YOUR LONDON AIRPORT
Gatwick

Noise Management Board (NMB)
First Term Report

June 2016 – May 2019

Prepared for NMB/14 – 8 May 2019

Date: 01 May 2019

The NMB Background

In 2014, Gatwick Airport was receiving complaints from some local community groups and elected officials that aircraft arriving at the airport were generating excessive noise disturbance and affecting more people. Communities also reported a perceived inability to influence noise factors through the normal community engagement process provided by the airport, including the Gatwick noise complaints procedure and the Gatwick Airport Consultative Committee (GATCOM). It was also apparent (from the findings of the Independent Review of Arrivals) that communities were, at the time, subjected to insufficiently coordinated and sometimes inconsistent communications regarding aircraft arrivals procedures and noise mitigation, from organisations including Gatwick Airport Limited (GAL), CAA, NATS and the DfT.

At the same time, the ubiquitous use of social media by communities informed by flight following Apps, enabled the rapid dissemination of information and sometimes misinformation, which the institutions involved in management of aircraft noise have often had neither the resource, coordination mechanisms, nor experience to manage effectively.

In August 2015, GAL commissioned an independent review of flight routes used for aircraft on arrivals to Gatwick. While the cost of this review was met by GAL, the review team, comprising Bo Redeborn and Graham Lake, was tasked to provide a wholly independent professional analysis and report. The analysis of community feedback to the review found that community sensitivity to, perception of, and reaction to the noise from aircraft using Gatwick, has increased since 2012. At the time of the review, which was conducted in the last quarter of 2015, the circumstances related to Gatwick to which communities had reacted included:

- The statutory public consultation of Airspace Change Proposals for Gatwick in 2013 (subsequently withdrawn), related to the UK Future Airspace Strategy and London Airspace Management Programme, their associated proposed P-RNAV arrival and departure routes, and the concentration of arrivals implied by the proposal of a Point Merge procedure.
- The 2013 Approach Stabilisation Initiative by GAL and NATS, which changed the radar vectoring methodology used by NATS air traffic controllers at Swanwick who manage Gatwick arrivals manoeuvring and sequencing, created an arrival swathe concentration of aircraft, both further east and further west of the airport.
- The work of the Airports Commission and the associated campaign by GAL to win approval for a second Runway at Gatwick.
- Airframe noise generated by the Airbus A320 family of aircraft. The use of these aircraft at Gatwick is progressively increasing; by 2014 they represented more than 60% of all aircraft movements at the airport.
- The 2014 ADNID trial of potential new departure routes west of the airport.
- The introduction of RNAV-1 departure routes and the subsequent Post Implementation Review by the CAA.

The policies, procedures and imperatives related to the management of aircraft noise disturbance are complex. The multi-layered interaction between the multiple organisations involved with achieving a reduction in the impact of aircraft noise is equally complex. As a result, it is challenging to align the collective responsibilities and initiatives of the stakeholders concerned into a consistent and harmonised outcome.

To address these issues, the Arrivals Review recommended that Gatwick establish a Noise Management Board (NMB) to be operated under independent Chairmanship and comprising representatives from each of the institutions able to coordinate and effect noise reduction initiatives. It was also proposed that the Chair of the Airport Consultative Committee (GATCOM), elected council members and residents' representatives also join the NMB, thereby creating a dedicated Industry and Community body to plan and coordinate noise reduction strategies for Gatwick.

The NMB was constituted for its first three-year term beginning in June 2016. The initial responsibility assigned being to oversee the delivery of the 23 recommendations of the Independent Arrivals Review, before addressing other issues including Departure and Ground Noise matters, as well as further arrivals related developments arising from the initial work programme.

NMB 2016-2019

The NMB/14 meeting on 8 May 2019 is the final meeting of the first term of the NMB. This report is intended as a review of the Board's work, including delivery of the 23 Recommendations accepted by GAL in March 2016, and the 20 follow-on activities that comprised the NMB's post Arrival Review workplan.

A wide range of activity has been undertaken by the NMB to understand community perspectives and to explore the technical, procedural and institutional opportunities to deliver further noise reductions and other noise mitigation measures. Good progress has been made in a number of key areas.

The 2019/2020 NMB workplan has been developed which includes a number of continuing activities from the previous workstream, and the potentially viable options resulting from analysis of the feasibility of additional measures proposed by community and other members of the NMB.

Formalised engagement throughout the first term of the NMB has improved collaboration between stakeholders and has led to the results reported here. An extensive list of NMB meetings and workshops is listed in Annex C. This underscores the amount of time and level of effort involved; a significant consideration for community representatives in particular, who are obliged to give up their own time to participate.

An important part of the role of the NMB is providing a conduit for two-way communications. Communications from the NMB to its members and their wider communities, and communications into the NMB to help inform and shape workplans and priorities.

The NMB has its own dedicated webpages, (www.gatwickairport.com/nmb), which has specific pages and areas for each meeting including: agendas, minutes, updates, blog and background information.

How we share information through the Airport Governance groups is important too. The three main groups with a remit for noise are the NMB, Gatwick Airport Consultative Committee (GATCOM) and the Noise and Track Monitoring Advisory Group (NaTMAG). These groups also have their own terms of reference and information sharing webpages.

Each group has a representative on the other groups and information, updates and minutes are shared both between Members and publicly through published data and minutes. In order to further enhance these relationships, the NMB has commissioned topic specific workshops over the last three years and will continue with these.

The NMB workshop concept has proven to be a valuable initiative. It has enabled greater engagement with a broader group of interested organisations (beyond the core NMB membership) and has allowed participants to independently develop a view on what they consider important issues and priorities. Workshops facilitate improved collective community discussion on specific topics to develop views prior to each NMB. The output and conclusions from each workshop are used to inform discussions at the NMB, as an input to strategic noise management planning.

By January 2017, the NMB reported in its annual summary *(Imm-20 Report)*

- reduction of noise disturbance from aircraft using Gatwick;
- improved quality and transparency of information available;
- the access available to communities;
- active engagement with aviation stakeholders.

A summary of all the initiatives undertaken through the NMB's first term is provided below. Additional supporting information is provided in the following sections.

As a direct result of an NMB initiative, the 2017 Gatwick Noise Exposure contours showed some noise reductions which, as identified by the CAA's Environmental Research and Consultancy Department, was to an extent driven by the modification to the A320 family of aircraft, one of the NMB's initiatives.

Summary of NMB's first term activities

ILS Joining Point

- In 2016, the NMB review of the ILS minimum joining point activity was conducted which resulted in acceptance and delivery of the recommendation that the minimum joining point on final approach revert from 10NM to 8NM. The purpose of this change was to largely negate a change made in 2013 (a move of the minimum ILS joining point from 7NM to 10NM from touchdown) and thereby to reduce the concentration of arriving aircraft. The recommendation was successfully delivered in August 2016, to emulate operations prior to the 2013 change. Actual traffic patterns are monitored and reported to the NMB and NaTMAG.

Increased Altitude for Continuous Descent Commencement and Monitoring

- In 2017, the NMB planned an increase to the altitude from which Continuous Descent Operation procedures (CDO) were measured. The intention being to increase the minimum altitude at which aircraft are operated in sustained level flight while approaching Gatwick, thereby reducing the noise reaching local communities. The altitude at which the monitoring of CDO commenced was raised from 6,000ft to 7000ft in coordination with NATS, CAA and airlines using Gatwick. CDO compliance at Gatwick, among the best in UK, has since been measured from this increased altitude, virtually eliminating arriving aircraft dwell at 6000 feet.

Runway in use protocol

- Investigation into the implementation of a runway alternation protocol, to provide fair and equitable respite to residents significantly affected by sustained periods of westerly runway operations. The study validated that typical weather conditions would enable the possibility of introducing runway alternation on approximately 18 days each year. Analysis and evidence were presented to the NMB to support the proposal, and the necessary procedures and safety assurances were developed. The protocol was rejected by communities that considered that they would have been adversely affected by the change. NMB has not advanced the protocol for operational implementation.

Fair and Equitable Dispersal (FED)

- The Arrivals Review was tasked with considering the community objective of the Fair and Equitable Dispersal of flights. The Review findings included the observation that the technology and (radar based) procedures currently used to manage arriving flights could deliver only random dispersal of arriving aircraft. However, Recommendation Aspire 21, identified that the adoption of carefully designed (P-RNAV) routes from the approach holding fixes used for Gatwick, to the ILS final approach tracks, provides a real opportunity in future to reduce noise, to disturb fewer people, to deliver fair and equitable dispersal of noise, and, to deliver well defined respite measures. Such measures will become feasible with the introduction of the UK's Future Airspace Strategy. Although no mechanism has been identified that can achieve FED (as defined by the communities) using current radar vectoring procedures. Based on discussions at NMB, NATS agreed to conduct further expert engagement and operational workshops to reconsider in detail the feasibility of a number of potential options for achieving Fair and Equitable Distribution (FED) of traffic. However, for technical, operational, and safety reasons thus identified, NATS confirmed that there was no viable mechanism to achieve FED without the introduction of the planned RNAV environment.

Academic Study of Height Perception

- Sussex University was commissioned to undertake independent academic research to identify whether there was a correlation between aircraft size, noise level and height perception. This study was completed in 2018 and is available on Gatwick's website. The results were presented to the NMB in a special presentation in March 2018. The study identified a number of useful findings and conclusions which are shaping our strategies for the 2019-20 workplan and directly informing noise reduction initiatives at the airport.

Improved Noise Abatement information in International Aeronautical Data Publications for pilots

- Information provided to pilots through the Aeronautical Information Publication (AIP) and Commercial Flight Information was reviewed to understand the availability and clarity of noise abatement procedures. The study identified discrepancies in the information provided to airlines, which were subsequently updated by GAL and commercial information providers and published to all airlines.

Airline Briefing Pack - Noise Abatement

- Communication of noise abatement information and its adoption by airlines was improved with the development of a new airline briefing pack providing up-to-date information for existing and new operators at Gatwick. The pack describes all of Gatwick's noise mitigation procedures, as well as providing other information to new airlines. It was published in July 2018 and is available online.

'Airbus Whine' Differential Charging Scheme

- A new charging regime was introduced in January 2018 to encourage airlines to modify their A320 fleet of aircraft with a Fuel Over Pressure Protector (FOPP) in order to alleviate a whining sound from the airframe. Since introducing the new charge, the number of modified aircraft has risen to 98% of flights.

Land Use Planning

- Planning authorities for communities impacted by aircraft noise from Gatwick, coordinated to conduct their own joint review of the application of land use policy in context of Gatwick aircraft noise, with the objective of identifying steps that will enable the increase of its effective use and the improvement of the aircraft noise awareness for existing and potential land users.

Aircraft Departure Procedures

- A review of Noise Abatement Departure Procedures (NADP 1 & NADP 2) was conducted to establish if one procedure had better noise benefits for communities around Gatwick compared to the other. The initial analysis concluded that the majority of Gatwick departures already fly NADP 2 procedures, and that moving from one procedure to another simply relocates the noise from one location to another. The NMB concluded it would be unlikely that there would be significant noise benefit from the standardisation of NADP procedures at Gatwick. Work continues to validate this conclusion.

Noise League table

- An Airline Noise League Table is being developed. This will help residents to track individual airline noise performance and to monitor continuous operational improvements. In collaboration with airlines, GAL has identified a number of operational and strategic metrics which will be monitored and reported against. Ongoing detailed planning work continues, with an expected launch date is planned for Q4 2019.

Reduced Night Noise Trial

- The NMB is continuing to progress plans for a Reduced Night Noise (RNN) trial. The primary objective of the trial is to assess the extent that PBN technology can be used to deliver noise benefits (to arriving aircraft) during the night period by reducing the number of aircraft flying unduly noisy profiles and/or flying at unnecessarily low altitudes, thus reducing the number of people disturbed. Significant engagement with the NMB and industry has taken place since early 2017 to develop the RNN trial concept and address community concerns. GAL submitted the Statement of Need and Trial Plan to the CAA in late 2018 and attended a formal CAA Assessment Meeting in March 2019. Detailed planning is underway, and GAL has commenced consultation with industry through an Airline Survey and a Technical Workshop. The trial is expected to start in January 2020.

Low Noise Arrival Metric

- In 2017, the NMB led the way in establishing a national cross-industry project in the UK to develop a new Low Noise Arrival Metric to complement the current CDA definition and provide an additional performance metric for Gatwick and all airports. The Future Airspace Strategy (FAS) sponsored work is being conducted by CAA (ERCD), with NATS supporting and Sustainable Aviation sponsoring the work. Detailed noise analysis and testing of the proposed KPI is ongoing, with an expected reporting date of Q2 2019. Validation of this metric has been included in the 2019/2020 workplan as a follow-on activity.

Activity Progress Report for the 2017/2018 workplan

This report summarises the status of the actions within the consolidated 2017/2018 NMB workplan to 8 May 2019.

Activity 1: Ongoing monitoring and reporting	***Due: Ongoing***

Task: Regular reporting to the NMB (and ultimately via NATMAG) on several metrics including, but not limited to, the following:

- Imm-01 A320 Series FOPP modification
- Imm-10 ILS joining point distribution
- Imm-12 Night KPI
- FED analysis using the community defined gates
- Progress reports on ongoing implementation tasks

Responsibility: GAL

Progress: Reporting is an ongoing activity.

In January 2018, a new noise charge was introduced at Gatwick for any FOPP-unmodified A320 family aircraft arriving at the airport. Statistics for the number of unmodified aircraft since January 2018 can be found in Annex B. Statistics for the number of unmodified aircraft are now reported through the Noise and Track Monitoring Advisory Group (NaTMAG) at Gatwick.

Imm-10 and Imm-12 are now reported by The Flight Performance Team (FPT) at Gatwick within their Quarterly reports.

Analysis of the community defined gates has been halted because delivery of the requested traffic distribution simultaneously across multiple community defined gates with current vectoring procedures is not possible. There is no mechanism identified to deliver Fair and Equitable Distribution (FED) in the short-term with current vectoring procedures. Controlled distribution of traffic across multiple points will only be possible in a future RNAV environment.

Activity Milestones:

1. Report to NMB/14 - May 2019
2. Report to future NCF and NEX
3. Report to future NCF and NEX

Activity 2: Review of metrics for NMB activities	*Due: Ongoing*

Task: Review current metrics in use at Gatwick and within the wider industry, to identify metrics and reporting structures to measure the impact of the NMB workplan and growth of the airport.

Responsibility: GAL

Progress: GAL have completed and shared the following; 1) a detailed review of Government policy on aviation noise; 2) commissioned an Ambient Noise study to understand the impact and consequence of ambient noise and; 3) an 'Assessing Noise Performance' paper, which sets out how, through working closely with community groups, a number of noise metrics have been identified in order to better assess, monitor and report noise impacts.

Therefore, with effect from 2019, GAL will also report, in addition to the annual primary noise metrics, secondary noise metrics, i.e. Number Above noise exposure contours to assess frequency of noise impact:

- Summer 16 hour day N65, at levels 20, 50, 100, 200 and 500 events; and
- Summer 8 hour night N60, at levels 10, 20, 50 and 100 events.

Use of the N65 day and N60 night metrics allows a balanced and more comprehensive view of the impacts local residents are likely to experience from aircraft noise. These measures may better reflect the perception of the change in noise created through the growth of air traffic movements at the airport and are likely to be more easily understood.

As in previous years, the Civil Aviation Authority's (CAA) Environmental Research and Consultancy Department (ERCD) will be commissioned to calculate noise contours (including primary and secondary metrics) and the annual noise exposure report. The aim is that all noise impact contours would be produced by the ERCD by end Q2 each year for the previous year.

Performance will be measured against a goal based upon forecast noise impact modelling, akin to that currently set out as part of the Gatwick Airport draft Masterplan document in the current scenario based upon a single runway operation.

Performance against achieving the goal set, based on the forecast noise exposures, will be provided to GAL as part of the annual noise exposure contours reported in the FPT Annual Report and presented to NaTMAG, GATCOM and the NMB.

This activity has been adopted in the 2019/2020 workplan as work continues to identify a basis on which the balance of growth and noise can be uniformly and consistently monitored, managed and reported.

Activity Milestones:

1. Develop an agreed Gatwick growth scenario – November 2018
2. Develop noise metric options to illustrate any noise impacts of future growth scenarios – January 2019
3. Delivery of Noise and Growth portfolio of work – May 2019
4. Delivery of noise contours – Q2 2019
5. Quantify the benefits delivered by existing and planned noise management initiatives – TBC through NMB Workplan

Activity 3: Determine target distribution for FED	*Due: On hold*

Task: Data analysis, discussion and agreement of FED distribution targets between industry and Community Noise Groups (CNG).

Responsibility: GAL

Progress: Community defined FED distribution targets were agreed by the NMB in September 2017 and were incorporated into subsequent FED monitoring reports. However, in Q3 2018 analysis of the community defined gates was halted because delivery of the requested traffic distribution simultaneously across multiple gates with current vectoring procedures is not possible (as outlined in the Report of the Arrivals Review and later confirmed by NATS). There is no mechanism identified to deliver FED in the short-term with current vectoring procedures. It is expected that the NMB will work on the identification and development of an operations concept for FED, which is expected to require use of P-RNAV approach procedures, in 2019.

This activity has been adopted in the new workplan; to define the noise requirements to deliver FED in an RNAV environment.

Activity Milestones:

1. No milestones attached.

Activity 4: Publish a noise league table	Due: Q4 2019

Task: Development and publication of a league table to track airline noise performance.

Responsibility: GAL

Progress: A review has been conducted of best practice from other airports around the world that currently operate noise, airline, or 'Fly Quiet' league tables. International best practice was compared between other airports and high-level options were presented to GAL for consideration and refinement.

A voluntary Working Group, consisting of airline and GAL representatives, has met several times during the year to support development of the league table. In collaboration with airlines, GAL have identified several operational and strategic metrics which will be monitored and reported against. A number of workshops have been held to review and refine the proposed metrics and to develop the league table model.

Further refinement and validation took place in Q1 2019, and integration of the model with GAL's new NTK system is planned for Q2 2019. Once integrated, it is expected that the model will run in shadow mode for 3 months using live data to test that the expected results are being produced and to refine further if required. The expected launch date is planned for Q4 2019.

This activity will complete before the end of the year and as such it has not been adopted in the new workplan. Work will continue through 2019.

Activity Milestones:

- Agreement on KPIs and reporting process between GAL and airlines – Q2 2019
- League table model validation and completion – Q3 2019
- First report – Q4 2019

Activity 5 Research into aircraft height perception	*Complete*

Task: Commission independent academic research to identify if there is a correlation between aircraft size, noise level and height perception. This is Imm-15 from the Arrivals Review.

Responsibility: GAL

Progress: The University of Sussex was commissioned to undertake this study. Field work took place through August and September 2017 with mobile noise monitors placed at Crowborough, Cowden, Penshurst and Tunbridge Wells. The study used a postal survey, street interviews and field visits to gather data.

The preliminary findings of the report were presented at NMB/9 in January 2018, and the full report was published online following final presentation of the report findings on 14 March. This activity is now complete.

The final report can be found here: https://www.gatwickairport.com/business-community/aircraft-noise-airspace/airspace/height-perception-study/.

Activity Milestones:

1. Publication of final report – Complete, Q1 2018
2. Follow up presentation for NMB members – Complete, Q1 2018

Activity 6 Develop requirements for future London airspace changes	*Due: 2019*

Task: Develop requirements for input into future airspace change as part of the Future Airspace Strategy Implementation (South) Programme. This will include consideration of the following Independent Arrivals Review recommendations as part of a full options appraisal:

- Aspire-21, the implementation of carefully designed routes from the holding fixes to the ILS joining point to provide the opportunity to reduce noise, disturb fewer people and deliver fair and equitable dispersal of noise.
- Aspire-22, the moving of the Gatwick holding areas to a higher altitude or relocation over water.

In addition, Activities 16 to 19 may also have an input to Future Airspace Strategy Implementation (South) (FASI-S) and the outcomes of these activities will be provided to the NATS airspace modernisation team.

Responsibility: GAL

Progress: The Government co-sponsored programme of airspace modernisation will provide the primary vehicle through which significant airspace and procedural redesign can be accomplished. The delivery programme, FASI-S, will follow the CAP1616 process and we envisage will require 3-4 years to develop, engage and ultimately consult on a future airspace design; the CAA and possibly the Secretary of State for Transport will be the final arbiters on a future airspace design. The airspace change process requires appropriate stakeholder engagement through which perspectives are gleaned on design principles, their relative importance and the application of design options. The NMB members are recognised as stakeholders and will be engaged at appropriate occasions to collect perspectives and ideas.

GAL submitted its Statement of Need to the CAA in Sept 2018 to initiate the redesign of its departure and arrival procedures as part of FASI-South; the CAA accepted this without amendment in Jan 2019. The next step in the CAP1616 process is the development of design principles through engagement with a wide range of organisations and groups; these design principles will assist with the selection of options to examine in more detail. It is our intent to submit these to the CAA in mid-June for their assessment. The airspace change reference is ACP-2018-60, and can be accessed via this link:

https://airspacechange.caa.co.uk/PublicProposalArea?pID=54

Activity Milestones:

1. Gatwick FASI(S) Statement of Need – Submitted to CAA Sept 2018
2. NMB FASI-South Workshop –Deferred by NMB to 2019 – Q3 TBC)

Activity 7 Scoping and feasibility assessment of NATS FED initiatives	*Due: Complete*

Task: The feasibility assessment to determine the likely benefits and drawbacks of four NATS-led FED options for introduction in the near/medium term. The task will recommend which activity/activities can be taken forward for implementation.

The options identified for detailed consideration were:

- Use of airspace blocks to provide dispersal
- Lowering the level of the stacks to reduce track distance
- Limiting the departure point from the hold
- Review impact on the swathe through the application of increased holding

Responsibility: NATS

Progress: NATS have conducted expert engagement and operational workshops to review the feasibility of each of the four initiatives along with the likely benefits and impacts. The first three options were discounted for technical, operational or safety reasons. Evaluation and analysis of option #4 is complete and NATS concluded that increased holding had negative implications on the outer holds, leading to greater use of the outer holds and thus reduced CDA performance and runway capacity, without enabling any significant advancement of FED.

This activity is therefore complete as there is no mechanism to deliver FED with current vectoring procedures. The focus is moving towards mechanisms to deliver FED in a future RNAV environment. This activity has been adopted in the new workplan; to define the noise requirements to deliver FED in an RNAV environment.

Activity Milestones:

1. Completion of feasibility, benefit and impact analysis - Complete, September 2017

Activity 8 Scoping and feasibility assessment of follow on FED initiatives	*Due: On hold*

Task: The feasibility assessment of additional FED initiatives. This task follows on from Activity 7, and seeks to investigate the following additional proposals which could assist with the delivery of FED:

- Varying the ILS joining point for predictable periods
- Use of a reduced ILS joining point
- Reinstating the straight in approach for runway 26

It is proposed that this activity is undertaken when the concept of operations for FED is developed.

Responsibility: NATS / GAL

All of the three items proposed would require an airspace change process (ACP) to be followed as defined in the CAA's CAP 1616 document. Given the progress of airspace change for the FASI-S – see Activity 6 – it is appropriate to incorporate these proposals into that ACP rather than pursue them as stand-alone items. The activity will therefore currently not be progressed.

Activity Milestones:

1. Milestones will be developed once this task has been fully scoped.

Activity 9 Development of a low noise approach KPI *[Previously: Review and update the CDO definition]*	*Due: First phase June 2019*

Task: GAL will investigate the development of a low noise approach metric to improve upon the current CDO definition.

Responsibility: GAL

Note: This is not Gatwick specific and there is an understanding and recognition that this activity can only be delivered through a Gatwick proposed and Sustainable Aviation (SA) led initiative with extensive support from the CAA and NATS to ensure effective engagement at both UK and European levels. This activity evolved from the Independent Arrivals Review recommendation 'Imm-08 CDA taxonomy'.

Progress: In 2017, the NMB led the way in establishing a national cross-industry project in the UK to develop a new low noise approach metric to complement the current CDA definition and provide an additional performance target for Gatwick and all airports. This metric will enable the measurement and benchmarking of arrivals against a pragmatic optimum low noise approach.

The activity includes the following tasks:

- The conduct of noise analysis to identify the optimised low noise approach for a variety of aircraft types in the current and future airline fleets;
- Identification of an optimum low noise approach profile envelope based upon noise analysis i.e. upper and lower approach profiles;
- Testing of the new KPI against historic radar data for participating UK airports;
- Recommendations on how to implement the new KPI and introduce low noise approach as a new definition.

Work is ongoing, with SA overseeing the study. The Future Airspace Strategy (FAS) sponsored work is being conducted by CAA (ERCD), with NATS supporting and project management provided by Helios for GAL.

End-to-end analysis is complete for the Airbus A320, Airbus A380, and the Boeing 787-8. Analysis is ongoing by ERCD for the Q400, however due to resource constraints, planned timescales have slipped. NATS have commenced testing of the new KPI for the 3 completed aircraft, whilst the CAA are carrying out their analysis on the final aircraft in parallel. This phase of the study is expected to end at a revised date of Q2 2019. Validation of this metric has been included in the 2019/2020 workplan as a follow-on activity.

Activity Milestones:

1. Conclusion of noise modelling – September 2018 (delayed to April 2019)
2. Completion of test and evaluation of new KPI – November 2018 (delayed to May 2019)
3. Publication of final report – January 2019 (delayed to Q2 2019)
4. Validation of metric – to be captured through the 2019/20 workplan

Activity 10 Review speed limitations on approach	*Complete*

Task: Review current speed limitations on approach and determine if these need to be altered to support optimum continuous descent operations and low power low drag on current and new aircraft types.

Responsibility: GAL

Progress: GAL have surveyed airlines at Gatwick to gather the views of senior pilots on the current approach speed restrictions and if these could be altered to deliver noise improvements for arrivals.

The survey conclusions were discussed in the FLOPSC workshops in October and November 2017. Of those who responded to the survey, there was broad support for the current restrictions, as NATS provides a degree of flexibility which allows aircrews to fly in the optimum, low noise, configuration. Despite this, there was interest in a revised final approach speed of 170kt to 5NM because it can delay the deployment of the landing gear on certain types such as the B738 and the A321. This speed restriction was trialled in 2007 at Gatwick Airport and is still available to aircraft upon pilot request.

As NATS will, where possible, accommodate speed requests from aircrews to allow approaches in an optimal configuration, there was no benefit to change the current approach speed regime. The conclusion of the workshop has closed this activity and the outcome was reported to the NMB in November 2017.

This activity is now complete.

Activity Milestones:

1. Submission of findings to NMB – Complete, November 2017

Activity 11 Review noise abatement information provided to airlines by commercial flight plan service providers	*Complete*

Task: Conduct a gap analysis on the information provided to airlines by commercial flight plan service providers compared with the regulated information contained in the UK AIP and make recommendations to improve the availability and the level detail provided.

Responsibility: GAL

Progress: GAL expanded the scope of this study to consider both the information provided by commercial providers (based overseas) along with Gatwick's entry in the UK Aeronautical Information Publication (AIP).

A survey was conducted of airlines at Gatwick to understand which commercial flight plan service providers are used, and GAL engaged with these providers to gather the required information.

The study noted that the provision of CDO information on a specific approach chart within the Gatwick AIP could be improved by providing additional information for airlines. The referenced charts have now been updated, but further work is required to introduce this to all of the relevant charts. This will be explored over the next year.

The review of commercial flight information identified a number of improvements to the level and clarity of information provided. The commercial operators committed to update their information and make the new versions available to flight crews. The information has subsequently been updated and circulated.

This activity is now complete.

Activity Milestones:

1. Collection of information from commercial providers – Complete, October 2017
2. Completion of gap analysis and identification of improvements – Complete, November 2017
3. Submission of findings to NMB – Complete, January 2018

Activity 12 Improve collaboration between airlines to align CDO standard operating procedures and noise training	*Complete*

Task: Creation of an airline engagement and continuous improvement forum and engagement process covering CDO.

Responsibility: GAL

Progress: The FLOPSC workshops in October and November 2017 concluded that the best option to share information was through an operator briefing pack which was previously produced by the tower ATC provider (NATS / ANS). The pack would contain information on the specific procedures including those covering noise abatement procedures at Gatwick and will be circulated to current and future operators to advise on noise abatement and operational procedures.

Helios have completed the operator briefing pack and the supporting document control sheet. The briefing pack was reviewed by industry experts and was presented to FLOPSC at the end of May 2018. This pack has been circulated to current and new operators at GAL, to be used as ongoing guidance for operations at Gatwick Airport. It is available on the public website.

This activity is now complete, however it is annually reviewed and updated.

Activity Milestones:

1. Identification of a suitable engagement process – Complete, November 2017
2. Completion of first draft of new operator pack – Complete, May 2018
3. Circulation of finalised pack to airlines – Complete, June 2018

Activity 13 Reduced Night Noise (RNN) Trial	*Due: June 2020*

Task: To trial carefully designed RNAV routes in the night period to determine whether RNAV arrivals reduce noise.

Responsibility: GAL

Progress: An industry workshop took place in July 2017 to review the existing night time operations, discuss opportunities for improvement, and identify and agree objectives for the Reduced Night Noise initiatives. The workshop outcomes were reported to the NMB in September 2017.

Several meetings have taken place throughout 2017/2018 to mature the concept and commence trial scoping, including considerable data analysis. Industry, community and technical workshops have also been held to help refine the requirements for the trial and the concept of operations.

At NMB/11 in June 2018, industry and elected NMB members agreed their support for the RNN trial, subject to some additional clarifications requested by CNGs. An ad-hoc meeting was held in July to resolve these questions, which resulted in a number of additional actions. These have been addressed. GAL, supported by NaTMAG and the NMB workplan implementation steering group, concluded that further delaying the trial would compromise a valuable opportunity to gather actual noise data and to validate the benefits and drawbacks of the use of RNAV approach procedures. GAL indicated that because of the expected benefits, it was minded to proceed with the RNN trial.

In September and December 2018, GAL submitted a Statement of Need and Trial Plan respectively to the CAA to ensure that the CAA requirements could be met on schedule. Trial planning and preparation was based on the requirements of CAP1616; the revised CAA Airspace Change Process, effective January 2018. In March 2019, GAL attended a CAA Assessment Meeting, where the trial proposal was presented and discussed in detail. The CAA have since provided further guidance on the requirements for airspace trials, and GAL has commenced consultation with industry through an Airline Survey and a Technical Workshop.

The expected start date of the trial is January 2020. This activity has been included in the new workplan as planning, implementation and review of the trial results are expected to take place through 2019/2020.

Activity Milestones:

1. Submit Statement of Need – September 2018 (complete)
2. Submit Trial Plan – December 2018 (complete)
3. CAA Assessment Meeting – March 2019 (complete)
4. Completion of draft route design – June 2019
5. Safety Assessment – TBC
6. Trial commencement – January 2020
7. Trial completion – June 2020

Activity 14 Standardise Noise Abatement Departure Procedures (NADP)	*Due: On hold*

Task: Conduct analysis on the Noise Abatement Departure Procedures (NADP) currently used by airlines operating at Gatwick and seek to identify an optimal procedure to become a recommended practice.

Responsibility: GAL

Progress: NADP is an aircraft noise management procedure which is used between 800ft and 3,000ft. The procedure changes the location of noise benefit to either be close to the runway (NADP 1), or at an increased distance from the airport (NADP 2).

An ANMAC report (CAP 1691), published in July 2018, provides detailed analysis for both NADP 1 and NADP 2 comparing a number of different aircraft types. The following conclusions were drawn from the CAA's review of NADP:

1. The noise benefit of one NADP procedure over the other is barely noticeable to the human ear, typically between 1 and 3dB. A reduction in noise over 3dB is rarely observed.
2. When LAmax is reduced, SEL increases. This means that one metric is worse while another one is better between different NADP procedures. It is not possible to improve both at the same time.
3. No single NADP procedure will reduce departure noise in all locations; a change of NADP simply moves noise from one location to another.

The NMB concluded it would be unlikely that there would be significant noise benefit from the standardisation of NADP procedures at Gatwick. Work continues to validate this conclusion. NADP will be considered as appropriate in any future departures work.

Activity Milestones:

1. Completion of DfT ANMAC research (A320) – Completed July 2018
2. Update of study findings to NMB – September 2018

Activity 15 Review departure routes to minimise impact	*Due: September 2018*

Task: Assess current Standard Instrument Departure (SID) routes to identify current issues and develop options for optimised/multiple SID routes within current NPRs.

Responsibility: GAL

Progress: On behalf of GAL, Trax has completed an Operational and Environmental Impact Assessment (EIA) of the Route 3 proposed amendment, working closely with Heathrow Airport as several of their SIDs conflict with Route 3. The results of the assessment, as discussed at NMB/11, means that Activity 19 has been paused in relation to Route 3. See Activity 19 update.

No further work will be undertaken specifically in relation to the Route 4 SIDs under the auspices of this activity. A separate Route 4 Airspace Change Process (ACP) has been developed following the Court decision to quash the CAA's Route 4 Post Implementation Review decision.

Note: Route design changes to any SIDs would be considered an airspace change. This activity does not include the ACP which would follow as an additional work program. Any additional work program would be based upon, and guided by, the findings of future feasibility, benefit and impact analysis.

Note: The study will be conducted in sequence following Activity 19 (the review of constraints placed upon Gatwick departures by routes to/from other airports) which has identified a need to consider changes to arrivals and departure routes to other London airports to enable SID design optimisation.

A Departures Workshop is planned for June 2019 to discuss progress and next steps.

Activity Milestones:

1. Completion of feasibility and options study on Route 3 and 4 – Delayed from December 2017 due to additional work necessary under Activity 19 – Completed January 2018
2. Presentation of findings to NMB – Complete January 2018
3. NMB Departures Workshop – May 2018 (this included discussion on work to review additional departure routes)
4. Completion of Route 3 Environmental Impact Assessment – July 2018
5. Assessment of impact assessment and benefits to inform Go/No Decision – September 2018
6. Report to NMB – January 2019

Activity 16 Review departure vectoring practices	*Due: TBC*

Task: Review of current departure vectoring practices with the aim to inform works to potentially increase or decrease the minimum vectoring height on specific SIDs.

Responsibility: GAL/NATS

Note: Activity 19 includes a review of the interactions between the Gatwick departure routes and the routes to other airports. This task will need to be completed prior to the commencement of Activity 16.

Progress: The NMB departures workshop, which took place in June 2017, provided initial inputs to this task which has allowed for the task to be scoped and planned. No further activity has taken place on this task as priority has been assigned to Activity 19, which is an important pre-cursor to this activity.

This workstream is subject to the ongoing Route 4 ACP undertakings and Route 3 works.

Activity Milestones:

1. Completion of feasibility and options study – TBC*
2. Presentation of findings to NMB – TBC*

* Milestone dates will be assigned once this task has been fully scoped.

Activity 17 Review of departures at night	*Due: TBC*

Task: Review of current night time departures and identify opportunities for improvements.

Responsibility: GAL

Note: Both Activity 19, a review of the interactions between the Gatwick departure routes and the routes to other airports, and Activity 20, a review of airport scheduling practices will need to be completed prior to the commencement of Activity 17.

Progress: The NMB departures workshop, which took place in June 2017 has provided initial inputs to the Gatwick Scheduling team for consideration. This activity is frozen as priority has been assigned to Activity 15 and 19.

Activity Milestones:

1. Completion of feasibility and options study – TBC*
2. Presentation of findings to NMB – TBC*

* Milestone dates will be assigned reflecting actual timelines of Activities 19 and 20.

Activity 18 Conduct a feasibility analysis of SID rotation	*Due: TBC*

Task: Conduct a feasibility assessment on the use of Standard Instrument Departure (SID) route rotation to provide departures FED.

Responsibility: GAL

Note: Activity 19 includes a review of the interactions between the Gatwick departure routes and the routes to other airports. This task will need to be completed prior to all other departures related activities.

Progress: GAL has conducted some initial work (with airlines, NATS and ANS) around the feasibility of SID rotation and to understand how the airport can influence SID usage. This activity is frozen as priority has been assigned to preceding Activity 15 and 19.

Activity Milestones:

1. Completion of feasibility and options study – TBC*
2. Presentation of findings to NMB – TBC*

* Milestone dates will be assigned contingent on Activity 19.

Activity 19 Review of constraints placed upon Gatwick departures by routes to/from other airports	*Due: 2019*

Task: Conduct a review of arrivals/departures routes to/from other London airports to identify restrictions and develop options to allow Gatwick departures to climb in a more consistent and low noise configuration.

Responsibility: GAL

Progress: The study identified which routes impact Gatwick Routes 3 and 4, how often the routes are used and their specific limitations on the operation.

The Route 3 Operational and Environmental Impact Assessment supported an earlier study that identified the need for changes to Heathrow operational practices and departure routes to enable the removal of the initial climb restriction on Route 3 reported at NMB/11. While the report was positive, Heathrow was 18 months into a 2-year steeper departures trial of its Detling departure route and was not in a position to introduce changes to the conflicting departure routes until the outcomes of the steeper departure gradient trial were known. This would mean pausing the work on Route 3 pending the outcome of this work.

Next steps need to be further considered in this context, however, there is a review into improving profiles on all other Gatwick SIDs. The review objective is to establish why each SID climb profile is designed in its current form and identify where improvements could be made and/or what would need to happen to enable those changes. The review could also include analysis to show how each SID is actually flown.

Note: No further work will be undertaken specifically in relation to the Route 4 SIDs under the auspices of this activity. A separate Route 4 ACP will be developed following the Court decision to quash the CAA's Route 4 Post Implementation Review decision.

A Departures Workshop is planned for June 2019 to discuss progress and next steps.

Activity Milestones:

1. Feasibility and options study for Route 3 and 4 – Complete, October 2017
2. Route 3 and 4 Continuous Climb benefits assessment – Complete, December 2017 (Additional Activity)
3. Presentation of study findings to NMB – Complete, January 2018
4. Feasibility and options study results validation by NATS – Complete, March 2018
5. Discussion of next steps at NMB Departures Workshop – May 2018
6. Route 3 Operational and Environmental Impact Assessment – Complete July 2018
7. Development of departures activities for the 2018/19 work plan – July 2018
8. Review of lateral and vertical performance on Routes 1, 7, 8 and 9 – Q2 2019
9. Review of lateral and vertical performance on Routes 5 and 6 – Q2 2019
10. Review of lateral and vertical performance on Route 2 – Q2 2019

Note: This task will be completed prior to all other departures related activities as any proposed changes resulting from this task will impact all other departures workstreams.

Activity 20 Review Gatwick airlines' scheduling practices	*Due: TBC*

Task: Review current scheduling practices and identify areas for potential improvements to assist with the delivery of FED.

Note: This includes options to optimise the arrivals/departure waves, reduce delays and minimise unscheduled operations in the night period.

Responsibility: GAL

Progress: The NMB FED and departures workshops, which took place in April and June 2017 both identified potential benefits of improving scheduling practices. Cross-industry work, supported by GAL, as part of an Industry Resilience Group (IRG) is being progressed as a UK wide initiative, as part of a programme for improving aviation resilience.

Activity Milestones:

TBC

Appendices

Annex A - Arrivals Review Recommendations

Consolidated Recommendations	
	Immediate > 12 months
	Noise at source
Imm-1	That as an indication of GAL commitment to noise reduction, as a further tangible indication to local communities that the noise impact of the airport is taken seriously and to incentivise an accelerated noise modification by all airlines using A320 family aircraft at Gatwick, GAL should establish an earlier sunset date for unmodified Airbus 320 family aircraft using the airport of December 31st 2017. With an appropriate noise penalty applied for non-compliant aircraft immediately thereafter.
Imm-2	That GAL to engage with DfT, consider proposing to the European Commission the establishment of a sunset date of December 31st 2020 for the operation in Europe of Airbus 320 series aircraft without the Fuel Over Pressure Protector (FOPP) cavity vortex generator noise modification.
	Land Use Planning
Imm-3	That planning authorities for communities impacted by aircraft noise from Gatwick, coordinate to conduct their own joint review of the application of land use policy in context of Gatwick aircraft noise, with the objective of identifying steps that will enable the increase of its effective use and the improvement of the aircraft noise awareness for existing and potential land users.
Imm-4	That Gatwick develop, publish and maintain with annual updates an information booklet intended for planning authorities, home buyers, estate agents and conveyancing solicitors, to provide reference information on flight routes, terminology and other aspects of the airport operation relevant to communities. NATS and the CAA should also be encouraged to participate, and to verify those elements of the content that reflect their own areas of activity.
	Noise Abatement Operational Procedures
Imm-5	That as soon as possible, the altitude for commencement of CDA at Gatwick should be increased from the current 6000 feet to 7000 feet (FL070).
Imm-6	That GAL collaborates with NATS, CAA and airlines, within 12 months, to agree incremental improvements, to the application of CDA procedures at Gatwick.
Imm-7	That GAL work with NATS and CAA to raise the Gatwick CDA commencement altitude to 8000 feet when feasible.

Consolidated Recommendations	
Imm-8	That GAL propose a subsidiary CDA taxonomy which includes the commencement altitude of the procedure, e.g. CDA 6000, be established by the CAA to improve lay understanding and to better benchmark later improvements
Imm-9	That GAL considers proposing to the CAA, the establishment in airspace design criteria, of a minimum distance between arriving tracks for aircraft, to deliver for arrivals; both a meaningful dispersal and an opportunity for respite. This is likely to apply to aircraft before they have joined the final approach track, which for Gatwick will therefore be at 3000 feet or above.
Imm-10	That GAL explore with NATS the potential for aircraft to be vectored to be established on the ILS at a minimum of 8nm from touchdown outside of night hours, rather than the current 10nm. This adaptation to vectoring methodology should extend the arrival swathe 2nm closer to the airport and increase the arrivals dispersal to more closely emulate the operations prior to the 2013 change. Hence the arrival swathe would normally extend from a minimum of 8nm to 14nm, with aircraft joining on a straight in approach when traffic permits.
Imm-11	The development, publication and implementation by GAL of an operating protocol to define the occasions when a change of landing direction will be implemented at Gatwick for noise reasons, if weather, safety requirements and other conditions permit. The objective of the protocol being to achieve a more even split of arrivals, and to fragment the otherwise continuous use of one runway direction or another because of long term weather patterns. The impact should be monitored by GAL and the results regularly reviewed by the Noise Management Board (NMB).The target implementation of the protocol should be during 2016 following engagement with airlines, air traffic control and communities.
	Operating efficiency
Imm-12	That the Gatwick Flight Performance Team introduce a KPI, enabling the monitoring and reporting of the number of flights delayed from planned daytime arrival, into a night movement (after 23:30 local) and that GAL initiate measures to identify and agree steps, including enhanced use of time based operations, with airlines and with the airport's scheduling committee for implementation within 12 months, to effectively and progressively reduce unplanned night arrivals at Gatwick.

Consolidated Recommendations	
Imm-13	That within 6 months, GAL and NATS conduct a joint investigation to establish and agree whether the XMAN extended arrivals manager is an effective tool to reduce arrival holding at Gatwick and if so; to agree and publish within 9months when XMAN can be deployed for Gatwick and what results can be expected.
Imm-14	GAL and NATS should evaluate the potential efficiency benefits of an earlier implementation of advanced TBS technology (timescale for completion of evaluation within 12 months).
	Other
Imm-15	To better inform stakeholders, independent academic research should be undertaken to validate the reasons why arriving aircraft are often perceived by residents to be lower than in the past and to identify measures to establish the actual facts in a controlled analysis with community involvement.
	Community relations
Imm-16	That GAL allocates additional manpower, as soon as possible, to strengthen the Airport's Community engagement capability.
Imm-17	That Gatwick should establish an enhanced complaints policy and fully transparent procedure, as soon as possible, using an on-line form as the primary medium, requiring sufficient detail to allow the location (postcode) of the complainant, the date and time of day of the incident, such that the aircraft in question can be identified and established with the location, to allow empirical data to be developed and analysed so that noise mitigation action can be taken. There should be no limit to the number of complaints per household. For residents not possessing computer access, postal submissions should be accepted, but should be required to contain the basic information outlined above.
Imm-18	The establishment of a Noise Management Board (NMB) by summer 2016, to be operated under independent chairmanship and comprising representatives from each of the institutions able to effect change for Gatwick arrivals, as well as the chair of the Airport Consultative Committee (GATCOM), and both elected council members and residents' representatives.
Imm-19	That Gatwick should publish not later than March 31st a description of the steps that it is intended to take in response to the arrivals report and which, if any of the recommendations it plans to pursue.

Consolidated Recommendations	
Imm-20	In the interests of improved community relations that; GAL publish not later than January 31st 2017 a report of overall progress towards delivery of the steps recommended in this report, including relevant status updates from CAA and NATS, with where appropriate the basis for any related decisions.
Aspirational	
Aspire-21	The adoption of carefully designed routes from the approach holding fixes used for Gatwick, to the ILS final approach tracks, provides real opportunity to reduce noise, to disturb fewer people, to deliver fair and equitable dispersal of noise, and, to deliver well defined respite measures. The London Airspace Management Programme should be developed by NATS and GAL to incorporate alternative proposals, to those published in 2013, as soon as reasonably possible, for consultation, agreement and implementation for Gatwick arrivals.
Aspire-22	That the Gatwick holding areas should be higher, or should be relocated to enable holding aircraft to dwell over water, rather than over Sussex.
Aspire-23	That the requirements specification of any system upgrade to, or replacement of, any sequencing tools must take full account of the need to integrate the AMAN at Swanwick and DMAN at Gatwick, such that they are each fully informed of, and take into account the capacity allocations of both arrival and departure functions.

Annex B: A320 Modification Status

This annex documents the number of unmodified flights to and from Gatwick Airport from 1st January 2018 – 31st March 2019 inclusive.

MONTH	NUMBER OF FLIGHTS
January 18	376
February 18	342
March 18	350
April 18	399
May 18	481
June 18	428
July 18	412
August 18	426
September 18	305
October 18	428
November18	143
December 18	128
January 19	189
February 19	176
March 19	145

As of March 2019, 98% of flights by A320 family aircraft at Gatwick Airport are operated by modified aircraft.

In order to update airline modification status, equipage data is requested from airlines through the annual GAL 'All Up-Weight Return (AUWR)' process. All operators are required to comply with this process under the terms of the Airport's Conditions of Use.

In line with the recent review of responsibilities, the ownership for routine monitoring and reporting of number of flights made by unmodified Airbus A320 family aircraft will be assigned to NaTMAG.

Annex C - NMB Meetings and Workshops

NMB Meeting/Workshop	Date
NMB/1	21 June 2016
NMB/2	7 September 2016
NMB/3	15 November 2016
Gatwick Airspace and NMB Public Meeting (NMB/4)	31 January 2017
NMB/5	5 April 2017
NMB Workshop: Continuous Descent Operations	2 May 2017
NMB Workshop: Departures	1 June 2017
NMB/6	14 June 2017
NMB/7	6 September 2017
NMB/8	15 November 2017
Gatwick Airspace and NMB Public Meeting	7 December 2017
NMB/9	11 January 2018
NMB Workshop: Reduced Night Noise	14 March 2018
NMB/10	11 April 2018
NMB Workshop: Departures	23 May 2018
NMB/11	27 June 2018
NMB Workshop: 2019/2020 Workplan	22 August 2018
NMB/12	26 September 2018
NMB Ad-Hoc Meeting: NMB Review	28 November 2018
Gatwick Airspace and NMB Public Meeting	5 December 2018
NMB/13	9 January 2019
NMB Ad-Hoc Meeting: NMB TORs	13 March 2019
NMB/14	8 May 2019

Annex D - Acronyms

ANMAC	Aircraft Noise Monitoring Advisory Committee
ANS	Air Navigation Services
CAA	Civil Aviation Authority
CDO/CDA	Continuous Descent Operations/Approach
CNG	Community Noise Groups
dBA	'A' weighted decibel
DfT	Department for Transport
FAS	Future Airspace Strategy
FASI-S	Future Airspace Strategy Implementation (South)
FED	Fair and Equitable Distribution
FLOPSC	Flight Operations Performance Safety Committee
FOPP	Fuel Over Pressure Protector
FPT	Flight Performance Team
GAL	Gatwick Airport Ltd
GATCOM	Gatwick Airport Consultative Committee
ILS	Instrument Landing System
LMax	A peak noise level
LTMA	London Terminal Manoeuvring Area
NADP	Noise Abatement Departure Procedure
NaTMAG	Noise and Track Monitoring Advisory Group
NATS	Formerly National Air Traffic Services
NCF	NMB Community Forum
NERL	NATS En-Route plc
NEX	NMB Executive Committee
NMB	Noise Management Board
NPR	Noise Preferential Route
LAMP	London Airspace Modernisation Programme
RNAV	Area Navigation
RNN	Reduced Night Noise
SA	Sustainable Aviation
SEL	Single Event Level
SID	Standard Instrument Departure
VIRG	Voluntary Industry Resilience Group

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