Scotland's economic performance and our attractiveness as a destination for visitors from the four corners of the world. It is because of this attractiveness and our global reputation that we believe that this growth will continue.

The growth, in the main, is driven by visitors to Scotland. The appetite for people from across the globe to visit our country remains undiminished. This growth is supported by the Scottish Government. For example, an answer, provided by the Cabinet Secretary for Transport, Infrastructure and Connectivity, Michael Matheson, on 7 November 2019 to a written parliamentary question, stated: "Improving Scotland's air connectivity is one of this Government's top priorities, with a focus on routes that are important for business and inbound tourism".

"In recent years, our partnership with Scotland's airports has helped secure new links between Scotland and Doha, Dubai, Boston, Chicago, Washington, New York, Philadelphia, Beijing and a number of European cities. Now, more than ever, we need to make it easy for Scotland to do business with the rest of the world and improving air connectivity is key to that. The Scottish Government will continue to promote Scotland as a destination which can sustain more direct international air services and better global hub connectivity and will continue to work with all Scotland's airports to achieve these objectives" [see Appendix D for the question and full answer].

With this growth comes the need to maximise the frequency at which aircraft can depart Edinburgh Airport in succession. Currently, due to the design of the departure flight paths, the standard departure interval between successive departures is two minutes – meaning our departure capacity is 28 movements per hour. However, this figure is only achieved when 28 identical aircraft depart in succession. As our fleet is a mixture of aircraft, some departure intervals can be up to five minutes,

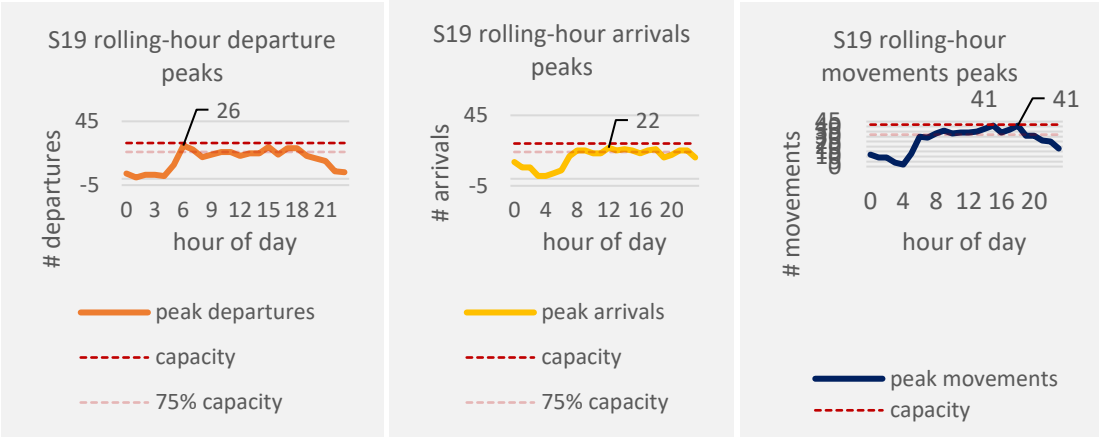
depending on aircraft performance, which is impacted by a variety of factors, including type, age, weight, and passenger load.

We are scheduling above 75% of airspace departure capacity every day (see Graph 1: Scheduled demand v capacity). These graphs show the Summer 2019 rolling-hour departure peaks. For the departure graphs, it shows the airspace is scheduled to operate over 75% departure capacity (21) on 99% of days and airspace scheduled to operate over 90% departure capacity (25) on 18% of days.

For the arrivals graph, it shows airspace is scheduled to operate over 75% arrival capacity on 39% of days and airspace is scheduled to operate over 75% movements capacity on 95% of days.

The UK Government's Aviation 2050 Strategy says that future growth demand should make best use of existing infrastructure: "The government believes that forecasted aviation demand up to 2030 can be met through a northwest runway at Heathrow and by airports beyond Heathrow making best use of their existing runways subject to environmental issues being addressed" (source: https://www.gov.uk/government/consultations/aviation-2050-the-future-of-uk-aviation).

Graph 1: Scheduled demand v capacity



These departure intervals often result in delays at busy times, especially during the first wave of departures in the morning, usually between 0600 and 0700. Hence the initial portion of the departures is a bottle-neck, which limits the airspace capacity and causes delays on the ground.

The current declared runway capacity is a maximum of 42 mixed movements per hour.

5. Purpose

Edinburgh Airport is running this Airspace Change Programme to modernise our airspace in line with the UK Government's modernisation strategy, as well as to increase Edinburgh Airport's airspace capacity.

Following CAP1616 and reviewing the existing situation, we believe any changes to flight paths will take advantage of improved navigational capability, which will allow better planning and increase the airspace capacity, particularly in peak times. This should also minimise the environmental impacts of flights in terms of the total number of people overflown, as well as when and how often they are overflown – while also reducing aircraft CO_2 emissions.

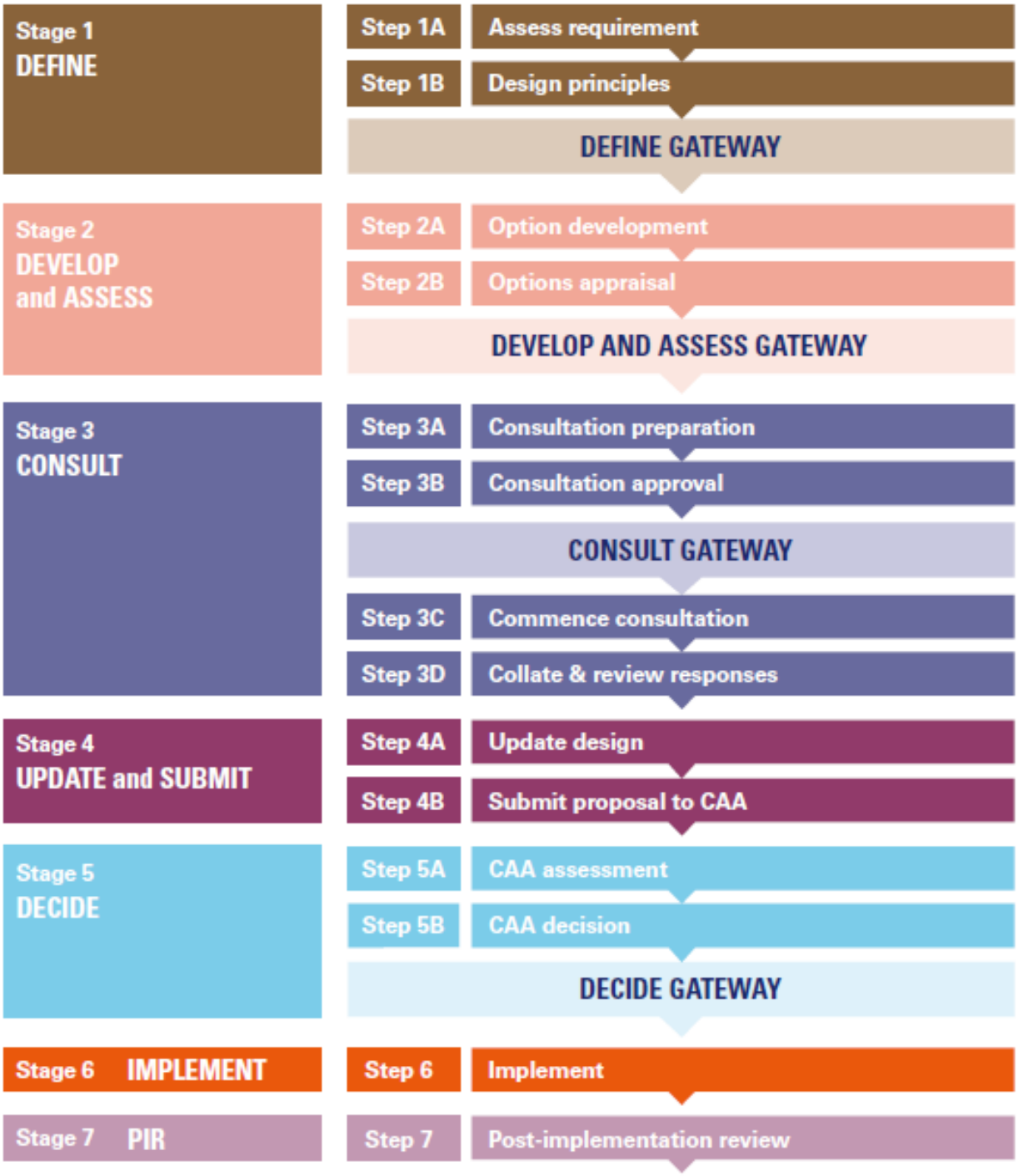
We are working with Glasgow Airport, NATS Prestwick and NERL, and participating as part of FASI North work for a coordinated airspace above 7,000ft. This includes an opportunity to review current airspace usage around Edinburgh Airport with the potential to open up the Forth Estuary to traffic.

We believe that an improved airspace, with the right flight paths and technology for Edinburgh Airport, will ensure that our airport can meet existing and future demand by increasing the capacity of its runways and allow flights to depart with fewer delays and reduce aircraft CO_2 emissions.

6. CAP1616: Stage 1, Define

Edinburgh Airport has followed the CAA's CAP1616 Airspace Design: Guidance on the regulatory process for changing airspace design including community engagement requirements and provides this submission for the approval gateway for Stage 1: Define.

Figure 1: Overview of the airspace change process



6.1 Stage 1, Step 1A: Assess requirements

We submitted our Statement of Need (CAA reference DAP1916-2788) to the CAA on 12 April 2019 and published this on the CAA's airspace change portal on 14 April 2019 in accordance with the requirements of 'Stage 1, Step 1a: Assess requirements' [see Appendix E: Statement of Need].

We had our 'Stage1, Step 1a: Assess requirements' Assessment meeting with the CAA on 17 June 2019 and met the pre-meeting requirements of CAP1616 by agreeing an agenda with the CAA and publishing this one week before the Assessment meeting on 10 June 2019 [see Appendix F: Assessment meeting agenda].

Our Assessment meeting on 17 June 2019 at Gatwick House was attended by the Edinburgh Airport Airspace Change Project team and a number of experts from the CAA. As required by CAP1616, we drafted and agreed minutes within two weeks of the Assessment meeting with the CAA and published these on the CAA's portal on 1 July 2019 [see Appendix G: assessment meeting minutes] as well as an updated version of the Statement of Need [see Appendix H: Statement of Need v2].

We were advised of our successful pass of 'Stage 1, Step 1a: Assess requirements' on 1 July 2019 [see Appendix I: Step 1a pass].

6.2 Stage 1, Step 1B: Design principles

Various stages of CAP1616 involve stakeholder engagement, including community engagement requirements, and must be documented, with decisions evidenced. At key points throughout the process, the CAA must assess and evaluate the work to date and approve the programme to move to the next level. Their Appendix D: Airspace design principles, provides more information on why it is included, how to undertake the activity and guidance on the outcome of the activity – [see Appendix J: CAP1616 Appendix D].

To ensure we meet the various stages of the CAP1616 requirements, we developed an Engagement Strategy for the Airspace Change Programme, which is updated through appendices for each stage of CAP1616. This allows a constant review of the approach, based on lessons learned and reaction to engagement methods, without dictating the full approach to the programme at the beginning – this gives us an agile approach to engagement and the overall programme [see Appendix K: Engagement strategy].

The objectives of the Step 1B Engagement plan were to ensure:

- a fair representation of stakeholders was involved in the design principle development;
- we received a broad representation of views;
- we could combine local context with technical considerations;
- our design principles were influenced by stakeholders; and
- we comply fully with CAP1616 guidance.

7. Governance

Our governance structure is designed to support a robust and successful process. Our Programme Sponsor is a senior director within Edinburgh Airport who reports directly to our Chief Executive and the Edinburgh Airport Board and Board ACP Sub Committee on this matter. The Programme Sponsor has a standing space at each Board meeting to provide an update on the Airspace Change Programme.

The Airspace Change Programme has a dedicated team within the airport consisting of a programme manager and coordinator as well as workstream leads for technical, environment and communication and engagement workstreams. The team are supported by Legal, Air Traffic and Data Protection internal experts in addition to the expert partners, listed below.

Each workstream speaks weekly regarding the requirements of CAP1616 and the actions and advice needed going forward, and then the Programme Working Group consisting of the Programme Sponsor, support and workstream leads meet weekly to discuss the progress of the programme.

The Programme Sponsor is the decision maker, reporting to the Board ACP Sub Committee and Board for final approvals.

8. Expert partners

We engaged a team of suppliers to support us through this process. These included:

- The Consultation Institute, who provided advice and guidance on our approach to engagement in Stage 1B and provided a review of process;
- Progressive Partnership, who conducted our stakeholder workshops, focus groups and analysed these conversations, reporting at each stage of the process;
- Diversity Dynamics, who provided advice and guidance on our approach to engagement with a diversity focus, including reviewing our communications and participating in stakeholder workshops and focus groups throughout the process;
- WSP, who provided advice and guidance on our approach from an environmental and health focus, including reviewing our communications and participating in workshops and stakeholder focus groups throughout the process; and
- To70, who provided advice and guidance on our approach from a technical focus, including reviewing our communications and participating in a number of stakeholder workshops and focus groups throughout the process.

9. Risks

We identified key risks at Step 1B Design principles, they are

- being perceived to select workshop attendees to influence outcomes;
- not engaging the right mix of stakeholders;
- developing unachievable design principles;
- community, media or political pressure to broaden the invite-only engagement process.

To mitigate the first two of these risks above during Step 1B Design principles, Edinburgh Airport appointed a third-party market research agency to conduct the design principles workshops on our behalf.

We determined the three types of representative groups we wanted to target through our engagement process – aviation, other stakeholders, such as businesses, third sector organisations and pressure groups, and communities that are or may be potentially impacted. We believe that this representation across aviation, industry and community has ensured that we have engaged the right mix of stakeholders in setting out our design principles.

To mitigate the third risk of developing unachievable design principles, we worked with our environmental and technical experts to ensure that legislative, regulatory and statutory requirements were established before the discussion groups to set a benchmark with the groups and set expectations about the possible options.

The stakeholder groups were asked to determine a longlist of design principles that are based on criteria within CAP1616. The market research supplier was supported through the sessions by experts to help ensure questions were answered throughout the process. To mitigate the fourth risk and to maintain the integrity and consistency of the consultation and engagement methodology, those who were invited but could not make it and wanted to participate were offered the opportunity to still participate through an electronic survey – it was only these participants who wanted to participate but couldn't attend who were offered the opportunity to participate in this way.

We also received a number of letters outwith the Step 1B workshop, focus group and recall workshop process from communities who wanted to reinforce their feedback through this stage of the process. We responded to these letters and let them know they would form part of our submission [see Appendix C] and that their points would be considered through the process.

10. Approach to engagement for Stage 1, Step 1B

The output of this programme of work was our design principles consisting of core principles for safety, environment and technical standards, as set by CAP1616 and related legislative, regulatory and statutory requirements, and desired design principles developed through this engagement programme.

It was important that we had an inclusive approach to Stage 1, Step 1B, including:

- equality representation: getting the right people with an equality perspective to attend the workshops by using learning from previous consultation about equality impacts and inviting organisations relevant to these aspects e.g. Autism Scotland;
- seldom heard voices: ensuring that quiet voices are heard in the consultation (people who may not feel confident / empowered / able to participate for a range of reasons);
- future proofing those we engage with to ensure that from the beginning we have conducted a wide stakeholder identification [see Appendix N: Stakeholder identification] process to ensure a fair representation of those impacted and those not yet impacted but who may be in the future.

We decided to start our design principle development with a blank sheet of paper and work with stakeholders to develop a longlist of design principles. We decided that workshops with aviation stakeholders and stakeholder representatives would allow a good debate and discussion amongst these groups, and that focus groups enabled us to hear the opinions of a cross-section of the general public.

We held a workshop with industry and operational experts to convert the longlist of draft design principles to a proposed shortlist of design principles, carefully noting and reporting the justifications for each principle on the long-list to being accepted, merged with others or rejected.

We undertook two recall workshops, where representatives from the first round of workshops and focus groups were asked for their feedback on our longlist and proposed shortlist, as well as our justifications for arriving at the shortlist.

It was from here that we reviewed all the information gathered through the workshops and focus groups, in addition to, information received outwith this process [see Appendix C: information gathered outwith process], and determined our final design principles.

10.1 Stakeholder identification

We conducted a stakeholder identification [see Appendix N: Stakeholder idenfitication] exercise to determine the relevant and potentially impacted stakeholders for the design principles – these also determined the audiences of our focus groups.

Stakeholders were identified by applying The Consultation Institute's methodology, looking at those who may be directly, indirectly, or potentially affected.

We looked at three types of stakeholders: aviation stakeholders, stakeholder representatives and community stakeholders.

To ensure it was a fair process and we did not hand-pick the individuals in the workshops and focus groups, we briefed Progressive Partnership on the types of stakeholders, including industry and area, we needed represented, and it was then their task to create a list and make contact with potential attendees to recruit a group of people to meet the brief.

Aviation stakeholders

We sought a wide representation of differing stakeholders to encourage a wide view of opinions.

Table 4: Aviation stakeholder matrix

Aviation representation	**Example type**
Scottish Airspace collective organisations	National Air Traffic Services – Prestwick Centre (known as NATS PC)
Scottish Airspace above 7,000ft	NATS En Route (known as NERL)
EAL airport navigation service providers	Air Navigational Services (ANS)
Neighbouring airspace owners	Military – Ministry of Defence, Glasgow/Newcastle/Dundee airports
Gliders	Scottish Glider Centre
Pilots	Flight Operations Committee (FLOPSC)
Local airline representatives	Edinburgh Airport Airline Operators Committee (AOC)
National airport representatives	Airport Operators Association (AOA)
Cargo operators	TNT, Royal Mail
Those opposed to airspace changes/growth	Edinburgh Airport Watch (EAW), Sustainable Aviation

Stakeholder representatives

We sought a wide representation of stakeholder organisations, with each organisation adding a unique perspective.

Table 5: Stakeholder representatives

Stakeholder representatives	**Example type**
Airport representative bodies	Edinburgh Airport Consultative Committee (EACC), Edinburgh Airport Noise Advisory Board (EANAB)
Economic growth and business representation	Chambers of Commerce, Royal Bank of Scotland (RBS), Amazon, etc
Education representation	Parent bodies, Education departments, parent teacher associations
Environmental representation	Scottish Environment Protection Agency (SEPA), Royal Society for the Protection of Birds (RSPB), Scottish Natural Heritage (SNH), Friends of the Earth
Equality representation (age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex, sexual orientation)	Edinburgh and the Lothians Regional Equality Network (ELREQ)
Health and disability representation	Health Protection Scotland (HPS), Royal National Institute of Blind People (RNIB), Autism Scotland, Disability Scotland
Interest in aviation	Sustainable Aviation, Edinburgh Airport Watch
Local Authorities and Community Councils	Representative of all areas
Local Council planning departments	West Lothian Planning team (example but could be all local council), Environmental health departments
Scottish Government	Transport Scotland, officials
Tourism and recreation representation	VisitScotland, Edinburgh Tourism Action Group

Community stakeholders

To ensure there was a fair representation of communities impacted or potentially impacted by flight paths, we included engagement with people from:

- communities currently flown over within noise contours [map A];
- communities currently flown over outwith noise contours [map B];
- communities currently not flown over but could be in future [map C].

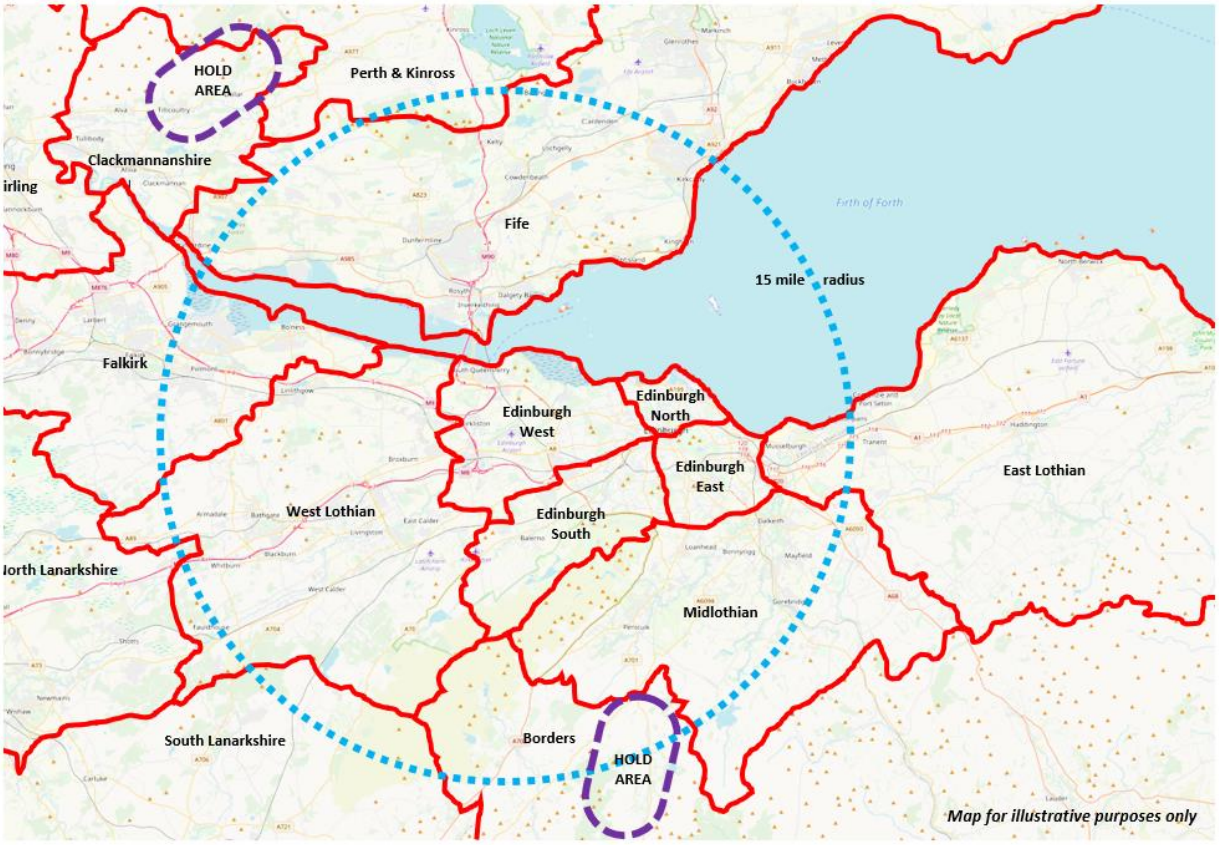
Map A: 2018 LAeq Summertime contour map

Map B: 2018 LAeq Summertime contour overlaid on the mean departure and arrival flight paths using EDI radar data supplied via ERCD

To determine which areas to include outside of the noise contours, we looked at airspace up to 7,000ft (CAA consider communities under 7,000ft as those who may receive the most noise impact and EAL's airspace is up to 7,000ft). Although TALLA, GRICE and GOSAM have waypoints at 6,000ft, this is the minimum height planes must reach before passing this waypoint.

We considered areas within a 15-mile radius of Edinburgh Airport [dotted blue line on map C] to cover most departing flights reaching 7,000ft in both directions (concluded by a random selection of flights over two 2-day periods in July 2019 to take into account wind direction). For arrivals under 7,000ft off runway 24 West and East Lothian and the Borders needed to be included, and off runway 06, North and South Lanarkshire, Stirling, Clackmannanshire and Falkirk in addition to East Lothian and the Borders needed to be included [map C].

Map C: 15 mile radius from Edinburgh Airport



10.2 Participant recruitment by Progressive Partnership

The process we undertook was a targeted process to ensure a true and fair representation of areas and stakeholders were included in the design principle development. Therefore, we determined our approach did not need an option for online participation for the general public at this stage. To allow the general public to participate in the Airspace Change Programme, there will be a comprehensive consultation exercise in Stage 3 of CAP1616.

As mentioned previously, to ensure it was a fair process and we did not hand-pick the individuals in the workshops and focus groups, Progressive Partnership was tasked to recruit a suitable group of participants in accordance with their brief [Appendix A includes all of the communication material used to recruit the workshop and focus group attendees].

They sent an introductory email to stakeholders introducing the Airspace Change Programme, this programme of work for Stage 1B and inviting them to participate.

These invitations covered stakeholders from a wide range of interest and geographical areas:

1. Aviation and technical groups such as: cargo, recreation, training and traffic control;
2. Stakeholder representative groups such as: property developers, environmental groups environmental activists, councils and equalities organisations;
3. Community representatives covering:
    - Edinburgh West/West Lothian North
    - Edinburgh East/East Lothian North
    - Fife South West/Fife South East
    - Falkirk/West Lothian (rest of)
    - Outlying areas (Midlothian, rest of Fife, rest of East Lothian, Perth and Kinross, Borders, Stirling, Clackmannanshire).

The starting point for the recruitment was to develop a database of potential delegates. This drew largely from contact details provided by EAL, organisations and representatives involved in previous consultations and a request from people to be kept informed. This was supplemented by contributions from the project team, based on their knowledge and experience of key stakeholders operating in the topic area; and by desk-research undertaken by Progressive Partnership, to update contact details in the EAL contact list, to identify contacts in outlying areas not covered by the EAL database, and to expand the range of contacts within the database (for example, to ensure the local authority contacts included all relevant departments). The contacts were built into a single database of 1,333 records.

The dataset was 'cleaned':

- records without valid contact details were identified and prioritised. Further work was undertaken to source contact details for these (names/phone numbers/email addresses for stakeholders), e.g. Google searches of local directories, calls to key organisations, re-contact EAL/partners;
- contacts, where email addresses remained missing following mitigating actions, were excluded;
- it was noted that many of the records within the EAL database e.g. libraries and leisure centres, related to information contacts that would enable EAL to distribute information, but were not organisations with a representative structure with whom we could engage. These were deprioritised in the engagement.

The cleaned database was sorted into 'List A' respondents and 'List B' respondents[1].

- Allocation into the list drew on a preliminary stakeholder identification exercise undertaken by Progressive Partnership; this was updated when EAL completed their draft stakeholder identification exercise and were able to provide a list of stakeholders to include in the engagement exercise. This included organisations (public and private sector) and community councils.
    - Allocation of records into these categories was undertaken to ensure organisations, identified through stakeholder identification exercise, were invited.
    - We also sought to ensure a good mix and spread of organisations at each event. For example, the community stakeholder workshop sought to include a mix of the following: representative and social organisations; tenant/resident groups; a selection of recreation and interest groups; and a selection of the community councils from the local area.
- List A organisations were contacted first, with List B contacts forming the back-up pool.
- After a low response to email invites, a further List C was drawn up comprising local representatives from national organisations and local organisations.

Emails were sent to all representatives inviting them to attend on the date assigned to the workshop for their respondent type. Recipients were offered three options in the email:

(1) I am interested and can attend
(2) I am interested but cannot attend
(3) I am not interested, remove me from the database.

[1] This has been shared to the project team as a separate document

Response to the initial email was lower than expected: the number volunteering to take part was only 41 in the first week of being emailed. Follow up telephone calls were therefore made to non-responders to determine interest and availability. In total, 484 organisations were emailed and 283 were telephoned. Many organisations were called up to five times in order to find an available/relevant person.

Because they were from a wide area and some distance from Edinburgh, many community representatives were reluctant to spend time and money on travelling to attend workshops. To compensate and encourage engagement, an incentive of £40 was offered to all participants of the community workshops.

Once all workshops were fully recruited, participants were sent confirmation details, which also sought recording permissions. Additionally, all participants were contacted by Progressive Partnership by telephone on the evening before the workshop to confirm their attendance.

Focus group recruitment

Experienced recruiters from Progressive Partnership enlisted all respondents for the focus groups, using precise specifications, approved by EAL, to ensure that the data gathered was reflective of the target audience in the brief. Progressive Parternship used a recruitment questionnaire that screened out members of any lobbying or advisory groups to the airport and those who worked in aviation.

Qualitative recruitment was back-checked (quality controlled) by re-contacting 100% of respondents and re-administering part of the recruitment questionnaire.

Respondents to the groups overflown were given an incentive of £40 for attending and to cover costs. Those who travelled from further afield (not overflown) were given an incentive of £50 to cover costs.

Principles of inclusion

Our methodology was designed to include a wide representation of views. We invited representatives from action groups such as Edinburgh Airport Noise Advisory Board (EANAB) and Extinction Rebellion, as well as community councils known to be opposed to airport growth or airspace change. People with protected characteristics and those representing equalities groups were included and supported. For example, a representative from RNIB was given support from a researcher whose role it was to translate any visual information into spoken word and write down his views so they could be included in the group's inputs. Members of the general public who are less used to speaking at large public forums were proactively recruited and given their voice in focus groups. We considered opportunities for those who were interested in taking part in the workshops but could not, either because they could not make the time or because they had autism and found large public meeting too difficult. As they were given the opportunity to participate, we made allowances for their contribution to be received electronically. This was fully supported by Diversity Dynamics, experts in inclusion.

10.3 Workshops

We conducted five 2.5 hour workshops, with 15-20 attendees at four of the workshops with six at the EANAB workshop , including, community, aviation and stakeholder representatives. We had initially only planned four workshops to cover these stakeholders, though through the invitation process, a strong sense of interest from Edinburgh Airport's Noise Advisory Board (EANAB) was shown. EANAB complained that they had insufficient opportunity to comment and we considered this complaint. It was decided as this group of individuals has an existing relationship with us, are more knowledgable on this topic and already has a strong opinion, that it would be beneficial to the wider piece of engagement that we offer this group a separate workshop to allow participation.

It was envisaged that workshops would determine a longlist of design principles. Workshops required the creation of a topic guide to inform and probe the workshops. This document outlined all of the issues of importance to discuss, including the core questions cited in CAP1616. The topic guide was jointly developed with the project team and signed off by the Sponsor to ensure the approach met the brief.

The way workshops were recruited and moderated, the issues of importance, and existing levels of knowledge were different across groups and so topic guides were tailored to reflect that. Discussions were held to understand the issues of importance to stakeholders and the reasons why. From these discussions, the workshop attendees were asked to rank the design principles in order of importance. The output of these workshops was the longlist of design principles. Attendees for the initial round of engagement are outlined below.

Table 6: Initial engagement workshop 1. Community stakeholders north and west

Name	Organisation	Name	Organisation
[redacted]	North Queensferry Community Council	[redacted]	Linlithgow and Linlithgow Bridge Community Council
[redacted]	North Queensferry Community Council	[redacted]	Low Valleyfield Community Council
[redacted]	Dalgety Bay and Hillend Community Council	[redacted]	Kirknewton Community Council
[redacted]	Dalgety Bay and Hillend Community Council	[redacted]	Charlestown, Limekilns and Pattiesmuir Community Council
[redacted]	Bathgate Community Council	[redacted]	Murieston Community Council
[redacted]	Blackness Community Council	[redacted]	Royal Burgh of Burntisland Community Council
[redacted]	Royal Burgh of Kinghorn Community Council	[redacted]	Uphall Community Council
[redacted]	Royal Burgh of Kinghorn Community Council	[redacted]	Lochgelly Community Council
[redacted]	Elie and The Royal Burgh of Earlsferry Community Council	[redacted]	Fife College
[redacted]	Murieston Community Council		

Table 7: Initial engagement workshop 2. Aviation

Name	Organisation	Name	Organisation
[redacted]	Scottish Gliding Centre	[redacted]	British International Freight Association (BIFA)
[redacted]	British Helicopter Association (BHA)	[redacted]	National Air Traffic Services (NATS)/NERL
[redacted]	East of Scotland Microlights	[redacted]	British Parachute Association (BPA)
[redacted]	East of Scotland Microlights	[redacted]	West Atlantic Airlines
[redacted]	Royal Mail	[redacted]	Scottish Mountain Paragliding Club pp BHPA (British Hang Gliding and Paragliding Association)
[redacted]	Airspace4All	[redacted]	Guild of Air Traffic Control Officers
[redacted]	Royal Mail	[redacted]	Edinburgh Airport Watch
[redacted]	Skydive St Andrews (Parachute Operation)	[redacted]	Tayside Aviation (Fife)

Table 8: Initial engagement workshop 3. Edinburgh Airport Noise Advisory Board (EANAB)

Name	Organisation
[redacted]	Blackness Area Community Council
[redacted]	Cramond Association
[redacted]	Ratho and District Community Council
[redacted]	Co-opted Ecclesmachan resident
[redacted]	Uphall Community Council
[redacted]	Cramond and Barnton Community Council

Table 9: Initial engagement workshop 4. Stakeholders general

Name	Organisation	Name	Organisation
[redacted]	Environmental Protection Scotland	[redacted]	Fife Centre for Equalities
[redacted]	Disability and Equality Scotland	[redacted]	West Lothian Council
[redacted]	Aberdour Community Council	[redacted]	Walker Group
[redacted]	East Lothian Council Environmental Health Service	[redacted]	Extinction Rebellion
[redacted]	Falkirk Council	[redacted]	Historic Environment Scotland (HES)
[redacted]	Winchburgh Developments	[redacted]	Fife Council Environmental Health
[redacted]	Royal National Institute of Blind People (RNIB)	[redacted]	Scottish Environmental Protection Agency (SEPA)
[redacted]	PPCA Town Planning Consultants		

Table 10: Initial engagement workshop 5. Community stakeholders south and east

Name	Organisation	Name	Organisation
[redacted]	Broxburn and Uphall Traders' Association	[redacted]	Cramond and Barnton Community Council
[redacted]	Ecclesmachan Community Council	[redacted]	Innerleithen Community Trust
[redacted]	Colinton Community Council	[redacted]	Sighthill/Broomhouse and Parkhead Community Council
[redacted]	Craigentinny/Meadowbank - Community Council	[redacted]	Pencaitland Community Council
[redacted]	Cramond and Barton Community Council	[redacted]	Queensferry and District Community Council
[redacted]	Midlothian Council	[redacted]	Ratho and District Community Council
[redacted]	Dalkeith and District Community Council	[redacted]	Drum Brae Community Council
[redacted]	Fairmilehead Community Council	[redacted]	Gullane Area Community Council

10.4 Focus groups

To test the views of the general public and ensure they have an opportunity to be involved at the earliest of stages we recruited and ran three 1.5-hour focus groups of 8-10 people. These were representative of the views of people currently overflown within noise contours, currently overflown outwith noise contours, potentially overflown and currently not overflown.

Table 11: Initial engagement focus group composition

Group 1: Currently overflown within noise contours	**Group 2: Currently overflown outwith noise contours**	**Group 3: Not overflown but potentially could be**
Pumpherston Newbridge Crammond Livingston	Queensferry South Queensferry North Davidsons Mains Newhaven	Clackmannan Alloa/Fife area Falkirk Penicuik/Borders area
Mix SEG	Mix SEG	Mix SEG
6 were parents of children living at home across a range of ages 1 to 11 years old	6 were parents of children living at home across an age range of 3 to 17 years old	2 were parents of children living at home, across an age range of 1 to 18 years old
4 males, 7 females	4 males 7 females	3 males, 3 females
Ages ranged from 20 to 66	Ages ranged from 34 to 66	Ages ranged from 38 to 66
4 with protected characteristics[2]	3 with protected characteristics	2 with protected characteristics
2 retired, 1 unemployed, 1 part time, 7 working full time	3 retired, 7 working full time, 2 working part time	2 working part time, 3 working full time 1 retired
11 respondents in total	11 respondents in total	6 respondents

10.5 Development of topic guide and stimulus material

We created a page on our website dedicated to the Airspace Change Programme – www.edinburghairport.com/airspacechange. This page is a driver to the CAA's portal but also houses airspace change information from our previous programmes. We have also developed some FAQs based on queries we received during our previous programmes – these are also housed on the website and will be updated throughout the programme based on feedback.

The attendees were given a copy of the Statement of Need ahead of the workshops and focus groups. We developed a topic guide with Progressive Partnership to ensure that key points were included in the conversations – including CAP1616 and where we were in the process, what this stage in the process involved and why they were invited. Progressive Partnership then determined the topics guide to promote conversation around design principles, including the following themes:

- responses to the SON;
- environment;
- community;
- technical;
- economic: business and economy; and
- equalities.

Where time permitted, we also discussed communication. Initially the topic guide was designed to include a summary section on trade-offs with a view to determining attendees' preference for one design principle over another. This was met with resistance from the majority of attendees who claimed the issues were too complicated to state preferences. Following the first workshop, it was proposed by

[2] Age / disability / gender reassignment / marriage civil partnership / pregnancy-maternity / race / religion or belief / sexual orientation

Progressive Partnership and agreed by the rest of the project team to remove the trade-off section in the topic guide. This was replaced with a section on relationships between principles. A full copy of both of the topic guides can be found in Appendix A; the initial and the revised version.

A short presentation was made to attendees which set out the reasons behind the Airspace Change Programme. This gave an overview of the Statement of Need, maps of existing flight paths, the regulatory process CAP1616 and examples of design principles. A copy can be found in Appendix A.

10.6 Supplementary activity

We recognise the interest of certain stakeholders such as elected representatives. However, we considered that their participation in workshops would not have been appropriate. Therefore we wrote to MSPs, MPs and Councillors [see Appendix O] to inform them about our activity and invited them to comment through written communication. We received one response from [redacted] about our programme [see Appendix O for [redacted] letter and our response].

Outside of our Airspace Change Programme, we have two community-based representative groups – our Consultative Committee (EACC) and our Noise Advisory Board (EANAB). Recognising their community representative role, we presented to these groups at the beginning of the programme to outline our approach.

EANAB

Since our Airspace Change Programme was rejected in 2018, airspace change has been on the EANAB agenda. To encourage open and honest communication with this group and strengthen our programme through their involvement, we advised EANAB in late 2018 that we would be beginning a new ACP under the CAP1616 guidelines.

Due to the significant correspondence from this group about airspace in general, we arranged for the CAA to come and talk to EANAB about how airspace is managed, and noise modelling in general, on 26 March 2019.

Although CAP1616 doesn't require it, we gave EANAB a draft of our Statement of Need and incorporated their comments before we submitted it to the CAA in July 2019. From this point, EANAB has been significantly more vocal and demanding than other stakeholders throughout this process with challenges to the need for the ACP, capacity issues and suggesting opportunities for flight path locations throughout our programme of work.

We continue to engage with EANAB and explain the CAP1616 process. The group submitted around 30 questions relating to airspace change which we answered and went through in person at a meeting on 21 August 2019. The group then submitted further questions which were responded to and questions continue to be asked on capacity, ACP need and location of flight paths, and we continue to answer questions as they come in.

As mentioned throughout this report, EANAB has challenged our process for our ACP. We have listened to their concerns, answered numerous questions and reconsidered our approach. For example, when we considered EANAB and EACC stakeholders to be more informed than the general public and to exclude them from community stakeholder workshops, we listened to their concerns and decided to hold a specific workshop in Stage 1B for EANAB to listen to their specific concerns.

With EANAB's ongoing concern regarding future capacity, we gave a deep-dive session on capacity and where we are in the ACP Programme/CAP1616 process on 3 December 2019. We then answered around ten additional questions on capacity. This continued engagement around capacity continues.

The group suggested key things for the programme to consider, such as using the Firth of Forth and suggesting specific flight path options that would benefit individual communities. We have taken on board a number of concerns raised by EANAB and continue to explain the CAP1616 process and consultation requirements about avoiding pre-determination. The continued communication with EANAB is attached [see Appendix C].

11. Output from initial engagement: Longlist of design principles

Stakeholders taking part in the workshops and focus groups provided a significant amount of insight to Progressive Partnership. Through their analysis and collation of this information, they then determined 50 draft design principles (DDPs). We were also approached by Glasgow Airport and NERL (NATS Prestwick Centre) to include two design principles that were consistent across the Scottish Airport Network. These were added to the 50, to produce a list of 52 DDPs.

The 52 DDPs provided to Edinburgh Airport are listed in Table 12. They are listed in order of importance, determined by the number of times mentioned within the workshops. The additional two design principles from Glasgow and NERL were added in no particular order.

Table 12: Draft design principles (longlist)

1. Reduce night flights and early morning flights
2. Fly over the sea/fly down the Forth
3. Consider impact of aircraft type/penalise poor performers/old aircraft
4. Ensure decision making is evidence-based (and evidence is appropriate/high quality)
5. Reduce flights over communities/fly over less populated areas
6. Minimise noise
7. Reduce emissions/pollution
8. Avoid overflying of schools
9. Do not fly over currently unaffected areas in planning
10. Adhere to WHO regulations
11. Ensure consideration of all airspace users
12. Ensure fully-integrated airspace change
13. Restrict aircraft holding areas over communities
14. Consider impact on mental health/wellbeing
15. Consider noise from take-off/landing/turning
16. Take background noise into account
17. Consider/offset the impact on wildlife/the environment
18. Minimise noise/flights below 7,000ft
19. Avoid overflying rural areas
20. Offset emissions
21. Consider other health impacts
22. Consider needs of the elderly/children/those with ill health/autism/sensory impairment
23. Recognise impact of flight paths on house prices and social migration

24. Restrict aircraft turning over communities
25. Avoid overflying hospitals and care/retirement homes
26. Review need for growth
27. Prioritise safety
28. Do not concentrate flight paths over communities
29. Avoid overflying of historical sites
30. Consider impact on sleep
31. Redesign the terminal airspace
32. Reduce flights
33. Ensure consideration of wider tourism impacts
34. Ensure true accessibility in design
35. Minimise route deviations
36. Consider no change to flight paths
37. Take account of noise above 7,000ft
38. Minimise light pollution
39. Consider climate impact
40. Ensure access to airspace by general aviation
41. Consider impact on animal welfare
42. Considerations for specific routes
43. Concentrate flight paths during work hours
44. Review routes/flight corridors
45. Reduce impact on green spaces
46. Avoid flying over the zoo
47. Make take off/landing gradients steeper
48. Take into account segregation of different plane types (e.g. turbo jet and prop)
49. Make routes as short as possible
50. Fly the west side of the River Almond
51. Collaborate with other Scottish airports and NATS to ensure that the airspace design options are compatible with the wider programme of lower altitude and network airspace changes being coordinated by the FASI North programme.
52. Routes to/from Glasgow and Edinburgh airports should be procedurally deconflicted from the ground to a preferred level in coordination with NATS Prestwick.

12. Longlist evaluation process

To evaluate the longlist of 52 DDPs developed through engagement with stakeholders, we held an evaluation workshop on 21 October 2019 from 9.30am to 5pm.

The attendees at this session were brought together for their expertise in technical, aviation, air traffic, environment, noise, health and operational areas. They were:

- [redacted] – EAL
- [redacted] – EAL
- [redacted] – EAL
- [redacted] – EAL
- [redacted] – EAL
- [redacted] – EAL
- [redacted] – EAL
- [redacted] – EAL
- [redacted] – ANS
- [redacted] – Eurocontrol
- [redacted] – WSP
- [redacted] – To70
- [redacted] – To70
- [redacted] – To70.

This session was observed by [redacted] from The Consultation Institute as part of the Institute's evaluation of our engagement activity.

Each DDP was read out to the group and discussed, including with a view to identifying DDPs that were out of scope of an Airspace Change Programme. The longlist was then divided into the two groups – 'for consideration' and 'not for consideration'.

Then the 'for consideration' group was reviewed. Each DDP was discussed, and similar draft design principles were grouped together, leading to theming design principles. This made it easier to discuss the large number of design principles when looking at the same types of comments.

Within individual themes, duplication and similarities were identified and it was appropriate in these instances to merge similar design principles. Once all design principles and themes were considered and either adopted or merged, the 'not for consideration' group was re-reviewed, and each DDP was then discussed again as to the full reason why it would not be considered [see Appendix R – minutes of the internal meeting to shortlist draft design principles].

13. Output from evaluation workshop: Shortlist of design principles

The table below contains the shortlist of 16 proposed design principles (PDPs) that was determined in the evaluation workshop with experts.

Table 13: Proposed design principles (PDPs)

PDP1	The airspace design and its operation must be safe as or safer than it is today.
PDP2	The prioritised requirements of airspace users must be taken into account when designing flight paths.
PDP3	Flight paths must be flyable
PDP4	Flight paths should be designed to minimise the total adverse effect on health and quality of life impacts created by aircraft noise and emissions.
PDP5	Flight paths should be designed to provide increased airspace capacity in order for Edinburgh Airport to support the Scottish Government's Economic Development agenda and the UK's wider aviation strategy.

PDP6	Flight paths should be designed to minimise CO2 emissions above an altitude of 7,000ft and, where it does not have a detrimental effect on adverse noise impacts, also between 4,000ft and 7,000ft.
PDP7	Flight paths should be designed to minimise adverse local air quality impacts.
PDP8	Flight paths should be designed with cost-effective routes that minimise track miles and fuel burn.
PDP9	Flight paths should be designed to ensure efficient and effective route management.
PDP10	Flight paths must be designed to accommodate PBN traffic in line with CAA's modernisation strategy.
PDP11	Flight paths should be designed to minimise population overflown below 4,000ft and, where possible, between 4,000ft and 7,000ft, taking into account any potential adverse impact, due to those overflown having protected characteristics, as defined by the Equalities Act 2010.
PDP12	Flight paths should be designed, where possible, to minimise overflying sensitive locations and noise-sensitive receptors (for example, the zoo, retirement complexes, green spaces, historic heritage sites, and others).
PDP13	Where possible, flight paths should be designed to include track concentration and/or track dispersal options to provide noise respite..
PDP14	The predictability of flight tracks must be maximised for consistency of operations.
PDP15	Collaborate with other Scottish airports and NATS to ensure that the airspace design options are compatible with the wider programme of lower altitude and network airspace changes being coordinated by the FASI North programme.
PDP16	Routes to/from Glasgow and Edinburgh airports should be procedurally deconflicted from the ground to a preferred level in coordination with NATS Prestwick.

14. Recall workshops process

The shortlisted PDPs were tested by going back out to representatives from the original workshops through two1.5 hour ‘recall’ workshops. The membership of this final group of representatives was determined by the market research agency from all of the attendees during the initial round of workshops, ensuring fair representation from community, aviation and general stakeholders.

14.1 Recall workshop recruitment

A representative sample of attendees to the first round of workshops was sent an invitation to attend a recall workshop. This included: all of those who attended the aviation workshop; a representative sample of community stakeholders, to ensure each region was represented, those currently overflown within noise contours, currently overflown outwith noise contours and currently not overflown but could be were included; a representative from EANAB; and delegates from other stakeholders such as property developers, environmental groups, environmental activists, councils and equalities organisations.

Delegates from the aviation industry are well informed about airspace change and have areas of interest that are different from those who represent community interests. Their interests often include their own use of airspace. A large workshop where ideas are exchanged at a high level of understanding with a large number of delegates is well suited to this group. For these reasons, we opted to give them their own forum and run a workshop dedicated to aviation delegates.

Members of community councils represent not just their own interest but those of people who reside in their area of residence. When considering community councils, we looked at guidance and information on their role in Scotland. As per the Scottish Government description, they are the ‘most local tier of statutory representation in Scotland’ and they ’bridge the gap between local authorities and communities and help to make public bodies aware of the opinions and needs of the communities they represent.’ This helped inform our thinking when considering a wider invitation to the recall workshops as community councils would provide a wide range of views from those within their community, thus informing our thinking at a local level.

To further inform our thinking, we invited a broader group of stakeholders that includes organisations that represent special interest groups such as: equality, disability, environmental issues, historic environment, local council officers (typically planning and environmental health), industry, property development and so forth. Delegates from these organisations represent views often from a national viewpoint. A large workshop where ideas are exchanged at a high level of understanding with a large number of delegates is well-suited to this group. For these reasons we opted to run one workshop dedicated to a wide range of stakeholders.

The approach to selecting the organisations invited to the community and stakeholder recall workshop was as follows:

- A database of organisations who attended the first round of community and general stakeholder workshops was compiled and randomised within group;
- A starting point was identified within the database at random;
- Organisations to the recall workshop were selected to ensure representation from each region, those currently overflown within noise contours, currently overflown outwith noise contours and currently not overflown but could be included; a representative from EANAB; and delegates from other stakeholders such as property developers and environmental groups;
- Given the limited space available in the workshop, priority was given to achieving a range of representation. Therefore, opportunities for representation from more than one organisation within each group were limited. Places were strictly limited to one per organisation.

The communications regarding the recall workshop are included in Appendix B.

Because stakeholders were from a wide area and some distance from Edinburgh, many community representatives were reluctant to spend time and money on travelling to attend workshops. To compensate and encourage engagement, an incentive of £40 was offered to all participants of the community workshops. The stakeholder recall workshop was held on 5 November 2019.

The aviation recall workshop was originally arranged to be held on 31 October. All participants from the initial aviation invitation list were emailed. In total twenty-one organisations were invited to attend. Initially ten agreed to attend. Due to the discussions around the conversion of the DDP longlist to the PDP shortlist, we decided to postpone the initial recall workshop to allow for further consideration of the PDP shortlist. A postponement email was sent to all 21 aviation organisations, including those who could not attend, stating the workshop would be held in the week commencing 11 November 2019. An invitation confirming the revised date of 13 November was sent, and eight agreed to attend the re-arranged recall workshop.

Once all workshops were fully recruited, participants were sent confirmation details which included a copy of the draft PDP shortlist, as well as a recording permission request. All participants were contacted by telephone the evening before the workshop to confirm their attendance.

14.2 Principles of inclusion

Our methodology was designed to include a wide representation of views. We invited representatives from action groups such as EANAB and Extinction Rebellion, as well as community councils known to be opposed to the airport's growth or development. People with protected characteristics and those representing equalities groups were included and supported.

The attendees for the recall workshops were:

Table 14: Stakeholder recall workshop attendees

Name	Organisation	Name	Organisation
[redacted]	Broxburn and Uphall Traders Association	[redacted]	Royal Burgh of Burntisland Community Council
[redacted]	EANAB	[redacted]	Cramond and Barnton Community Council
[redacted]	Uphall Community Council	[redacted]	PPCA
[redacted]	Environmental Protection Scotland	[redacted]	Extinction Rebellion
[redacted]	North Queensferry Community Council	[redacted]	Environmental Health at Fife Council
[redacted]	Royal Burgh of Kinghorn Community Council	[redacted]	Blackness Area Community Council
[redacted]	Aberdour Community Council	[redacted]	Dalkeith and District Community Council
[redacted]	Royal National Institute of Blind People (RNIB)	[redacted]	Drum Brae Community Council

Table 15: Aviation stakeholder recall workshop attendees

Name	Organisation	Name	Organisation
[redacted]	Airspace 4 All	[redacted]	Edinburgh Airport Watch
[redacted]	British Parachute Association	[redacted]	Guild of Air Traffic Control Officers
[redacted]	Scottish Mountain Paragliding Club pp BHPA (British Hang Gliding and Paragliding Association)	[redacted]	Light Aircraft Association
[redacted]	NATS/NERL		

Attendees were sent a copy of the shortlist of design principles prior to attending the workshop.

A short presentation was made to attendees which set out the shortlist of PDPs, issues that respondents to the first wave of workshops thought important but were not design principles, and the longlist of DDPs derived from the first-wave workshops.

The stakeholder recall workshop identified some strong views on the wording of the shortlist principles. It was decided to test the suggestions for change in the aviation workshop.

14.3 Output from recall engagement: Feedback on shortlist of design principles

Through the recall workshops, the stakeholders provided insights and opinions to Progressive Partnership Full transcripts can be found in Appendix B, through their analysis and collation of this information, determined the process of shortlisting the 52 DDPs to 16 DPDs. There were some individual concerns regarding technical language and the use of of acronyms or jargon.

Some PDPs were thought to be too general as they used phrases such as '*taking into account*', and *'potential adverse impact'*. There was a request for more specific and definite language. Some participants did not like the use of caveats such as '*where possible'* as they thought this would give the

opportunity to not apply PDP. Some commented on the need to balance statements so that environmental and operational issues are equally represented.

There was much debate around using the words '*should'* or '*must'* in PDPs, with communities insisting '*must'* needs to be used when considering any impact on communities. Aviation stakeholders suggested '*must'* only be used when it is mentioned in the CAP1616 or any other regulatory guidance.

14.4 Supplementary activity

We received a number of letters from community groups outwith this process, reiterating their comments made during the engagement process. These letters and our responses are included in Appendix C. Although we received communication from elected representatives in the initial round of engagement, we did not receive further communication from elected representatives during the recall round of engagement.

15. Final design principles process

We gathered the information collated from the recall workshops from Progressive Partnerships, plus the supplementary information provided by a number of community groups outwith the process. We used this information to review each of the 16 PDPs.

Each PDP was considered individually in light of the comments provided at the recall workshops to determine whteher a revision was warranted or a comment should be noted.. Some further comments were made that went beyond the PDPs and addressed possible solutions. These were noted and would be shared in Stage 2: Design and Assess.

16. Design principles development

16.1 Draft design principles from stakeholder engagement

As set out above, 52 DPDs were identified following the extensive stakeholder engagement process, which consisted of five workshops, three focus groups and requests from Glasgow Airport and NATS Prestwick Centre, and consideration of the supplementary activity and communications.

These were themed through the evaluation workshops, with themes on the following topics emerging:

- environment;
- communities;
- economies;
- equalities;
- health;
- technical;
- other.

Technical and operational issues

Workshops

The aviation delegates covered the technical issues in the greatest detail. However all the workshops and focus groups at least touched on the key issues of noise control and safety. The key issues addressed during the aviation workshop were:

- **Safety:** This was the key priority; the majority of delegates argued that if there is a safety reason for placing a route in a specific place that should take precedence over all other issues.

- **Turning**: A point was made that tight turns over a community prolong the noise exposure for those on the inside of the turn and, as such, should be avoided.

- **Steeper take-off/landing gradients**: Many argued that in the interests of reducing costs, CO_2 emissions, and reducing the impacts of noise, it would be better to have steeper descents and approaches.

- **Route length:** It was argued that, from a commercial perspective, it is important to have routes as short as possible in order to reduce fuel burn, reduce hours on the engine and reduce emissions. This led to the design principle of **considerations for specific routes.**

- **Global Navigation Satellite System (GNSS):** It was noted that many planes could not fly Global Navigation Satellite System (GNSS) because planes were not equipped for it. While this may be out of scope for the ACP, it is a point worth noting for the future.

- **Glasgow airspace**: The need to consider a joined up thinking with Glasgow airspace was reiterated, both with respect to the Airspace Change Programme and access to airspace by general aviation. This led to the design principle **ensure fully integrated airspace change/clean sheet.**

- Delegates also commented that the design principles should **ensure airspace access for general aviation**. It was suggested that the Glasgow - Edinburgh corridor needs to be made wider and deeper, as this would allow better access for general aviation and reduce noise from civil aviation transport for communities.

- **Evidence:** There is a need to ensure the number of aircraft movements is fully understood in the context of passenger numbers. This led to the design principle **ensure decision-making is evidence-based (and evidence is appropriate/high quality).**

Other issues raised by community and stakeholder delegates included:

- The need to stick to **designated routes**: Delegates claimed that many flights are vectored off-route and, as a result, affect people who are not normally flown over. There was some confusion over vectoring altitude, but there was agreement that it happened too often and without good cause.
- Turning over communities: Delegates referred to early-turn trials that demonstrated the practice created more noise. The outcome of the conversation was to create a design principle to **avoid turning over communities below 7,000ft**.
- Many were aware of the different noise made by old and new planes. Delegates were consistent in their view that **old planes should be phased out or charged heavy penalties** if they contravene modern CO_2 emission and noise standards.
- **Safety**, both inflight and through the airport terminal was prioritised as a key design principle.
- Data: The need to **monitor real live noise** rather than rely on modelling, which many felt was inaccurate
- Noise management: there was a desire to reduce the footprint of noise, which led to the design principle of **do not concentrate flight paths over communities.** Some community stakeholders commented on the different noise made by different types of planes. They felt that there was a need to segregate turbo jet and turbo prop aeroplanes. This led to the design principle t**ake into account segregation (e.g. turbo jet and prop).**
- Terminal: There were comments that an expansion of flights will place added pressures on security and facilities within the terminal building. This led to the design principle of **redesign the terminal/terminal airspace.**

One other point that may be out of scope, but was recorded for completeness, was the option of doing nothing. Many in the community groups felt that maintaining the status quo would be no bad thing for

communities. Some in the stakeholder group commented that the airport needs to set out how its approach contributes to Scottish net-zero emissions targets. This led to the design principle of **consider no change to flight paths**.

Focus groups

Participants from not overflown areas said they would like to know more about the effects of emissions and commented that they felt this information is not well publicised.

There was a strong view from those in the overflown outwith contours group that communities should not be subjected to concentrated flight paths as this would subject them to relentless noise. This led to the design principle of **do not concentrate flight paths over communities.**

Environment issues

General

Workshops

Key themes during these discussions were the community and the environment. Delegates from across the workshop sessions raised the emerging issue of a societal move away from cheap, frequent flights; and the growing view that frequent flying is not good for the environment. They were concerned about pollution and the negative effect on the planet from CO_2 emissions.

Delegates from the community workshops, in particular, were concerned about the negative effects of noise on their respective communities, in terms of devaluing their homes, negatively affecting schooling of children, and flying over large new developments that have not previously been flown over. They were also very concerned about the road access infrastructure, claiming that roads are already facing heavy traffic, which they felt will only get worse if the airport expands.

Focus groups

Focus group participants were on the whole indifferent about any environmental impact, commenting that climate change is inevitable and there is nothing they can do about it. There were some low-levels of concern about emissions. These were mentioned by a few, and more to do with offsetting in general rather than meeting any net-zero carbon targets. They pointed to offsetting by planting trees and using solar panels as actions that the airport could easily take.

Pollution issues

Workshops

The community delegates considered reducing pollution and emissions an important issue. They talked about the need to consider wildlife and migrating birds, giving the principle of **consider/offset the impact on wildlife/the environment**, but these concerns typically did not override the overall desire for flight paths to **fly over water**. They also talked about the need to consider the smell of aviation fuel.

EANAB raised concerns about carbon emissions and the idea that continued growth of the airport is counter to the Scottish Government response to climate change. Delegates considered that continued expansion of the airport would contribute to an increased carbon footprint when we should be thinking about reducing it. One delegate from EANAB pointed to the current trend of people choosing not to fly which, in their opinion, casts doubt on the need to accommodate expansion. Together this led to the principle of **consider climate impact.** Delegates commented that disturbance also comes from shadows being cast by planes during the day, and lights from planes at night. This translated into the design principle of **minimise light pollution**.

The aviation delegates commented that one of the key ways to reduce pollution was embodied in the principles of **making routes as short as possible** and **keeping ascent and descent gradients steep**. These design principles are covered in the technical section. However, there was a discussion about the impact of noise and whether steeper gradients lead to increased noise.

Focus groups

The idea that the airport should offset was made by a few participants; with planting trees and using solar panels suggested as actions that the airport could easily take. While the suggestion was out of scope, it is worth noting that some felt the airport should recycle more inside the terminal. This led to the principle of **offset emissions.**

Noise issues

Workshops

The dominant environmental – and overarching - theme for the community and stakeholder workshops was noise. At its simplest, these groups wanted to reduce noise. There were heated comments about the accuracy of current noise monitoring, and a desire was expressed for independent and accurately reported noise monitoring, together with accurate estimates of the populations affected. Concern was expressed over the height at which noise becomes a nuisance, with many arguing that 7,000ft is not a sufficiently high cut-off, as noise continues to be a nuisance when planes are above that height.

Delegates in the north and west claimed they could hear planes waiting for take-off as well as those taking-off and landing; turning and banking manoeuvres were reported to increase the levels of noise by 3 to 4 decibels; noise levels were felt to have been increasing in some areas; while delegates in the south and east cited cargo and mail planes as being particularly noisy because they are old and really noticeable because they fly at 2am.

Concerns were expressed about a lack of accurate monitoring of noise. Many felt that EAL based its thinking on modelling rather than monitoring and, in some instances, respondents doubted the validity of the positioning of monitors. This led to a request to **monitor and report accurately on noise**. World Health Organisation's (WHO) guidelines on health and noise were commonly referred to. Some called for avoidance of flying over rural areas because the noise impact is greater due to less ambient noise.

Delegates from the south and east were concerned about the negative effects of noise on their communities in terms of devaluing their homes, negatively affecting schooling of children, and flying over large new developments that have not previously been flown over.

The aviation delegates also considered minimising noise as much as possible the most important issue in the context of the environment. They suggested a way to reduce noise was to adopt a 'polluter-pays' approach, which would penalise poor performers. The EANAB delegates discussed fining noise polluters: they were doubtful that this was being done in an accurate way and called for punishment to be made more transparent. This led to the design principle of **consider impact of aircraft type/penalise poor performers**.

EANAB raised the issue of night-time noise. Delegates commented that night-time noise has worsened in the last ten years. They also commented that night flights used to be subject to time restrictions and were largely commercial (cargo); increasingly they are much more frequent, unrestricted and are a mix of flight types.

The stakeholder delegates raised a number of issues in relation to particular needs and representative groups. They discussed the effects of different types of noise, and commented that constant background noise was an issue, as much as taking-off and landing noise, to those living in close proximity to the

airport. Delegates commented that hearing loss is becoming a big issue in Scotland and that any additional noise in the environment should be carefully considered. They commented that the type of noise should be considered, as should other factors, such as the frequency and the general audio landscape. For example, delegates commented that a plane flying over Edinburgh Castle would have a different (lesser) impact to one flying over Inchcolm Abbey, because of the noise from the railway below and general ambient noise in the city.

Focus groups

Noise was not a major problem for the majority of focus groups participants. The majority of those who were overflown and living within noise contours were affected by noise, but they were not unhappy about it. One participant was less accepting of noise than others were. Many said that living in a capital city with all its benefits means you have to put up with some noise. This led to design principle of **get people to accept noise**.

A key concern for this group was the desire to keep green spaces in the city free of overflying, leading to the principle of **reduce impact on green spaces.** The majority of those who were overflown and living outwith noise contours were aware of noise but were not compromised by it. Those not currently overflown were not affected by noise and couldn't envisage ever being affected by noise as they were so far away from the airport. They did say their opinion on noise would change if they were to find themselves overflown.

Those living nearer to Edinburgh (overflown within and outwith contours) were aware of the need for respite, and many claimed the night and early morning flights should be kept to the minimum, with emergency landings or delayed flights being the exception. One of the most often mentioned design principles in the context of noise was **reduce night flights and early morning flights**. There was some understanding that older planes are worse than the newer ones in terms of their noise emissions.

One participant felt that some homes under the flight path perhaps could be compensated with triple glazing, but on the whole, overflown groups felt this was something that people who live close to the airport should just deal with,t and so in the end the idea was dropped. Many said that living in a capital city with all its benefits means you have to put up with some noise. Two participants suggested that it would be beneficial if flights were concentrated during working hours when most people were out. This led to the design principle of **concentrate flight paths during work hours.**

Community issues

Workshops

Issues of importance to communities overlapped with issues for the environment; with issues relating to noise mentioned as having the biggest impact on communities. A number of key themes emerged:

Community and stakeholder delegates were concerned with **avoiding densely-populated areas** and **reducing flights over communities**. Planning **routes over the sea or over unpopulated areas** was seen as a way of addressing this, with flying down or using the Forth more frequently mentioned as a solution. One delegate in the south east community workshop considered this a workable option as the Ministry of Defence (MOD) no longer has the Forth mapped as a restricted area, now that RAF Leuchars has closed down. Others were not sure if using the Forth would provide a solution, as by the time planes are over the water, they are quite high.

Community delegates were concerned that communities were being 'pitted against each other' when discussing **dispersed versus concentrated flight paths**. On the one hand, they wanted flights to be moved away from their community; on the other, they didn't want other communities to suffer at their expense. The outcome was a general agreement that **the number of flights need to be reduced** and that there should be a **reduction of flights over populated areas**.

Community delegates were concerned with seeing the impact of night noise reduced, as it has a particular impact due to lower levels of ambient noise. Frankfurt Airport was mentioned by the south east community workshop as an example of an airport that has successfully banned flights from 11pm to 6am.

Delegates from all workshop groups voiced the need to **take into account areas that are not currently overflown**. EANAB gave the example of the new builds in Winchburgh and West Calder as areas where this had happened to people previously. The responsibility on the part of EAL should be to demonstrate that any changes in airspace will not impact negatively on **areas being developed for housing**.

Delegates from all workshops identified **sensitive buildings and sites**: s**chools** were cited as buildings that should be avoided as noise can impinge on learning; **hospitals and care homes** were also placed on the sensitive building category because residents have no way to escape. EANAB said they realised it is not always possible to completely avoid all sensitive buildings (for example, a new school is due to be built on Turnhouse Road), but they called for an understanding of what the issues are, as a way of enabling the airport to plan interventions that could help mitigate effects.

Some claimed that **reducing flights** was the only legitimate way to reduce CO_2 emissions and noise. Others claimed that any increase in flights would also lead to an increase in traffic which would result in a negative effect. Turning aircraft and **holding over communities** were thought to increase noise and one of the design principles clearly articulated was **not to turn over communities**. A few called for **compensatory measures to help insulate houses** under flightpaths from noise. A few mentioned the need to **review flight corridors** in light of UK Government's Airspace Modernisation Strategy.

The stakeholder delegate from Historic Environment Scotland (HES) proposed a widely-endorsed idea that the historic environment is not reliant solely on the visual landscape and that audio landscape is equally as important to some sites. The issue of rural versus urban came up as delegates discussed the pros and cons of both. The resulting design principle was **not to fly over rural areas** as a justification for flying over fewer people, because the impacts of noise in a rural setting is likely to be greater than in a setting where there are higher levels of ambient noise.

The Focus Groups

Those living nearer to Edinburgh suggested a design principle of **not flying over populated areas**. One respondent from Cramond expressed a very clear wish to have planes **fly the other side (west) of the River Almond,** thus avoiding populated areas.

Respondents had mixed views on whether planes should fly over rural areas with some saying this could affect livestock and others saying it was preferable as there are fewer people. There was a fairly strong sense in the group not overflown that all attempts should be made **not to fly over populated areas**.

There was some concern from those not overflown and living in the Scottish Borders about the prospect of holding areas changing and then finding themselves being overflown when they had bought their homes a long time ago without any thoughts of being under a flight path.

Some felt that the centre of Edinburgh as a UNESCO site should be avoided. In the interests of tourism, the castle should be avoided, and Edinburgh Zoo should be avoided to protect the animals.

Delegates and focus group members also noted the positive aspects of the airport/airport expansion for communities; in particular, the issue of maintaining access for families to see relatives instigated a lot of conversation. Access to the Islands was seen as being of particular importance, not just for communitarian reasons but for economic ones as well.

Health

Workshops

The discussions on health also linked to the subject of noise. Delegates referred to a body of research linking ill-health to noise. EANAB delegates claimed that noise, and constancy of noise, has a detrimental effect on health, particularly hypertension. Broken sleep, caused by night flying, was reported as being a contributory element to poor health. Respondents commented that being outdoors, sitting in the garden and relaxing, contributes to wellbeing. They claimed this is curtailed by the interruption of plane noise.

The WHO report from 2018 was quoted as having the most comprehensive set of guidelines on noise limits; as a consequence, delegates were concerned that noise be limited to a **maximum of 45 decibels**.

Many in the community workshops disputed the lowest-observed-adverse-effect level (LOAEL) measurements in place by the UK Government to measure noise. Delegates from Cramond said that an average of 51 decibels during the day and 45 at night did not give a true reflection of conditions when Cramond is exposed to 64 decibels, which is beyond being a nuisance.

It was also felt that disturbance also comes from shadows being cast by planes during the day and lights from planes at night. This translated into the design principle of **minimise light pollution.**

The stakeholders workshop also raised the issue about the need to support people who rely on sound to navigate. An example was given of blind people being unable to move safely when a plane is flying overhead, as they cannot hear traffic noises, etc.

Economy

Workshops

The economy prompted less discussion than environment and community across all the workshop sessions. Many delegates contested EAL's economic arguments that there is a need to increase the number of passengers and runway movements at Edinburgh Airport; some delegates said EAL's reasons for expansion were flawed as there has been a downturn in air-travel, with a few arguing there will be further decreases in the number of flights because of 'flight shaming' and environmental conscientiousness. Some disputed the argument that EAL supports tourism in Scotland, referring back to the argument that the airport also facilitates tourism out of Scotland. Others argued against the need for an increase in business flights. This prompted a principle to **review the need for growth**.

There was a high level of agreement on the need to improve **surface access to the airport**, and to have an **integrated-transport policy**. While these are out of scope for design principles, they are issues that were of great importance for all respondents to this engagement exercise. These issues were given more prominence than others under the heading of economy.

Transport: Community delegates argued that there is a need for **improvement to transport links** to the airport and a need to take into account the current pressure on roads such as Queensferry Road and St John's Road. Stakeholder delegates emphasised that **integrated transport planning** was necessary – extending to East/West Lothian and Fife - and that just looking at the airport in isolation was not going to bring about an effective transport solution. Community delegates echoed these points, and also stressed the need for an **affordable public transport system**.

Housing: Community delegates argued that there had been a **drop in the value of their homes** and sluggishness in sales in Broxburn due to aircraft noise. This was evidenced by the experience of an estate agent who was a member of the Broxburn & Uphall Traders' Association. Some commented there was a need to **reinsulate and re-glaze properties that had received compensation in 1996**. Delegates noted the need for developers to ensure homes near the airport are built to higher insulation standards; while those

within the noise contours receive compensation, those just outside do not, and developers have to foot the bill. This links to the perception that the noise contours do not accurately reflect the needs of communities around Edinburgh airport.

Tourism was an important issue to many both in terms of the need to support the Scottish tourism industry and the need to protect tourist sites in and around Edinburgh by protecting their acoustic and visual landscapes. Some felt that imposing a **'frequent flyer levy'** would reduce the number of flights overall and so could reduce traffic/transport congestion in the mornings (as many frequent flyers are likely to be business flyers leaving early in the morning). Some community delegates disputed tourism growth as an argument to support the airport's expansion, claiming that more money goes out of Scotland than comes in. Overall, this led to a call for a design principle relating to **consideration of wider tourism impacts.**

Recreational aviation: Some aviation delegates expressed a desire to protect the recreational aviation industry. They commented that they did not want to see any expansion of controlled airspace. This led to the design principle **ensure consideration of all airspace users.**

Focus groups

For focus group participants, transport infrastructure was the single biggest issue in relation to the economy, with many saying the roads around the airport are already stretched to a breaking point. Concerns were raised about how roads would cope following further expansion.

The majority of other economic comments were positive. Many participants said that the airport and its expansion is making Edinburgh and Scotland more accessible. The airport is seen as a great supporter of tourism and business in general. It was also seen as an important employer. While these views are out of scope for design principles, they were commonly voiced opinions.

Equality

Workshops

Workshop delegates, particularly those in the community and stakeholder workshops, were concerned about the **differential impacts that noise has on people with particular needs** within the community. They highlighted concerns for:

- **Older people** who have their sleep broken claiming it has a greater effect because of their potential physical frailty and feeling unable to move. It was also noted that they may have limited mobility and may rely on the amenity of their gardens, which can be compromised by constant overflying. A number of areas, including Cramond and Barton, and Dalgety Bay and Aberdour, were reported as having a large population of older people, with many care homes located in these areas.
- **Children** were cited as vulnerable because of the effects of overflying of schools. One delegate referred to the Rights of the Child, which linked to the previously outlined point about not overflying schools.
- **People with hidden disabilities** such as autism, and the needs of those who cannot cope or have a sensitivity to noise.

Comments were made that some people with particular needs require support in the airport; increasing the number of passengers will add to pressures on passenger assistance. Other comments were made about the complexities of greater numbers of people arriving in the country and the effect this might have on security for Edinburgh in the context of human trafficking and sex tourism. This was summarised as a need to think carefully about the interdependence of what happens in the sky and the infrastructure at the airport below, and expressed in the issue of importance as **ensure true accessibility in design**.

Another dominant comment was that homes in populated areas that are overflown reduce in value and amenity, which leads to 'ghettoization' of the poor who may be unable to afford to move. This led to the design principle of **recognise impact of flight paths on house prices and social migration.**

The inequality of not paying tax on aviation fuel when it is charged on road and rail fuel was also noted.

Focus groups

Some felt that aeroplane noise might have a severe effect on those with autism and that the airport should take this into consideration. This was thought to be more of a problem in the areas closest to the airport than in outlying areas. This was the only equality issue raised in the focus groups.

Communication

Workshops

The workshops generated a lot of questions from delegates. One of the concerns that came out clearly was a need for more information: many wanted clarity on why planes have to fly certain routes; some wanted to hear more about EAL's policy on energy and renewables at the airport, and some wanted information on airport security. Delegates were particularly interested in receiving more information from EAL on issues such as the plans for integrated transport planning and on the community support work EAL currently undertakes.

EANAB felt that airport reports are 'being clever with words', that is, its reports can be read at face value but fail to give the whole picture. Respondents asked for more openness and accuracy.

Focus groups

Participants were also keen to hear more from EAL and asked for effective communication: In particular, they requested explanations of decisions EAL has made in a clear and non-technical format; information about what the airport is doing in the community; and how it is developing as an airport. The channels for communicating also had to be accessible and effective: one respondent commented that EAL was good at communicating on social media, but that getting out into the community would be more effective.

Social benefits of efficient air travel

Workshops

Very few of the workshop delegates discussed the social benefits of air travel. One of the community workshops touched on it briefly, but the delegates were reticent to discuss the topic, claiming that social benefits, such as employment, should not be a reason to subject people being overflown 24/7.

Some commented that EAL doesn't benefit them in terms of air travel, because flights are cheaper out of English airports than out of Edinburgh, so they drive down to Newcastle. Others commented that technology was reducing the need to travel and that people could communicate efficiently online negating the need to increase capacity for business users.

Focus groups

The focus group participants thought there were many social benefits of airport expansion. These mirrored the comments made in response to the SON, and included supporting tourism - both incoming and outgoing, supporting employment, and connecting Edinburgh to the rest of the world more efficiently.

Table 16: Design principle shortlisting and considerations given for shortlisting

1. Reduce night flights and early morning flights This is a potential flight path operational solution that may emerge during flight path optioneering. The concern regarding night and morning flights was noted. A design principle was designed which references terms from CAP1616, that is to minimise total adverse effects on health and quality of life. Through discussions of similar draft design principles under communities theming, it was determined that this feedback was covered by a proposed design principle (PDP4).
2. Fly over the sea/fly down the Forth Flights being directed to fly over the sea or down the Forth is a potential flight path solution that may emerge during flight path optioneering. Through discussions of similar design principles under communities theming, it was determined that this feedback was covered by a proposed design principle (PDP4).
3. Consider impact of aircraft type/penalise poor performers/old aircraft Decisions about what aeroplanes to fly are operational ones for the individual airlines. Edinburgh Airport has limited ability to influence this; however, we see this issue as an opportunity to reconsider our existing charging structures at the next review. With the introduction of the CAA's modernisation strategy encouraging more effective flight paths and efficient aircraft, a design principle was created to ensure flight paths meet the CAA's modernisation strategy (PDP10).
4. Ensure decision-making is evidence-based (and evidence is appropriate/high quality) Edinburgh Airport notes this request. The CAP1616 process requires Edinburgh Airport to ensure that decision making is evidence based. As this is a requirement of CAP1616 and decision-making will need to be included and evidenced in the application, we have rejected this as a design principle but raised as an important point with the ACP project team.
5. Reduce flights over communities/fly over less populated areas This is noted as a concern from stakeholders. Flying over less populated areas could be considered a design principle however we want to avoid making a choice of flying either over urban or over rural areas as this will limit the flight path optioneering. A design principle has been designed which references terms from CAP1616, to minimise total adverse effects on health and quality of life (PDP4).
6. Minimise noise A design principle has been designed which references terms from CAP1616, that is to minimise total adverse effects of noise on health and quality of life (PDP4).
7. Reduce emissions/pollution A design principle has been designed which recognises air quality. It also acknowledges the limitations of Edinburgh Airport only being able to affect air quality in the area local to the airport (PDP7). The intention is to reduce emissions on a per-flight basis due to reductions in hold times on the taxi-way and shorter flight paths. Air quality impacts will be localised due to the effects of mixing and dispersion, emissions from aircraft above 1,000ft are unlikely to have a significant impact on local air quality *(*Para 3.28 of Department for Transport's Air Navigation Guidance 2017). Local ground level impacts from aircraft emissions are not particularly sensitive to emissions above a height of approximately 200m (Rogers, H.L., Lee, D.S., Raper, D.W., de, F., Forster, P.M., Wilson, C.W., Newton, P.J. (2002). The impacts of aviation on the atmosphere. The Aeronautical Journal. 106, 521–546)
8. Avoid overflying of schools Avoid overflying schools is recognised as a concern from stakeholders. There are many schools within Edinburgh, Lothians and Fife and to avoid overflying schools will be impossible. A design principle has been designed which references terms from CAP1616 and those with protected characteristics, as defined by the Equalities Act (PDP11).

9. Do not fly over currently unaffected areas in planning

Not overflying currently unaffected areas in planning is recognised as a concern from stakeholders. Considering urban growth and development is outlined in CAP1616 to ensure that population/communities are considered. A design principle has been designed to ensure that total adverse effect on health and quality of life is considered (PDP4).

10. Adhere to WHO regulations

WHO Guidelines are not adopted by the UK Government, including the CAA. We will meet the noise guidelines as directed by CAA (rejected).

11. Ensure consideration of all airspace users

A design principle has been designed which references considering airspace user requirements (PDP2).

12. Ensure fully integrated airspace change

A design principle has been designed which references considering airspace user requirements (PDP2).

13. Restrict aircraft holding areas over communities

Edinburgh Airport's airspace goes to 7,000ft, with hold areas confirmed at higher altitudes; therefore this request regarding restricting aircraft holding areas over communities is rejected as out of scope. Any airspace changes or issues over 7,000ft are considered in the FASI(N) process (reject). This concern will be forwarded to the FASI North ACP project team.

14. Consider impact on mental health/wellbeing

There are individuals with different needs within Edinburgh, Lothians and Fife and to avoid overflying them all may be impossible. A design principle has been designed which references terms from CAP1616 and those with protected characteristics, as defined by the Equalities Act (PDP11).

15. Consider noise from take-off/landing/turning

A design principle has been designed which references terms from CAP1616, that is to minimise total adverse effects of noise on health and quality of life (PDP4).

16. Take background noise into account

Taking background noise into account is recognised as a concern from stakeholders. A design principle has been designed which references terms from CAP1616 and those with protected characteristics, as defined by the Equalities Act (PDP11).

17. Consider/offset the impact on wildlife/the environment

Considering and offsetting the impact on wildlife and the environment has been recognised as a concern from stakeholders. A design principle has been designed which references terms from CAP1616. Where possible, we can minimise overlying sensitive wildlife and environmental locations and noise-sensitive receptors (PDP12).

18. Minimise noise/flights below 7,000ft

Edinburgh Airport's business objectives were included in the Statement of Need which indicated growth is one of the objectives of this Airspace Change Programme; therefore this request to minimise flights is rejected as it contradicts the Statement of Need, already lodged and passed by the CAA (rejected).

19. Avoid over flying rural areas

Avoiding flying over rural areas is recognised as a concern from stakeholders. Flying over less populated areas could be considered a design principle. However we want to avoid making a choice of flying either over urban or over rural areas as this will limit the flight path optioneering. A design principle has been designed which references terms from CAP1616, that is to minimise total adverse effects on health and quality of life (PDP4).

20. Offset emissions
Offsetting emissions is an operational issue and it is recognised as a concern from communities. A design principle has been developed to encourage minimising of emissions (PDP4).

21. Consider other health impacts
A design principle has been designed which references terms from CAP1616, that is to minimise total adverse effects of noise on health and quality of life (PDP4).

22. Consider needs of the elderly/children/those with ill health/autism/sensory impairment
Taking into account the needs of the elderly/children/those with ill health/autism/sensory impairment is not a design principle; however, it is recognised as a concern from stakeholders. There are individuals with different needs within Edinburgh, Lothians and Fife and to avoid overflying them may be impossible. A design principle has been designed which references terms from CAP1616 and those with protected characteristics, as defined by the Equalities Act (PDP11).

23. Recognise impact of flight paths on house prices and social migration
Recognising the impact of flight paths on house prices and social migration is not a design principle, but we acknowledge that it is an important issue for our communities. Edinburgh Airport sees this as an opportunity to address in the post-implementation review stage of the project, with a detailed study on any impacts (reject).

24. Restrict aircraft turning over communities
Flights being restricted turning over communities is a proposed solution. It is recognised as a concern from stakeholders that turning aircraft may have additional noise impacts on communities in the vicinity of the turn - noise contours will reflect this. A design principle has been designed which references terms from CAP1616, that is to minimise total adverse effects on health and quality of life (PDP4).

25. Avoid overflying hospitals and care/retirement homes
Overflying care and retirement homes is recognised as a concern from stakeholders. There are many care and retirement homes within Edinburgh, Lothians and Fife and to avoid overflying them all may be impossible. A design principle has been designed which references terms from CAP1616 and those with protected characteristics, as defined by the Equalities Act. We believe that the adverse impact on those having protected characteristics is what the 'avoid overflying care/retirement homes' is trying to achieve (PDP11).

26. Review need for growth
Edinburgh Airport's business objectives were included in the Statement of Need which indicated growth is one of the objectives of this Airspace Change Programme; therefore this request to reduce flights is rejected as it contradicts the Statement of Need, already lodged and passed by the CAA (rejected).

27. Prioritise safety
A design principle has been designed which references safety (PDP1).

28. Do not concentrate flight paths
Not concentrating flight paths and adding dispersal measures were both mentioned by stakeholders. A design principle was developed to cover both dispersal and concentration to provide balance for communities in respite (PDP13).

29. Avoid overflying of historical sites
A design principle has been designed which references terms from CAP1616. Where possible we can minimise overlying sensitive locations and noise-sensitive receptors (PDP12).

30. Consider impact on sleep
A design principle has been designed which references terms from CAP1616, that is to minimise total adverse effects of noise on health and quality of life (PDP4).

31. Redesign the terminal airspace
Reviewing our airspace design and capacity is an objective of the airspace change programme (reject). This feedback is noted.

32. Reduce flights
Edinburgh Airport's business objectives were included in the Statement of Need which indicated growth as one of the objectives of this Airspace Change Programme; therefore this request to reduce flights is rejected as it contradicts the Statement of Need, already lodged and passed by the CAA (reject).

33. Ensure consideration of wider tourism impacts
Edinburgh Airport has a significant role in fulfilling Scottish Government's ambitions for Scottish tourism and economy; therefore, it was felt that aligning our Airspace Change Programme's objectives with the objectives of the Scottish Government is an important step to ensure that wider tourism impacts are considered and the aims of this DDP met (PDP5).

34. Ensure true accessibility in design
There are individuals with different needs within Edinburgh, Lothians and Fife and to avoid overflying them may be impossible. A design principle has been designed which references terms from CAP1616 and those with protected characteristics, as defined by the Equalities Act (PDP11).

35. Minimise route deviations
Minimising route devisations is recognised as a concern from the community. A design principle has been developed to ensure more predictability for how flight tracks are flown leading to minimised route deviations (PDP14).

36. Consider no change to flight paths
We will be considering the 'do nothing but modernise' approach alongside the 'clean sheet' and 'replicating existing routes' approach, as part of the design optioneering process in CAP1616's Stage 2. However this may not meet Edinburgh Airport's increased capacity objective, as outlined in the SON (reject).

37. Take account of noise above 7,000ft
Edinburgh Airport's airspace goes to 7,000ft, therefore this request regarding taking into account noise above 7,000ft is rejected as out of scope (rejected).

38. Minimise light pollution
Aircraft lights are a feature to ensure safety of aircraft occupants and the wider general public. Therefore this DDP was rejected on the basis that it would impact the fundamental safety of operations (rejected).

39. Consider climate impact
Considering the climate impact has been recognised as a concern from stakeholders, a design principle has been designed which references terms from CAP1616 around minimising CO_2 emissions (PDP6).

40. Ensure access to airspace by general aviation
A design principle has been designed which references considering airspace user requirements (PDP2).

41. Consider impact on animal welfare

Considering and offsetting the impact on wildlife and the environment has been recognised as a concern from stakeholders. A design principle has been designed which references terms from CAP1616. Where possible, we can minimise overlying sensitive wildlife and environmental locations and noise-sensitive receptors (PDP12).

42. Considerations for specific routes

This is an operational matter. Edinburgh Airport notes this point (reject).

43. Concentrate flight paths during work hours

It was felt that, due to the change in the way people work, with an increase in flexible working and working from home, defining 'work hours' would be overly complex and impractical. This also does not take into account the non-working population (reject).

44. Review routes/flight corridors

Not a design principle; however reviewing our airspace design, flight routes and corridors, and capacity is an objective of the airspace change programme (reject).

45. Reduce impact on greenspaces

Considering the impact on green spaces has been recognised as a concern from stakeholders. A design principle has been designed which references terms from CAP1616. Where possible, we can minimise overlying sensitive locations and noise-sensitive receptors (PDP12).

46. Avoid flying over the zoo

Avoid overflying the zoo is not a design principle, this is a solution. A design principle has been designed which references terms from CAP1616. Where possible, we can minimise overlying sensitive locations and noise-sensitive receptors (PDP12).

47. Make take off/landing gradients steeper

Edinburgh Airport notes this as an issue for stakeholders. A design principle has been designed which references terms from CAP1616, that is to minimise total adverse effects on health and quality of life (PDP4).

48. Take into account segregation of different plane types (e.g. turbo jet and prop)

Edinburgh Airport notes this as an issue for stakeholders. A design principle has been designed which references terms from CAP1616, that is to minimise total adverse effects on health and quality of life (PDP4).

49. Make routes as short as possible

A design principle has been designed which references minimising track miles and fuel burn (PDP8).

50. Fly the west side of the River Almond

This proposed solution does not meet safety standards, specifically ICAO Doc 8168 Vol. 2 PANS-OPS because a landing aircraft must be stabilised during the final descent to the runway. Stabilisation of this last and crucial part of the flight occurs around 5NM from the runway for aircraft operating at Edinburgh Airport. Making a last manoeuvre just before touchdown, to stay west of the River Almond would be unsafe, since this will de-stabilise the final and crucial part of the descent. Therefore, flying west of the River Almond for approaches is an unsafe operation (reject).

51. Collaborate with other Scottish airports and NATS to ensure that the airspace design options are compatible with the wider programme of lower altitude and network airspace changes being coordinated by the FASI North programme.

Included.

52. Routes to/from Glasgow and Edinburgh airports should be procedurally deconflicted from the ground to a preferred level in coordination with NATS Prestwick.

Included.

This resulted in 16 PDPs, listed below and re-ordered by category.

Table 17: Proposed design principles

PDP1	Safety (Core)	The airspace design and its operation must be as safe or safer than it is today.
PDP2	Technical	The prioritised requirements of airspace users must be taken into account when designing flight paths.
PDP3	Technical (core)	Flight paths must be flyable.
PDP4	Noise	Flight paths should be designed to minimise the total adverse effect on health and quality of life impacts created by aircraft noise and emissions.
PDP5	Economy	Flight paths should be designed to provide increased airspace capacity in order for Edinburgh Airport to support the Scottish Government's Economic Development agenda and the UK's wider aviation strategy.
PDP6	Environment	Flight paths should be designed to minimise CO_2 emissions above an altitude of 7,000ft and, where it does not have a detrimental effect on adverse noise impacts, also between 4,000ft and 7,000ft.
PDP7	Environment	Flight paths should be designed to minimise adverse local air quality impacts.
PDP8	Operational	Flight paths should be designed with cost effective routes that minimise track miles and fuel burn.
PDP9	Operational	Flight paths should be designed to ensure efficient and effective route management.
PDP10	Operational	Flight paths must be designed to accommodate PBN traffic in line with CAA's modernisation strategy.
PDP11	Health and wellbeing	Flight paths should be designed to minimise population overflown below 4000ft and, where possible, between 4,000ft and 7,000ft, taking into account any potential adverse impact, due to those overflown having protected characteristics, as defined by the Equalities Act 2010.
PDP12	Health and wellbeing	Flight paths should be designed, where possible, to minimise overflying sensitive locations and noise-sensitive receptors (for example, the zoo, retirement complexes, green spaces, historic heritage sites, and others).
PDP13	Noise	Where possible, flight paths should be designed to include track concentration and/or track dispersal options to provide noise respite.
PDP14	Noise	The predictability of flight tracks must be maximised for consistency of operations.
PDP15	NATS Prestwick Centre (Core)	Collaborate with other Scottish airports and NATS to ensure that the airspace design options are compatible with the wider programme of lower altitude and network airspace changes being coordinated by the FASI North programme.
PDP16	GLA (Core)	Routes to/from Glasgow and Edinburgh airports should be procedurally deconflicted from the ground to a preferred level in coordination with NATS Prestwick.

16.2 Testing of proposed design principles

These proposed design principles were then tested at two recall workshops with community representatives and aviation stakeholders [see transcripts at Appendix B].

The feedback from both of these sessions is summarised below, full details included in Progressive Partnerships Recall Workshops Report [see Appendix B].

PDP1 Safety (core)

The airspace design and its operation must be as safe or safer than it is today.

There was no contest to this design principle. No one made any comments on how or if it should be improved. It was agreed and fully understood.

PDP2 Technical (core)

The prioritised requirements of airspace users must be taken into account when designing flight paths.

Many in the stakeholder workshop were unsure of what this means and questioned what an airspace user was. Many in this workshop felt it needed to be written in less jargonistic language.

Some community stakeholders read it as being a statement to give the aviation industry priority over those who are on the ground, which they did not consider to be a good idea.

Other community stakeholders picked up on the use of the word *must* and took that as a sign that this design principle would be considered more important than any with the word *should*. This prompted a lot of discussion around the suggestion that there would be value in using a Red-Amber-Green (RAG) system to prioritise principles, with some saying that all principles that include the word *must* would be given priority over *should*. Most community stakeholders felt PDP2 ought to read *should*. Other community stakeholders picked up on the word *core.* Both of these words were thought to give priority to the design principles that were important to the aviation industry, over the other design principles, and community stakeholders were not in favour of this.

Very few community stakeholders realised that this principle was designed with general aviation airspace users and many said it needed more explanation.

Removal of the words *the prioritised* was suggested in the stakeholder groups. This was not opposed when discussed with aviation stakeholders, but a more general point was that EAL's controlled airspace to take up the minimum amount of overall airspace it requires in order that some controlled airspace may be released for the use of general aviation.

The replacement of the word *must* with *should* was discussed by aviation, but this prompted a long discussion about the importance of the words and that *must* would take priority over *should* at design stage. At this point only one person asked for *must* to be kept. The word *should* was agreed by the majority.

PDP3 Technical (Core)

Flight paths must be flyable.

There was no contest to this design principle. Community stakeholders made no comments on how or if it should be improved, it was agreed and fully understood by them.

Delegates at the aviation workshop suggested it would be helpful if EAL were to investigate the legal position of using the terms *must* and *should* in the design principle.

PDP4 Noise (core)

Flight paths should be designed to minimise the total adverse effect on health and quality of life impacts created by aircraft noise and emissions.

The use of the word *should* was contested in this design principle with many saying is has to be a *must*.

This was considered by some to be a catch-all principle with the suggestion that we should detail the longlist design principles which were merged into this 'catch all'.

The representative from Edinburgh Airport Watch was very keen to have the word *should* be replaced with *must.* Other aviation delegates were less convinced that it was necessary or that it is possible (as with PDP3, delegates suggested it would be helpful if EAL were to investigate the legal position of using the terms *must* and *should* in the design principles). Later in the aviation discussion it was thought that this could subsume PDP7 in which case it should be mandatory and adopt the word *must.*

PDP5 Economy

Flight paths should be designed to provide increased airspace capacity in order for Edinburgh Airport to support the Scottish Government's Economic Development agenda and the UK's wider aviation strategy.

This prompted a lot of discussion with community stakeholders around the need for expansion. Many delegates argued against the need for increased capacity. One of the contentious points in this principle was the word *provide.* Many community stakeholders felt it suggested that the sole purpose of this design principle was to increase capacity, and many argued against the need for this. Other community stakeholders argued that if the government's economic development agenda is to be cited, then its policy on the climate change should be given equal weight.

Some community stakeholders felt the statement was too restricted to supporting the aviation industry and should include reference to tourism and trade.

We tested the addition of the words *tourism* and *trade* to this statement with aviation stakeholders. This addition was agreed and understood by the group.

PDP6 Environment

Flight paths should be designed to minimise CO_2 emissions above an altitude of 7,000ft and, where it does not have a detrimental effect on adverse noise impacts, also between 4,000ft and 7,000ft.

Many felt that this statement placed emphasis on CO2 emissions over noise and it should be the other way around. The Air Navigation Guidance 2017 (ANG2017) has a different focus and this, and in some respondent's minds the following should be adopted:

> *For flightpaths at or above 4,000ft to below 7,000ft, the environmental priority should continue to be minimising the impact of aviation noise in a manner consistent with the government's overall policy on aviation noise, unless this would disproportionately increase CO_2 emissions.*

We tested this suggestion with aviation delegates and they preferred the ANG definition because they felt it was less confusing than the original version.

PDP7 Environment

Flight paths should be designed to minimise adverse local air quality impacts.

Many community stakeholders called for the wording of this to be *must* as opposed to *should* as they felt there should be an imperative on the airport to protect air quality. Others argued for the inclusion of the word *local communities of people* because people should be prioritised over animals, land and water.

As a result of stakeholder responses, we tested with aviation stakeholders the replacement of *should* with *must.* This prompted discussion with aviation delegates over the prioritisation of *musts* over *should* at

design stage. The outcome of the discussion was that this principle is covered by PDP4 and the majority agreed that it could be deleted as long as PDP4 adopted the word *must*.

PDP8 Operational

Flight paths should be designed with cost-effective routes that minimise track miles and fuel burn.

The words *cost effective* confused some community stakeholder delegates who made an assumption that this was tied into the commercial strategies of airlines. This led many to agree that all design principles must be easy to understand.

We discussed the removal of the words *cost-effective* with both groups. There was a discussion amongst the aviation delegates about the difference in PDP8 and PDP9 and the correlation of less fuel burn with effective route management. After some discussion about the possibility of merging PDP8 with PDP9, the group agreed with the removal of the words *cost-effective*. The group discussed the benefits of keeping PDP8 and PDP9 as separate design principles.

PDP9 Operational

Flight paths should be designed to ensure efficient and effective route management.

This was not immediately understood by community stakeholders and needed to be explained. It was explained by observers from the working group as being a way to get planes in as quickly as possible, minimising halt times as well, which helps reduce fuel burned, track miles and CO_2. Some community stakeholders thought this was so close to PDP8 that it could be merged, but then conversation followed that highlighted the difference in emphasis of one being about the minimisation of track miles and the other being about route management. It was noted that by merging the two, the flexibility of efficient and effective route management may be lost. The final outcome was a suggestion to keep them separate.

Other community stakeholders reiterated the need to keep this as a *should* and not a *must* as it may be necessary to create curved routes to avoid overflying communities.

Aviation stakeholders agreed and did not challenge this design principle.

PDP10 Operational

Flight paths must be designed to accommodate PBN traffic in line with CAA's modernisation strategy.

This was not understood by the community stakeholders because not everyone knew what *PBN* means and the CAA modernisation strategy was not understood by the majority. It was agreed that these points need to be spelt out in a glossary in order for them to be understood.

A comment was made by community stakeholders that three operational design principles had been discussed that potentially could be merged into one. Having three operational principles was thought to give the aviation industry a disproportional representation within the appraisal framework, as routes would have to be evaluated against three rather than one operational design principle.

Some aviation stakeholders felt there is a need to qualify PBN as 'higher standard' or 'modern' as not all PBN traffic is the same. Otherwise, they did not challenge this design principle and asked that PBN was listed in full.

PDP11 Health

Flight paths should be designed to minimise population overflown below 4,000ft and, where possible, between 4,000ft and 7,000ft, taking into account any potential adverse impact due to those overflown having protected characteristics as defined by the Equalities Act 2010.

The first observation made by community stakeholders was the need to remove the phrase *where possible,* as they felt this opened the way for this design principle to be ignored.

The phrase *taken into account* was also thought to be too ambiguous by the community stakeholders. Some felt it should be strengthened: one way to do so would be to replace it with the word *meet the requirements of communities defined as having protected characteristics.*

A comment that was made in the community stakeholder workshop, was that a lot of the principles have been designed to protect larger communities but there is not enough to protect the needs of those with specific requirements.

Many community stakeholders were not aware of the definition of protected characteristics under the Equalities Act. This, combined with the suggestion that reference to it looks like a tick box exercise, led to the suggestion of removing the reference to the Equalities Act and placing more emphasis on those with specific requirements.

A point made in the community stakeholder workshop, by PPCA Ltd. on behalf of Winchburgh Developments, was that all statements from PDP1 to PDP11 have focused on the existing populations and that nothing has been said about the future populations.

One of the outcomes of the discussion by community stakeholders around PDP11 was that, once EAL has completed its mapping exercise of where communities are, where they might be and what should be avoided, they (EAL) should make that public so that members of the public can better understand the rationale for proposed flight paths.

A comment made by one delegate that adverse effects of flights above 7,000ft should be recognised and that the principle should focus on flights up to 12,000ft. The same person commented that this principle doesn't differentiate between flights taking off and landing and that the difference in noise is tangible.

The following version of this PDP was tested with the aviation delegates:

> *Flight paths should be designed to minimise population overflown below 4000ft and, between 4000ft and 7000ft, taking into account any potential adverse impact, due to those overflown having protected characteristics, and special requirements.*

Most aviation delegates agreed with this principle even thought they were confused about how EAL could put this into effect.

It was agreed that this design principle will need a fuller explanation.

PDP12 Health

Flight paths should be designed where possible to minimise overflying sensitive locations and noise-sensitive receptors.

Community stakeholder delegates asked for more certainty in this principle and wanted the phrase *where possible* to be removed. Some argued that this PDP should be under the heading *health and wellbeing* as noise is not just a health issue and it can be intrusive and affect wellbeing.

The word *receptors* was not widely understood by community and aviation workshop delegates and needed to be explained in more detail. This was done by giving examples of the types of locations, such as Edinburgh Zoo, and including a reference to this in a glossary of terms.

PDP13 Noise

Where possible flight paths should be designed to include track concentration and/or track dispersal options to provide noise respite.

The phrase *where possible* was once more challenged by community stakeholders and its removal requested. This idea was tested and agreed with by aviation stakeholders. Otherwise this design principle went unchallenged

PDP14 Noise

The predictability of flight tracks must be maximised for consistency of operations.

There was a debate with community stakeholders as to whether this was an operational or noise design principle. Another point made by community stakeholders in relation to this PDP was that it is dependent on air traffic control and vectoring.

Some community stakeholders claimed that the principle should be about minimising vectoring to conditions where safety and weather require it and that it should explicitly state that '*we will work with air traffic control to keep these flight paths as narrow as possible.'*

Aviation delegates agreed and made no challenge to this design principle.

PDP15 NERL (Core)

Collaborate with other Scottish airports and NATS to ensure that the airspace design options are compatible with the wider programme of lower altitude and network airspace changes being coordinated by the FASI North programme.

This design principle was welcomed by members of EANAB and other community stakeholders, who were pleased to see joined up thinking. *FASI North* was not universally understood. This design principle was agreed by the aviation workshop delegates and no challenge was made to the wording.

PDP16 GLA (Core)

Routes to/from Glasgow and Edinburgh airports should be procedurally deconflicted from the ground to a preferred level in coordination with NATS Prestwick.

Many of the community stakeholders did not understand the term 'deconflicted'. Following a discussion, delegates within this group were content to accept the DPD, but noted the terminology is not user-friendly. The design principle was agree with no challenge was made to the wording by aviation workshop delegates.

Table 18: Summary of responses

PDP1	**Safety (Core)**	**The airspace design and its operation must be as safe or safer than it is today.** Accepted without challenge.
PDP2	**Technical**	**The prioritised requirements of airspace users must be taken into account when designing flight paths.** Remove the words *The prioritised*, use *should*.
PDP3	**Technical (core)**	**Flight paths must be flyable.** Accepted but needs to be explained in design principle or in glossary
PDP4	**Noise**	**Flight paths should be designed to minimise the total adverse effect on health and quality of life impacts created by aircraft noise and emissions.** It could subsume PDP7 in which case it should be mandatory and include the word *must.*
PDP5	**Economy**	**Flight paths should be designed to provide increased airspace capacity in order for Edinburgh Airport to support the Scottish Government's Economic Development agenda and the UK's wider aviation strategy.** The word *provide* could be replaced with *enable*, it should also include reference to *tourism and trade.*
PDP6	**Environment**	**Flight paths should be designed to minimise CO_2 emissions above an altitude of 7,000ft and, where it does not have a detrimental effect on adverse noise impacts, also between 4,000ft and 7,000ft.** Revert to the ANG17 version wording.

		ANG says: "These environmental objectives are designed to minimise the environmental impact of aviation within the context of supporting a strong and sustainable aviation sector. These objectives are, in support of sustainable development, to: *a. limit and, where possible, reduce the number of people in the UK significantly affected by adverse impacts from aircraft noise;* *b. ensure that the aviation sector makes a significant and cost-effective contribution towards reducing global emissions; and* *c. minimise local air quality emissions and in particular ensure that the UK complies with its international obligations on air quality."* Therefore to incorporate this into a design principle, with environmental expert advice, we have interpreted this into a design principle as: For flightpaths at or above 4,000ft to below 7,000ft, the environmental priority should continue to be minimising the impact of aviation noise in a manner consistent with the government's overall policy on aviation noise, unless this would disproportionately increase CO_2 emissions.
PDP7	**Environment**	**Flight paths should be designed to minimise adverse local air quality impacts.** Workshop participants thought this design principle could be combined with PDP4. Edinburgh Airport determined the need for both design principles to remain separate as air quality is different to emissions.
PDP8	**Operational**	**Flight paths should be designed with cost-effective routes that minimise track miles and fuel burn.** Remove the words *cost-effective*.
PDP9	**Operational**	**Flight paths should be designed to ensure efficient and effective route management.** Stakeholders suggested merging this with PDP8, but aviation wanted it to be kept separate from PDP8.
PDP10	**Operational**	**Flight paths must be designed to accommodate PBN traffic in line with CAA's modernisation strategy.** Define PBN.
PDP11	**Health and wellbeing**	**Flight paths should be designed to minimise population overflown below 4,000ft and, where possible, between 4,000ft and 7,000ft, taking into account any potential adverse impact, due to those overflown having protected characteristics, as defined by the Equalities Act 2010.** Debate around whether reference to the Equalities Act in the design principle ios helpful, alternatively spell out in glossary.
PDP12	**Health and wellbeing**	**Flight paths should be designed, where possible, to minimise overflying sensitive locations and noise-sensitive receptors (for example, the zoo, retirement complexes, green spaces, historic heritage sites, and others).** Remove 'where possible', define sensitive receptors in DP or spell out in glossary.
PDP13	**Noise**	**Where possible, flight paths should be designed to include track concentration and/or track dispersal options to provide noise respite.** Remove 'where possible'.
PDP14	**Noise**	**The predictability of flight tracks must be maximised for consistency of operations.** Generally accepted without challenge.
PDP15	**NATS Prestwick Centre (Core)**	**Collaborate with other Scottish airports and NATS to ensure that the airspace design options are compatible with the wider programme of**

		lower altitude and network airspace changes being coordinated by the FASI North programme. Generally accepted without challenge; however, could be worded less technically.
PDP16	**GLA (Core)**	**Routes to/from Glasgow and Edinburgh airports should be procedurally deconflicted from the ground to a preferred level in coordination with NATS Prestwick.** Generally accepted without challenge; however, could be worded less technically.

16.3 Finalising design principles

This feedback from the recall workshops and information gathered outwith the process was then considered for each design principle.

The themes were reviewed to ensure proper classification in light of comments made since the shortlisting process.

The order of the design principles was reviewed as a result of comments that 'core' design principles should be at the top.

Noise and heath were combined to a new category of wellbeing as these were considered overlapping in many areas.

The use of the words *must* and *should* were reviewed in detail for each design principle. It was noted that wellbeing-themed design principles were considered *must* by communities but not by aviation stakeholders.

As a result of the methodology set our above and the responses received by participants, EAL settled on the following finalised design principles listed in Table 19.

Table 19: Final design principles

Category	Number	Design principle
Safety (core)	FDP1	The airspace design and its operation must be as safe or safer than it is today.
Safety (core)	FDP2	Flight paths must be flyable and technically supported by air traffic control and airport technical management systems.
Operational (core)	FDP3	Flight paths must be designed to allow modern aircraft to use performance based navigation (PBN) in line with CAA's modernisation strategy
Operational (core)	FDP4	Routes to/from Glasgow and Edinburgh airports must be procedurally deconflicted from the ground to a preferred level in coordination with NATS Prestwick.
Operational (core)	FDP5	The predictability of flight tracks must be maximised for consistency of operations.
Operational (core)	FDP6	Collaborate with other Scottish airports and NATS to ensure that the airspace design options are compatible with the wider programme of lower altitude and network airspace changes being coordinated by the FASI North programme.

Health and wellbeing	FDP7	Flight paths should be designed to minimise the total adverse effect on health and quality of life created by aircraft noise and emissions.
Health and wellbeing	FDP8	For flightpaths at or above 4,000ft to below 7,000ft, the environmental priority should continue to be minimising the impact of aviation noise in a manner consistent with the government's overall policy on aviation noise, unless this would disproportionately increase CO_2 emissions.
Health and wellbeing	FDP9	Flight paths should be designed to minimise population overflown below 4,000ft and, between 4,000ft and 7,000ft, taking into account any potential adverse impact, due to those overflown having protected characteristics, as defined by the Equalities Act 2010.
Health and wellbeing	FDP10	Flight paths should be designed to minimise overflying sensitive locations and noise-sensitive receptors (for example, the zoo, retirement complexes, green spaces, historic heritage sites, and others).
Health and wellbeing	FDP11	Flight paths should be designed to include track concentration and/or track dispersal options to provide noise respite.
Operational	FDP12	Flight paths should be designed with routes that minimise track miles and fuel burn.
Operational	FDP13	Flight paths should be designed to ensure efficient and effective route management.
Technical	FDP14	Requirements of airspace users should be taken into account when designing flight paths.
Environment	FDP15	Flight paths should be designed to minimise adverse local air quality impacts.
Economy	FDP16	Airspace should be designed to maximise capacity in order to contribute economic benefits to Scotland including tourism.

17. Communicating outcomes to participants

This document will be submitted to the CAA on 3 January 2020 ahead of the Stage 1: Define Gateway, due to take place on 31 January 2020.

On 3 January 2020, we plan to send email communications to all people who have participated in our process or advised they would like to participate but cannot participate at this point in time. This communication will let people know that we have submitted our Application for Stage 1: Define Gateway with the CAA and that redacted versions are available on the CAA's portal. We will also advise that our Gateway date is 31 January 2020 and that we will communicate the result of this application once we hear the result – we will also provide a copy of the final design principles at this stage.

We will also thank people for their involvement and participation in the process so far.

18. Conclusions and next steps

This document will be submitted to the CAA ahead of the Stage 1: Define Gateway, due to take place on 31 January 2020.

Edinburgh Airport seeks CAA approval of the design principles set out in this document and apermission to proceed to Stage 2 of the CAP1616 process – Develop and Assess, whereby Edinburgh Airport will develop options for new airspace design based on the Statement of Need and assess these options against the proposed Design Principles.

Other key dates include are listed in Table 20.

Table 20: Key dates

29 May 2020	**Stage 2: Develop and Assess Gateway**
28 August 2020	Stage 3: Consult Gateway
7 May 2021	Stage 4: Full proposal submission
19 November 2021	Stage 5: Decide Gateway
From March 2022	Stage 6: Implementation

19. Assurance and endorsement statement

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31 December 2019

Endorsement of Edinburgh Airport's Approach to Step 1B of CAP 1616 for its Airspace Change Programme

The Consultation Institute has overseen Edinburgh Airport's (EAL) engagement on its design principles, at Stage 1B of CAP1616, and endorses its approach.

Early in EAL's consideration of its approach to the Airspace Change Programme (ACP), it engaged tCI to conduct a "Review of Edinburgh Airport's ACP Consultations 2016-18". A summary report was prepared in early January to inform the Board on lessons learned and provide a baseline for decisions regarding the approach to the ACP under CAP1616. The full report was delivered in February 2019.

In May 2019 tCI hosted an engagement plan strategy meeting and we have reviewed and guided the development of the Engagement Plan since prepared by EAL, based on the advice the Institute has provided.

Also in May tCI delivered two workshops at EAL:

- risk assessment: to the ACP team and Legal Director to highlight the likely challenges of CAP 1616 and begin to suggest, and plan for, practical mitigations;
- stakeholder mapping: to the ACP and Community Engagement teams to provide a systematic methodology to inform the development of EAL's Stage 1B Engagement Plan.

We have also examined documentation, reports and other inputs. We have been able directly to observe one of the Recall Workshops and we attended, in an observer capacity only, the internal EAL decision-making workshops regarding the draft Design Principles on 21 October. This was conducted in a thorough and professional manner with time devoted and careful consideration being given to the evidence and insights presented, and to the rationale for decisions taken, including about discarded options.

Throughout the process the main points of contact have been the [redacted] who is the ACP Senior Responsible Officer, and the [redacted] who is the ACP Project Lead. We have also had sight of, and become familiar with, the governance framework within which the ACP is being delivered.

A dedicated weekly call with the engagement suppliers, in which we have always participated, has ensured the programme remained on track, advice and guidance was offered in real time, and relationships have developed to ensure meaningful communication. Significant elements of engagement have been conducted by a third-party supplier, Progressive Partnership. Its work has been guided and supported by EAL and the methodology provided a randomized sampling process, ensuring that key target groups were included, providing good representation. This approach was also overseen and supported by another supplier, Diversity Dynamics, and as such, tCI is content that those with protected characteristics have been fairly included – and heard – within the process.

The Consultation Institute

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The reports produced are detailed, written in clear and accessible language, thereby offering EAL a bank of evidence to analyse, and also demonstrate the success of the engagement exercise.

For EAL we provided direct advice and guidance, endorsing the following elements:

- Statement of Need
- Stakeholder Identification
- ACP Engagement Strategy and Stage 1B Engagement Plan
- Brief for research agency
- Stakeholder Engagement Methodology
- Planning and timetabling of activity
- Development of Design Principles process
- Stakeholder and Public Engagement Reporting

In addition to these elements of the ACP above we have:

- Provided support and advice regarding the involvement of stakeholders with a pre-existing and particular relationship with EAL, such as Edinburgh Airport Noise Advisory Board (EANAB) and Edinburgh Airport's Consultative Committee (EACC);
- Attended a meeting of Edinburgh Airport's ACP Board sub-committee to advise on observations of the process to date and provide insight and guidance on the process, in April 2019;
- Reviewed the performance and effectiveness of the Stakeholder Reference Group (SRG) in operation for the ACP during 2016-2018;
- We subsequently made recommendations regarding the establishment of a refreshed SRG in 2020, as an additional safeguard through which local representative voices, asked to concentrate on the process alone, can help us reflect opinion for the remainder of the ACP.

The Institute is satisfied that the approach taken aligns with our good practice standards.

Although the scale of the public engagement has been over and above what was strictly necessary, we believe that the extra understanding gained about the public's issues and priorities, the building of trust and the strengthening of relationships, will pay dividends in the subsequent stages of the process.

We believe that the responses and inputs from stakeholders (at Workshops), the general public (through carefully recruited Focus Groups) and others – through supplementary activity, has been captured in this report and the supporting documents. We are satisfied, from our observations, that the process used for arriving at the proposed Design Principles is consistent with the requirements of CAP 1616.