George Best Belfast City Airport – 2019 Annual Performance Report

On Compliance with the Requirements of the 2019 Planning Agreement

Contents

1. Introduction

This report has been prepared to meet the requirements of the Planning Agreement (the Agreement) between Belfast City Airport and the Department for Infrastructure (the Department) dated 22 July 2019. Specifically –

Covenant 1.1: To submit the Annual Performance Report by 31st March in each calendar year and within the Annual Performance Report to report on the performance and compliance with the covenants in this Agreement in the preceding calendar year in a form which shall include all the annual reporting requirements contained in this Agreement or as agreed with the Department from time to time and which shall be published on the Company's website.

The report aims to address each of these reporting requirements either directly within the sections of this report or by reference to further reports (or sections of these) which are provided as appendices.

2. Summary of Reporting Requirements

Table 1 summarises the current reporting requirements within the covenants of the Agreement, as understood by Belfast City Airport.

Table 1 – Reporting Requirements

Covenant Reference	Reporting Requirement (summarised)
2.4.2	Written details of every delayed aircraft outside of permitted hours and circumstances for any aircraft during extended hours
2.4.3	Written report of the payments into and out of the Community Fund
6.7.1.1	Noise exposure contours for year x-1* based on actual ATM (air traffic movements) data
6.7.1.2	Forecast noise contours for years x and x+1 based on predicted ATM data
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6.7.2	Comparison of the area within the 57 dB $L_{Aeq, 16h}$ contours for the cases described in 6.7.1.1 and 6.7.1.2 with a 5.2km2 area
6.7.3	Total number of ATM by aircraft type and actual modal split (for year x-1) and assumed modal split (for years x and x+1) for the cases described in 6.7.1.1 and 6.7.1.2
6.7.4	Number of monthly and annual ATM and a comparison against 48,000 in any period of twelve months
6.7.6	The Quota for year x-1 and a comparison against 4,665
6.7.7	Record of movements by aircraft types not permitted to use the Aerodrome in year x-1 (ie to only accept those which meet the requirements of ICAOC Chap 3, Annex 16 and which are not Marginally Compliant Aircraft)
6.7.8	Record of the use by Aircraft of approaches and climb-outs over Belfast Lough in year x-1

6.7.9	Record of ATM within extended hours and fines administered in year x-1
6.7.10	Log of engine ground runs including time & duration for year x-1
6.7.11	Summary of noise complaints received by the Company, the responses given and the actions taken for year x-1
6.7.12	Review of the degree of adherence to any published noise abatement procedures in operation
6.7.13	Information to verify the accuracy and consistency of the operation of the integrated noise and track keeping system
6.7.14	Evaluation of the data reported including a description of any trends and identification of any relevant features of the Aerodrome operation which may have affected the results
6.7.15	Where the results of the comparison described in 6.7.2 show that the area within the 57 dB $LA_{eq, 16h}$ contour of 4.68km2 was exceeded in year x-1 or is likely to be exceeded in year x or x+1, submit (and promptly implement) proposed actions to ensure compliance in year x (and report in the subsequent Annual Performance Report)
6.9	In the Annual Performance Report for 2020, provide data showing the percentage of total arrivals in year x-1 that implemented Continuous Descent Approaches and any agreed improvement
6.11	In the Annual Performance Report for 2020, details of the number and type of departing aircraft breaching the departure noise limits (which are to be introduced by 22 July 2020 along with a mechanism to fine breaches of the limits) and a report of payments into and out of the Community Fund in year x-1
6.12.3	Report regarding compliance with the obligation to ensure the availability of fixed electrical ground power (FEGP) (as described in 6.12 and 6.12.1 to 6.12.2.2 in the Agreement) for year x-1 and agreed actions for improvements (if any) in each Annual Performance Report
7	Include a written report on the operation of a noise insulation scheme

*In this report 'year x-1', 'year x' and 'year x+1' refer to 2019, 2020 and 2021, respectively

3. Reports by Requirement

This section provides a report by each requirement – in the order in which these are covered within the Agreement.

2.4.2 Written details of every delayed aircraft outside of permitted hours and circumstances for any aircraft during extended hours

Details of each delayed aircraft are provided at Appendix 1 - *Extensions Log for 2019.*

2.4.3 Written report of the payments into and out of the Community Fund

Table 2 shows the payments into and out of the Community Fund in 2019, including a summary of the types of projects receiving funding. This should be viewed in conjunction with Appendix 3 – *Extension Charges for 2019*.

Table 2 – Community Fund Payments

	£	£
Payments In		
Extensions Jan-June		23,250
Extensions July-Dec		49,450
Extensions over 480		16,800
Subtotal		89,500
Payments Out		
Local schools support	17,989	
Community education initiatives	3,408	
Community events/awards	26,821	
Local sports	3,000	
Local charities/community groups support	38,282	
Subtotal		(89,500)
Balance		**0**

6.7.1.1 to 6.7.1.3 Noise Exposure Contours

These are discussed in Section 4 and shown in Figures 1 to 5 of the report prepared by Bickerdike Allen Partners on behalf of Belfast City Airport, provided at Appendix 2 – *Bickerdike Allen Partners Report 2019.*

6.7.2 Comparison of the area within the 57 dB LAeq, 16h contours for the cases described in 6.7.1.1 and 6.7.1.2 with a 5.2km^2 area

The area of the 2019 57 dB LAeq,16h contour area is 3.3 km^2, whilst the forecast areas for 2020 and 2021 are 2.7 km^2 and 2.9 km^2 respectively. Details are provided in *Table 4: 2019, 2020, and 2021 Noise Contour Areas* in Section 4 of *Bickerdike Allen Partners Report 2019* (Appendix 2).

6.7.3 Total number of ATM by aircraft type and actual modal split (for year x-1) and assumed modal split (for years x and x+1) for the cases described in 6.7.1.1 and 6.7.1.2

Total number of ATM by aircraft type for the cases described in 6.7.1.1 and 6.7.1.2 is provided at *Table 1: 2019, 2020 and 2021 Summer Fixed Wing Movements* in Section 2 of *Bickerdike Allen Partners Report 2019* (Appendix 2).

The term 'modal split' refers to the split of movements by runway – at Belfast City Airport this is between Runway 04 (c 040° bearing) and Runway 22 (c 220° bearing). This is generally determined by wind direction as aircraft will take off and land into a headwind to maximise lift - so variation is likely between individual years.

Actual modal split for 2019 and assumed modal split for the cases described in 6.7.1.1 and 6.7.1.2 are provided at *Table 2: 2019 and Long-Term Average Summer Modal Split* in Section 3.2 of *Bickerdike Allen Partners Report 2019* (Appendix 2).

6.7.4 Number of monthly and annual ATM and a comparison against 48,000 in any period of twelve months

Table 3 (below) shows the monthly ATM in 2018 and 2019 along with the rolling 12-month total from January 2019 onwards – which remained lower than the upper limit of 48,000 movements.

Table 3 – Rolling 12 Month ATM

ATM 2018		ATM 2019		Rolling 12 Mth ATM
Jan-18	2,738	Jan-19	2,622	**36,120**
Feb-18	2,629	Feb-19	2,537	**36,028**
Mar-18	2,905	Mar-19	2,892	**36,015**
Apr-18	3,061	Apr-19	3,076	**36,030**
May-18	3,393	May-19	3,249	**35,886**
Jun-18	3,251	Jun-19	3,133	**35,768**
Jul-18	3,326	Jul-19	3,397	**35,839**
Aug-18	3,294	Aug-19	3,310	**35,855**
Sep-18	3,108	Sep-19	3,006	**35,753**
Oct-18	3,041	Oct-19	2,974	**35,686**
Nov-18	2,786	Nov-19	2,621	**35,521**
Dec-18	2,704	Dec-19	2,565	**35,382**

6.7.6 The Quota for year x-1 and a comparison against 4,665

The Quota Count total for the Quota Period 2019 was 2216, which is lower than the upper limit of 4,665. Details of how the Quota Count has been calculated are provided in *Table 7: Summer 2019 Quota Count* in Section 4 of *Bickerdike Allen*

Partners Report 2019 (Appendix 2) including details of how the Quota Count has been calculated.

6.7.7 Record of movements by aircraft types not permitted to use the Aerodrome in year x-1

In 2019 there were no movements of aircraft that do not meet the requirements of ICAOC Chap 3, Annex 16 or are only marginally compliant. Details are provided in Section 6 of *Bickerdike Allen Partners Report 2019* (Appendix 2).

6.7.8 Record of the use by Aircraft of approaches and climb-outs over Belfast Lough in year x-1

The Agreement requires Belfast City Airport to maintain a bias in favour of approaches and climb-outs by aircraft over Belfast Lough (the 'Lough Bias'). Whilst direction of approach/climb-out is generally determined by wind direction, Air Traffic Control aims to maximise additional opportunities to direct aircraft over Belfast Lough (for example during light wind conditions, if safe to do so). Table 4 (below) shows the number of arrivals and departures over both the City and Belfast Lough throughout 2019. An average bias of 52% in favour of arrivals and departures over Belfast Lough was maintained, in compliance with the Agreement.

	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	2019
Arrivals over Lough	1,091	1,197	1,330	986	807	867	1,217	1,488	1,207	1,065	609	1,218	13,082
Arrivals over City	221	73	117	553	817	698	485	164	297	422	701	65	4,613
Departures over Lough	257	103	152	640	848	744	549	244	328	499	756	126	5,246
Departures over City	1,053	1,164	1,293	897	777	824	1,146	1,414	1,174	988	555	1,156	12,441
Total	**2,622**	**2,537**	**2,892**	**3,076**	**3,249**	**3,133**	**3,397**	**3,310**	**3,006**	**2,974**	**2,621**	**2,565**	**35,382**
Percentage Over Lough	**51%**	**51%**	**51%**	**53%**	**51%**	**51%**	**52%**	**52%**	**51%**	**53%**	**52%**	**52%**	**52%**

Table 4 – Arrivals and Departures over the City and Belfast Lough

6.7.9 Record of ATM within extended hours and fines administered in year x-1

Appendix 3 – *Extension Charges for 2019* provides a record of ATM within extended hours and associated fines administered.

6.7.10 Log of engine ground runs including time & duration for year x-1

Belfast City Airport operates restrictions on engine ground runs. These are prohibited between 22:30 and 06:00 and require prior approval by Airfield Operations, with further restrictions in place according to location and the power level of runs. All engine ground runs in 2019 complied with these requirements. Details of engine ground run requirements are provided in Appendix 4 – *AOI-07 Aircraft Ground Running and Use of Auxiliary Power Units and Ground Power Units*. A log of engine ground runs is provided at Appendix 5 – *Engine Run Log 2019*.

6.7.11 Summary of noise complaints received by the Company, the responses given and the actions taken for year x-1

A summary of noise concerns logged in 2019 is provided at Appendix 6 – *Noise Concerns Summary 2019*. All noise concerns received are acknowledged upon receipt and responded to by letter, email or telephone within 14 days.

Various responses are provided according to the nature of the concern lodged. In the case of general queries, information on the procedures and standards applied at the airport will be provided. In the case of concerns relating to specific noise events, the results of investigation will be provided. A relatively high proportion of concerns relate to movements during extended hours. In these cases, our response will include reference to the relevant requirements of our Planning Agreement and to the guidance issued by the Department of Infrastructure relating to extensions.

Where applicable, action will be taken to address noise issues and/or make improvements to noise management. This has included dialogue with airlines to ensure effective implementation of the noise abatement procedures in place at the aerodrome.

6.7.12 Review of the degree of adherence to any published noise abatement procedures in operation

Belfast City Airport's noise abatement procedures are published at https://www.aurora.nats.co.uk/htmlAIP/Publications/2020-01-30-AIRAC/html/eAIP/EG-AD-2.EGAC-en-GB.html#AD-2.EGAC. These determine specific paths to be flown by aircraft on departure/arrival to minimise the impact of noise on local populations. 'Track violations' occur when aircraft deviate from these paths. Whilst the incidence of track violations is relatively low, in certain situations adherence to the noise abatement procedures may prove problematic, for example in poor weather conditions. Belfast City Airport reports track violations to Airlines on a monthly basis and maintains dialogue with Airline representatives with the aim of minimising the number of occurrences.

Table 5 summarises the occurrence of track violations in 2019.

Table 5 – Track Violations

Runway	A / D	Number Flights	Number Violations	Percentage
04	D	5246	202	3.9%
04	A	4613	7	0.2%
22	D	12441	30	0.2%
22	A	13082	5	0.0%
	Total	**35,382**	**244**	**0.69%**

At only 0.69% of all flights, the number of track violations is well below the target level of 5% set out in the Airport's Environmental Noise Directive Noise Action Plan 2019-2023 *(available at https://www.belfastcityairport.com/our-community/environment/noise)*.

6.7.13 Information to verify the accuracy and consistency of the operation of the integrated noise and track keeping system

Belfast City Airport operates a Noise & Flight Track Monitoring System which provides ongoing data on aircraft movements including noise levels and tracks flown. An ongoing maintenance and support contract has been in place with Topsonic Systemhaus GmbH since 2007 when the system was installed. This includes daily system checks by Topsonic (further details are available on request). Third-party calibration of microphones and monitoring equipment is conducted on a two-yearly basis. Copies of current system calibration records are provided at Appendix 7 – *Calibration Records.* In 2019, local radar maintenance took place in September and November for a total period of approximately 39 hours (at which time a secondary radar feed was provided by the nearby Crow Hill installation). During this period the Noise & Flight Track Monitoring System continued to record data on flight movements and noise events.

6.7.14 Evaluation of the data reported including a description of any trends and identification of any relevant features of the Aerodrome operation which may have affected the results

Overall, Belfast City Airport has fully complied with the requirements of the Agreement during 2019.

The Airport has provided bi-monthly performance reports to the Department since the Agreement came into effect in July 2019, including details of delayed aircraft using the aerodrome outside permitted hours (06:30 to 21:30) and the circumstances for any aircraft using the aerodrome during extended hours (21:31 to 23:59). The following summarises key data and trends:

– In 2019, delayed flights after 21:30 constituted only 1.5% of all movements

– Of these, the majority (71%) occurred within the period 21:30 to 22:00

– In 2019, 79% of delays after 21:30 were due to the late arrival of aircraft from another flight or previous sector

– Most delayed flights after 21:30 were on the following routes: Birmingham (20%), Manchester (17%) and Edinburgh (16%).

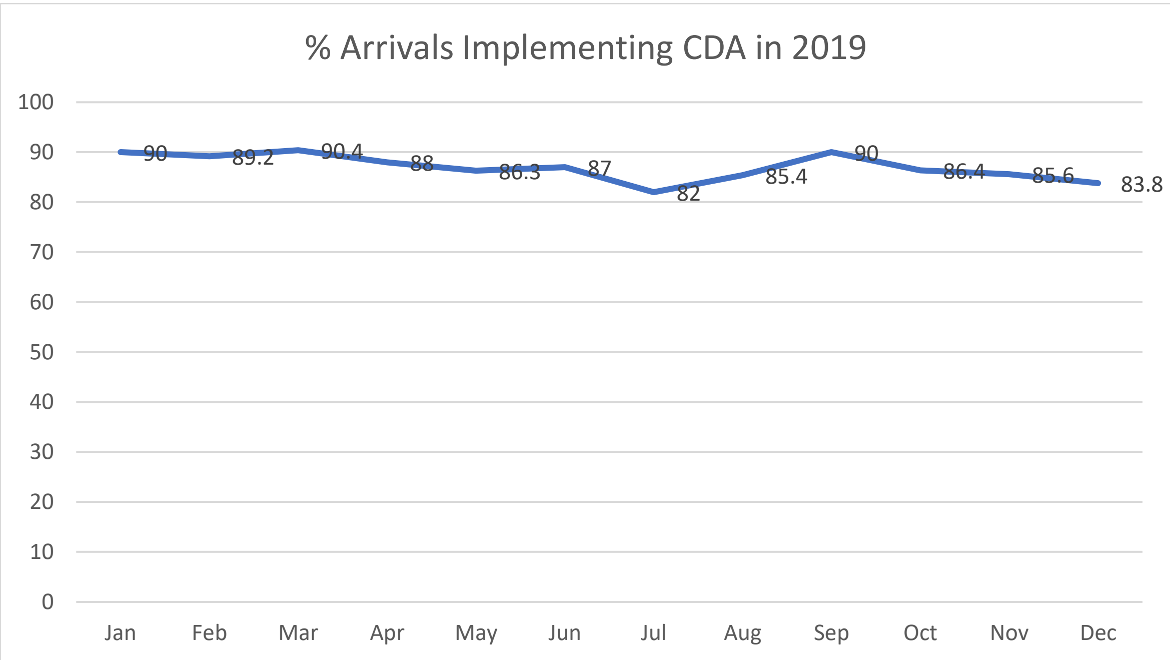
6.7.15 Where the results of the comparison described in 6.7.2 show that the area within the 57 dB LAeq, 16h contour of 4.68km2 was exceeded in year x-1 or is likely to be exceeded in year x or x+1, submit (and promptly implement) proposed actions to ensure compliance in year x (and report in the subsequent Annual Performance Report)

Not applicable, as the area within the 57 dB LAeq, 16h contour of 4.68km2 was not exceeded in year x-1 and is not likely to be exceeded in years x or x+1.

6.9 In the Annual Performance Report for 2020, provide data showing the percentage of total arrivals in year x-1 that implemented Continuous Descent Approaches and any agreed improvement

Continuous Descent Approach (CDA) is an operating technique in which arriving aircraft follow a constant-angle descent (rather than a series of steps) in order to reduce noise and fuel consumption. Whilst reporting is not required until 2020, data for 2019 has been provided.

The chart below shows the percentage of arrivals implementing Continuous Descent Approaches (CDA) by month. Overall, 86.92% of arrivals in 2019 implemented CDA.



Data provided by NATS (Air Traffic Control provider at Belfast City Airport)

6.11 In the Annual Performance Report for 2020, details of the number and type of departing aircraft breaching the departure noise limits and a report of payments into and out of the Community Fund in year x-1

Not applicable to this report – departure noise limits and an associated fining mechanism will be introduced in 2020.

6.12.3 Report regarding compliance with the obligation to ensure the availability of fixed electrical ground power (FEGP) (as described in 6.12 and 6.12.1 to 6.12.2.2 in the Agreement) for year x-1 and agreed actions for improvements (if any) in each Annual Performance Report

All stands at Belfast City Airport are equipped with FEGP. In 2019, 98% of flights used FEGP. Occasions when FEGP was not used were due to the following:

- Aircraft parked in non-standard orientation (due to weather) making FEGP inaccessible
- Aircraft incompatible with FEGP
- FEGP unit undergoing repair

Over the past two years we have undertaken a replacement programme of all FEGP units at a cost of £280,000. FEGP at Belfast City Airport will continue to be subject to an ongoing maintenance regime aimed at achieving maximum serviceability.

7 Include a written report on the operation of a noise insulation scheme

At present, no residential dwellings are affected by the level of noise at which a noise insulation scheme must be implemented (ie as defined by the 63 dB LAeq, 16h contour). For this reason, the scheme is not yet operating.

4. Appendices

Appendix 1 - *Extensions Log for 2019*

Appendix 2 – *Bickerdike Allen Partners Report 2019*

Appendix 3 – *Extension Charges for 2019*

Appendix 4 – *AOI-07 Aircraft Ground Running and Use of Auxiliary Power Units and Ground Power Units*

Appendix 5 – *Engine Run Log 2019*

Appendix 6 – *Noise Concerns Summary 2019*

Appendix 7 – *Calibration Records*

Date	Airline Code	Sch Time	Actual Time	Arr / Dep	Registration	Flight #	Airport	Delay code 1	Description 1	Delay code 2	Description 2	Additional Info
01/01/2019	BE	20:45	21:44	D	GECOD	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionarytionary due to earlier technical problems
01/01/2019	BE	20:40	21:48	D	GJEDW	694	EDI	46	AIRCRAFT CHANGE, for technical reasons.			Aircraft change required due to earlier technical problems
07/01/2019	BE	20:45	21:46	D	GJECR	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to aircraft swap in Birmingham
08/01/2019	EI	21:00	21:32	A	EIFNJ	037	LHR	87	AIRPORT FACILITIES, parking stands, ramp congestion, lighting, buildings, gate limitations, etc.	89	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runway closed due to obstruction or weather, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	Reactionarytionarydue to drone disruption in Heathrow
08/01/2019	BE	21:10	21:48	A	GECOA	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	89	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runway closed due to obstruction or weather, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	Reactionary due to aircraft swap in Manchester
10/01/2019	BE	21:20	21:39	A	GPRPE	486	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	91	LOAD CONNECTION, awaiting load from another flight	Awaiting transfer pax
10/01/2019	BE	20:45	21:46	D	GECOD	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionarytionary due to crew sickness in Birmingham (First Officer)
13/01/2019	BE	21:10	21:36	A	GECOA	416	BHX	19	REDUCED MOBILITY, boarding / deboarding of passengers with reduced mobility.			Boarding a wheelchair passenger at Birmingham with electric wheelchair
13/01/2019	BE	20:35	21:48	D	GJECL	989	SOU	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	89	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runway closed due to obstruction or weather, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	Reactionarytionary due to technical delay at Southampton on the previous sector
15/01/2019	BE	18:40	21:33	D	GFLBA	692	EDI	46	AIRCRAFT CHANGE, for technical reasons.			Aircraft change due to technical problems
16/01/2019	BE	21:10	21:31	A	GECOG	416	BHX	41	AIRCRAFT DEFECTS.			Air Traffic Control delay earlier
16/01/2019	BE	20:40	21:42	D	GPRPB	694	EDI	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical			Reactionarytionaryionary due earlier technical problems resulting in aircraft change
16/01/2019	BE	21:00	21:47	A	GPRPA	130	GLA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to earlier technical fault resulted in ongoing delay
20/01/2019	BE	21:10	21:34	A	GECOE	416	BHX	92	THROUGH CHECK-IN ERROR, passenger and baggage			Awaiting flight deck crew from another flight
20/01/2019	BE	21:20	21:49	A	GPRPO	486	MAN	92	THROUGH CHECK-IN ERROR, passenger and baggage			Awaiting flight deck crew from another flight
21/01/2019	BE	21:20	21:33	A	GPRPM	486	MAN	41	AIRCRAFT DEFECTS.			Technical issues and aircraft swaps throughout the day
21/01/2019	BE	19:35	21:33	A	GPRPJ	1390	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Air Traffic Control delays out of Manchester
21/01/2019	BE	20:40	22:08	D	GPRPJ	694	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Air Traffic Control delays out of Manchester
22/01/2019	BE	21:00	21:36	A	GECOE	740	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	77	GROUND HANDLING IMPAIRED BY ADVERSE WEATHER CONDITIONS	Reactionary due to weather heavy snow fall at point of orgin and deicing
22/01/2019	BE	21:45	21:48	A	GPRPO	41W	SEN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to weather heavy snow fall at point of orgin and deicing
22/01/2019	EI	21:00	21:53	A	EIDEA	037	LHR	75	DE-ICING OF AIRCRAFT, removal of ice and/or snow, frost prevention excluding unserviceability of equipment			Reactionary due to weather heavy snow fall at point of orgin and deicing
22/01/2019	BA	20:10	21:55	A	GEUUM	1422	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to weather heavy snow fall at point of orgin and deicing
22/01/2019	BE	21:20	22:16	A	GECOR	486	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	19	REDUCED MOBILITY, boarding / deboarding of passengers with reduced mobility.	Reactionary due to weather heavy snow fall at point of orgin and deicing
23/01/2019	BE	21:10	21:45	A	GECOR	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to weather
24/01/2019	BE	21:20	21:32	A	GFLBD	486	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Technical issues and aircraft swaps throughout the day
25/01/2019	BE	21:15	21:47	A	GPRPM	693	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to technical issues earlier in the day. Was out of service at EDI and then returned to service
25/01/2019	BE	21:15	21:55	A	GJEDP	1360	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to technical issues earlier in the day (Amsterdam)
27/01/2019	BE	21:20	21:35	A	GPRPA	486	MAN	95	CREW ROTATION, awaiting crew from another flight (flight deck or entire crew)			Reactionary due crew shortage
27/01/2019	BE	21:10	21:40	A	GECOB	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	92	THROUGH CHECK-IN ERROR, passenger and baggage	Awaiting flight deck crew from another flight
27/01/2019	BE	21:15	21:44	A	GPRPF	1360	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical	Reactionary due to earlier technical issues throughout the day
28/01/2019	BE	20:25	21:55	D	GJECZ	487	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Aircraft returned to stand in Manchester
29/01/2019	BE	21:20	21:47	A	GJEDR	486	MAN	71	WEATHER DEPARTURE STATION			Aircraft de-icing in Manchester.
30/01/2019	BE	21:20	21:35	A	GECOB	486	MAN	71	WEATHER DEPARTURE STATION			Reactionary due to de-icing
30/01/2019	BE	21:00	21:39	A	GFLBE	740	LBA	39	TECHNICAL EQUIPMENT, lack of or breakdown, lack of staff, e.g. pushback	77	GROUND HANDLING IMPAIRED BY ADVERSE WEATHER CONDITIONS	Reactionary due to de-icing and problem with equipment in Leeds
30/01/2019	BE	21:00	21:50	A	GPRPD	130	GLA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to de-icing
31/01/2019	BE	21:00	21:38	A	GPRPD	740	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	71	WEATHER DEPARTURE STATION	Adverse weather at Leeds
31/01/2019	BE	20:35	21:52	D	GECOK	987	SOU	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to weather
31/01/2019	BE	21:20	22:17	A	GPRPJ	486	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to snow in UK mainland and de-icing issues at Leeds.
01/02/2019	BE	21:15	21:33	A	GPRPO	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	77	GROUND HANDLING IMPAIRED BY ADVERSE WEATHER CONDITIONS	Reactionary due to weather
01/02/2019	BE	20:35	21:37	D	GECOK	987	SOU	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to weather in Southampton
01/02/2019	BE	21:15	21:45	A	GPRPN	1360	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	87	AIRPORT FACILITIES, parking stands, ramp congestion, lighting, buildings, gate limitations, etc.	Baggage issues earlier in the day in Birmingham
01/02/2019	BE	21:15	21:47	A	GPRPL	693	EDI	77	GROUND HANDLING IMPAIRED BY ADVERSE WEATHER CONDITIONS	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	Reactionary due to catering delays in London City and adverse weather in Birmingham
01/02/2019	BE	21:10	21:54	A	GPRPA	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	62	OPERATIONAL REQUIREMENTS, fuel, load alteration	Reactionary due to deicing and bad weather in Birmingham
01/02/2019	EI	21:00	22:57	A	EIDEA	037	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	75	DE-ICING OF AIRCRAFT, removal of ice and/or snow, frost prevention excluding unserviceability of equipment	Adverse weather at Heathrow and Air Traffic Control restrictions
04/02/2019	BE	20:40	21:47	D	GJEDV	694	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary technical issues with aircraft during the day and aircraft swaps
08/02/2019	EI	21:00	21:31	A	EIDEB	037	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Late inbound due to Air Traffic restrictions in Heathrow.
08/02/2019	BE	21:15	21:46	A	GECOO	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Late in due to adverse weather and Air Traffic restrictions.
08/02/2019	BE	20:40	22:24	D	GPRPB	694	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	7	Transfer bags received	Late in and then issues with oversize bags at gate needing to be placed in the hold
11/02/2019	BE	21:20	21:33	A	GJEDP	486	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to aircraft change on previous sector due a technical issue
17/02/2019	BE	20:35	21:53	D	GJEDP	989	SOU	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to earlier technical issues at Southampton
18/02/2019	BE	21:10	21:49	A	GJECO	416	BHX	19	REDUCED MOBILITY, boarding / deboarding of passengers with reduced mobility.			Reactionary delay due to wheelchair loading at Birmingham
24/02/2019	BE	20:25	21:38	D	GJECK	487	MAN	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical			Reactionary due to earlier fog
24/02/2019	BE	21:15	21:41	A	GJEDW	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	62	OPERATIONAL REQUIREMENTS, fuel, load alteration	Reactionary due to earlier fog
24/02/2019	BE	21:00	21:59	A	GECOE	130	GLA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to earlier fog
24/02/2019	BE	21:20	22:25	A	GECOJ	486	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to earlier aircraft change due to technical issues
27/02/2019	BE	21:10	23:04	A	GJEDW	416	BHX	72	WEATHER DESTINATION STATION			Delays due to fog
27/02/2019	BE	20:20	23:11	A	GJECR	414	BHX	46	AIRCRAFT CHANGE, for technical reasons.	72	WEATHER DESTINATION STATION	Delays due to fog
27/02/2019	BE	20:45	23:39	D	GJECR	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Delays due to fog
01/03/2019	BE	21:10	21:34	A	GPRPC	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due technial issues and aircraft changes
01/03/2019	BE	21:20	21:38	A	GPRPH	486	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	95	CREW ROTATION, awaiting crew from another flight (flight deck or entire crew)	Reactionary due technial issues and aircraft changes
03/03/2019	BE	21:15	21:34	A	GPRPD	1360	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Adverse weather in Birmingham
03/03/2019	BE	20:15	21:34	D	GECOE	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	72	WEATHER DESTINATION STATION	Adverse weather in London City
03/03/2019	BE	21:10	21:42	D	GPRPA	692	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	7	Transfer bags received	
04/03/2019	BE	21:15	21:38	A	GECOG	368	EMA	16	COMMERCIAL PUBLICITY/PASSENGER CONVENIENCE, VIP, press, ground meals and missing personal items			Medical incident on the previous sector from Belfast City
07/03/2019	BE	20:45	21:40	D	GECOK	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to crew sickness
07/03/2019	BE	21:15	21:42	A	GPRPE	1360	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	7	Transfer bags received	Reactionary due to Air Traffic restrictions at London City Airport
08/03/2019	BE	20:45	21:34	D	GKKEV	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to technical issues
08/03/2019	BE	20:35	21:37	D	GFLBA	987	SOU	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to technical issues
08/03/2019	BE	21:15	22:07	A	GPRPH	1360	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	87	AIRPORT FACILITIES, parking stands, ramp congestion, lighting, buildings, gate limitations, etc.	Reactionary due to special request from crew
10/03/2019	EI	21:00	21:31	A	EIDVG	037	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	89	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runway closed due to obstruction or weather, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	Reactionary due weather delays all over uk
10/03/2019	BE	20:35	21:40	D	GJECO	989	SOU	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due weather delays all over uk
10/03/2019	BE	21:20	21:43	A	GPRPG	486	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due weather delays all over uk
10/03/2019	BE	21:10	21:44	D	GECOR	692	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	15	BOARDING, discrepancies and paging, missing checked-in passenger	Reactionary due weather delays all over uk
10/03/2019	BE	21:40	22:04	A	GPRPN	43D	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Aircraft on earlier sector diverted to Birmingham due to issues at East Midlands.
10/03/2019	BA	19:40	22:08	D	GEUYE	1421	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	16	COMMERCIAL PUBLICITY/PASSENGER CONVENIENCE, VIP, press, ground meals and missing personal items	Reactionary due weather delays all over uk
10/03/2019	BE	21:10	22:11	A	GJECM	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due weather delays all over uk
10/03/2019	BE	20:25	22:13	D	GJEDW	487	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	65	FLIGHT DECK CREW SPECIAL REQUEST, not within operational requirements	Reactionary due weather delays all over uk
12/03/2019	BE	21:15	21:51	A	GJEDU	693	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to weather delays (storm Gareth)
12/03/2019	BE	21:15	21:55	A	GPRPE	1360	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	89	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runway closed due to obstruction or weather, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	Reactionary due to weather delays (storm Gareth)
13/03/2019	BE	21:20	21:32	A	GJECR	486	MAN	91	LOAD CONNECTION, awaiting load from another flight			
14/03/2019	BE	21:10	21:33	A	GJEDW	416	BHX	62	OPERATIONAL REQUIREMENTS, fuel, load alteration			
14/03/2019	BE	20:40	21:39	D	GJEDM	694	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
14/03/2019	BE	21:20	21:44	A	GJEDT	486	MAN	85	MANDATORY SECURITY	89	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runway closed due to obstruction or weather, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	Baggage discrepancy in Manchester
14/03/2019	EI	21:00	22:42	A	EIGAM	037	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	89	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runway closed due to obstruction or weather, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	Air Traffic Control restrictions at Heathrow
15/03/2019	BE	21:10	21:32	A	GFLBB	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	7	Transfer bags received	Gate bags had to be placd in aircraft hold
15/03/2019	BE	21:00	21:52	A	GPRPM	740	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to earlier technical problems
15/03/2019	EI	21:00	23:13	A	EIDVL	037	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	46	AIRCRAFT CHANGE, for technical reasons.	Reactionary due to strong winds at Heathrow
17/03/2019	BE	21:15	21:36	A	GPRPF	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to earlier technical problems
17/03/2019	BE	21:10	21:42	D	GJEDU	692	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to earlier technical problems
17/03/2019	BA	20:30	21:43	A	GEUPL	1422	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	3	A/C dispatch	Reactionary due to weather related delays and congestion at Heathrow
17/03/2019	BE	21:20	21:46	A	GECOD	486	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	34	SERVICING EQUIPMENT, lack of or breakdown, lack of staff, e.g. steps	Reactionary due to an aircraft change at Belfast City on the previous sector due to technical problems
17/03/2019	EI	21:00	22:01	A	EIDVL	037	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	89	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runway closed due to obstruction or weather, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	Reactionary due to weather related delays and congestion at Heathrow
18/03/2019	BE	21:20	21:49	A	GPRPI	486	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to restrictions at Amsterdam
18/03/2019	BE	21:15	21:58	A	GPRPJ	1360	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to restrictions at Amsterdam
18/03/2019	BE	21:10	22:06	A	GECOD	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to restrictions at Amsterdam
20/03/2019	BE	21:00	21:52	A	GJEDW	740	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to earlier technical problems
20/03/2019	BE	21:20	21:56	A	GJEDT	486	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to earlier technical problems
21/03/2019	BE	21:15	21:49	A	GPRPF	1360	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to power outage at London City
22/03/2019	BE	21:15	21:31	A	GPRPG	693	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
24/03/2019	BE	21:10	21:37	D	GJECY	692	EDI	55	DEPARTURE CONTROL			
25/03/2019	BE	21:00	22:08	A	GJEDP	130	GLA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to earlier technical problems
28/03/2019	BE	20:35	21:50	D	GPRPL	987	SOU	85	MANDATORY SECURITY			Passenger off loaded
28/03/2019	BE	21:15	22:07	A	GPRPK	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	Reactionary due to earlier technical problems
29/03/2019	BE	21:15	21:38	A	GPRPK	1360	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	89	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runway closed due to obstruction or weather, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	Reactionary due to earlier technical problems
29/03/2019	BE	21:00	21:49	A	GECOT	130	GLA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to earlier technical problems
29/03/2019	BE	21:15	22:11	A	GPRPF	693	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to earlier technical problems
31/03/2019	BE	20:25	21:38	A	GFBJB	4557	CWL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to earlier technical problems
31/03/2019	BE	21:00	22:16	D	GFBJB	4558	CWL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to earlier technical problems
01/04/2019	BE	19:55	22:42	A	GECOR	414	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	4	A/C handling	
01/04/2019	BE	20:40	23:09	D	GECOR	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
04/04/2019	BE	21:15	21:47	A	GPRPK	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	89	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runway closed due to obstruction or weather, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	
04/04/2019	BE	21:00	22:21	A	GPRPN	990	SOU	46	AIRCRAFT CHANGE, for technical reasons.			
05/04/2019	BE	21:10	21:36	A	GJEDP	416	BHX	46	AIRCRAFT CHANGE, for technical reasons.			
07/04/2019	BE	21:05	21:32	A	GFLBD	738	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
07/04/2019	BE	20:40	21:33	D	GJECL	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	7	Transfer bags received	
07/04/2019	BE	20:25	21:36	A	GFBJB	4557	CWL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	4	A/C handling	
07/04/2019	BE	21:20	21:52	A	GFLBB	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	65	FLIGHT DECK CREW SPECIAL REQUEST, not within operational requirements	
07/04/2019	BE	20:00	22:03	A	GPRPN	130	GLA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
07/04/2019	BE	21:15	22:38	A	GJEDM	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	62	OPERATIONAL REQUIREMENTS, fuel, load alteration	
07/04/2019	BE	21:00	22:45	D	GFBJB	4558	CWL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	55	DEPARTURE CONTROL	
07/04/2019	BE	20:25	22:52	D	GFLBB	131	GLA	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical	55	DEPARTURE CONTROL	
08/04/2019	BE	21:15	21:49	A	GPRPB	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	89	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runway closed due to obstruction or weather, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	
08/04/2019	BE	20:40	21:52	D	GECOB	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
11/04/2019	BE	20:45	21:35	D	GFBJA	489	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
14/04/2019	BE	21:20	22:04	A	GJECY	488	MAN	95	CREW ROTATION, awaiting crew from another flight (flight deck or entire crew)	16	COMMERCIAL PUBLICITY/PASSENGER CONVENIENCE, VIP, press, ground meals and missing personal items	
15/04/2019	BE	20:40	21:31	D	GECOT	417	BHX	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical			
16/04/2019	BE	21:10	21:41	A	GPRPC	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	87	AIRPORT FACILITIES, parking stands, ramp congestion, lighting, buildings, gate limitations, etc.	
16/04/2019	EI		Diverted			973	FAO		Extension declined. Aircraft diverted to BFS.			This flight was delayed initially due to a technical issue in Malaga on a previous sector - there were further issues when it operated to Faro as there was no
17/04/2019	BE	20:40	22:17	D	GJECK	417	BHX	16	COMMERCIAL PUBLICITY/PASSENGER CONVENIENCE, VIP, press, ground meals and missing personal items			
18/04/2019	BE	21:05	21:37	A	GECOF	738	LBA	38	ULD, lack of or serviceability			
22/04/2019	BE	20:45	21:49	D	GFBJJ	489	MAN	4	A/C handling	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	
23/04/2019	BE	21:00	21:36	D	GFBJF	4558	CWL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	4	A/C handling	
23/04/2019	BE	20:45	22:15	D	GFBJI	489	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
24/04/2019	BE	21:15	21:35	A	GECOR	697	EDI	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical			
24/04/2019	BE	21:20	21:41	A	GPRPF	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	87	AIRPORT FACILITIES, parking stands, ramp congestion, lighting, buildings, gate limitations, etc.	
24/04/2019	BE	21:15	22:11	A	GFLBE	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
25/04/2019	EI	21:15	21:48	A	EISTA	973	FAO	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
26/04/2019	BE	19:55	22:51	A	GPRPK	414	BHX	46	AIRCRAFT CHANGE, for technical reasons.			
26/04/2019	BE	20:40	23:23	D	GPRPK	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
27/04/2019	BE	21:10	21:33	A	GFLBE	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
28/04/2019	BE	21:00	22:04	D	GFBJI	4558	CWL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
28/04/2019	BE	21:10	22:23	A	GPRPB	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	66	LATE CABIN CREW BOARDING OR DEPARTURE PROCEDURES, other than connection and standby	
29/04/2019	BE	21:10	21:38	A	GJEDP	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
02/05/2019	BE	21:15	21:35	A	GPRPC	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Aircraft delayed on earlier sector out of LHR
03/05/2019	BE	21:00	21:53	A	GPRPH	990	SOU	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical			Aircraft swap in SOU
03/05/2019	BE	21:20	21:57	A	GFLBE	1364	LCY	5	Aircraft towing			Weight restriction issues
05/05/2019	BE	21:15	21:45	A	GPRPB	697	EDI	63	LATE CREW BOARDING OR DEPARTURE PROCEDURES, other than connection and standby (flight deck or entire crew)			Crew meals
05/05/2019	BE	21:05	22:12	A	GPRPL	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Aircraft late leaving BHD earlier due tech
05/05/2019	BE	21:00	22:05	D	GFBJI	4558	CWL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	7	Transfer bags received	Issue with transfer bags in CWL
06/05/2019	BE	20:45	22:00	D	GFBJK	489	MAN	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical	7	Transfer bags received	Reactionary due to earlier tech problems
06/05/2019	BE	21:00	21:55	D	GFBJJ	4558	CWL	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical			Reactionary due to earlier tech problems
06/05/2019	BE	21:20	21:48	A	GPRPB	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to earlier tech problems
08/05/2019	BE	21:15	22:14	A	GECOJ	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due ATC delays at LHR and the Aircraft had operated LHR-EDI on the previous sector
08/05/2019	BE	21:00	21:46	A	GECOR	990	SOU	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical			Operational delay due to an Aircraft change in SOU due tech issues
08/05/2019	BE	21:20	21:52	A	GFLBE	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due ATC delays at LCY
08/05/2019	BA	20:30	22:06	A	GEUYH	1426	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due ATC delays at LHR
08/05/2019	EI	20:40	21:40	A	EICVC	937	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due ATC delays at LHR
08/05/2019	BE	20:40	21:58	D	GJECK	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to technical problems in BHX
08/05/2019	BA	19:10	21:57	D	GEUUV	1419	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due ATC delays at LHR
08/05/2019	BA	20:10	22:24	D	GEUOB	1421	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due ATC delays at LHR
09/05/2019	EI	21:15	22:34	A	GECOJ	973	FAO	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	89	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runway closed due to obstruction or weather, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	Reactionary due slots - French ATC Industrial action blamed.
12/05/2019	BE	21:15	21:31	A	GFLBE	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
15/05/2019	BE	21:20	21:51	A	GPRPA	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Crew sickness , swapping crew from other flights
15/05/2019	BE	21:15	21:57	A	GFLBA	697	EDI	19	REDUCED MOBILITY, boarding / deboarding of passengers with reduced mobility.			Awaiting PRM PAX in EDI
16/05/2019	BE	21:05	21:57	A	GPRPA	738	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Due to earlier fuel issue at BHD
16/05/2019	BE	19:25	21:32	A	GJEDT	1362	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Due to earlier fuel issue at BHD
16/05/2019	BE	20:15	22:13	D	GJEDT	696	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Due to earlier fuel issue at BHD
17/05/2019	BA	19:15	21:52	D	GEUUE	1419	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Original Aircraft technical issue in LHR and then Aircraft change required

Date	Airline Code	Sch Time	Actual Time	Arr / Dep	Registration	Flight #	Airport	Delay code 1	Description 1	Delay code 2	Description 2	Additional Info
17/05/2019	BE	21:00	21:40	D	GFBJH	4558	CWL	41	AIRCRAFT DEFECTS.			
19/05/2019	BE	21:20	22:04	A	GPRPK	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Aircraft delayed ex MAN on a previous sector due to refuelling issue
19/05/2019	BE	21:20	21:38	A	GPRPA	488	MAN	87	AIRPORT FACILITIES, parking stands, ramp congestion, lighting, buildings, gate limitations, etc.			Refuelling issue at MAN - a power surge had meant no refuelling possible
19/05/2019	BE	21:05	21:43	A	GJECM	738	LBA	19	REDUCED MOBILITY, boarding / deboarding of passengers with reduced mobility.	31	AIRCRAFT DOCUMENTATION LATE/INACCURATE, weight and balance, general declaration, pax manifest, etc.	Boarding PRM PAX and loadsheet issue
21/05/2019	BE	21:10	22:04	A	GFLBA	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	31	AIRCRAFT DOCUMENTATION LATE/INACCURATE, weight and balance, general declaration, pax manifest, etc.	Delay due technical issues at BHD this afternoon - aircraft swop onto spare aircraft and transfering PRM PAX
22/05/2019	EI	21:20	Diverted	A	EISTA	949	AGP		Extension declined. Aircraft diverted to BFS.			Aircraft had technical issue earlier at FAO - fuel imbalance - eventually diverted to BFS
23/05/2019	BE	21:20	21:31	A	GPRPK	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due Aircraft swap on the previous sector ex BHD due technical issues
23/05/2019	BE	20:45	21:46	D	GFBJI	489	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due earlier technical issues resulting in an Aircraft change
23/05/2019	EI	21:15	21:57	A	EISTA	972	FAO	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary delay due to the Aircraft diverting to BFS last night due to earlier technical issues
24/05/2019	EI	21:20	21:36	A	EISTA	949	AGP	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
24/05/2019	BE	20:05	22:02	D	GECOA	991	SOU	64	FLIGHT DECK CREW SHORTAGE, sickness, awaiting standby, flight time limitations, crew meals, valid visa, health documents, etc.			Slowed to depart also swissport checking cabin baggage sizes on boarding at gate.
26/05/2019	BE	21:20	21:41	A	GPRPD	1364	LCY	87	AIRPORT FACILITIES, parking stands, ramp congestion, lighting, buildings, gate limitations, etc.	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	Awaiting bus, remote parked in LCY
28/05/2019	BE	21:20	21:36	A	GPRPJ	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due an ATC delay on the previous sector from BHD to LCY
29/05/2019	EI	21:20	21:46	A	EISTA	949	AGP	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary as the Aircraft diverted to BFS last night due to airfield restrictions at BHD
29/05/2019	BE	21:20	Diverted	A	GPRPA	1364	LCY		Extension declined. Aircraft diverted to BFS.			Delayed due to technical issues and then further delayed so refused and diverted to BFS
30/05/2019	BE	21:10	21:36	A	GKKEV	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due delay code 7 / transfer bags
30/05/2019	BE	21:05	21:36	A	GJEDU	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due earlier technical issues
30/05/2019	BE	21:15	21:46	A	GPRPO	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due earlier technical issues
31/05/2019	BE	20:40	21:41	D	GECOM	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	16	COMMERCIAL PUBLICITY/PASSENGER CONVENIENCE, VIP, press, ground meals and missing personal items	LIAC from BHX due staff shortages on ground / PAX on inbound would not get off aircraft, wanted to complain to crew / flight deck
02/06/2019	BE	19:50	21:32	A	GPRPF	695	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	87	AIRPORT FACILITIES, parking stands, ramp congestion, lighting, buildings, gate limitations, etc.	Reactionary due to two technical issues in EDI
02/06/2019	BE	21:15	21:56	A	GFLBC	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical	Reactionary due to two technical issues in EDI
03/06/2019	BE	20:40	22:08	D	GPRPA	417	BHX	55	DEPARTURE CONTROL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	Late leaving BHX due to system failure and manual boarding
04/06/2019	BE	21:05	21:47	A	GJECR	738	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Late leaving BHD on earlier sector due crew meals and PRM delay
04/06/2019	BE	21:15	21:57	A	GPRPD	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	19	REDUCED MOBILITY, boarding / deboarding of passengers with reduced mobility.	Late leaving BHD earlier due late crew to aircraft. Bulk of delay due PRM issue in MAN
05/06/2019	BE	20:25	21:40	D	ESATA	131	GLA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Technical problem on earlier sector
05/06/2019	BE	20:45	21:55	D	GFBJA	489	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
07/06/2019	BE	21:15	22:05	A	GPRPF	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			The aircraft operated EDI-LHR-EDI on the previous sectors and got delayed due to ATC slots at LHR
07/06/2019	BE	21:20	21:37	A	GPRPO	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Delay ex BHD on previous sector dealing with oversize hand luggage
07/06/2019	BE	20:40	21:37	D	GJEDP	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to earlier technical issues
09/06/2019	EI	20:40	22:15	A	EIDEG	937	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	Reactionary due a technical issue on an earlier sector from LHR / had further technical issues on this sector from LHR
09/06/2019	BE	19:50	21:40	A	GFLBC	486	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to operational changes due to a technical problem with aircraft
09/06/2019	BE	21:15	21:31	A	GPRPF	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	7	Transfer bags received	Hand luggage issues at the boarding gate
10/06/2019	BE	21:15	21:38	A	GPRPI	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	65	FLIGHT DECK CREW SPECIAL REQUEST, not within operational requirements	Captain opted for a manual loadsheet
10/06/2019	BE	21:10	21:49	A	GECOF	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	46	AIRCRAFT CHANGE, for technical reasons.	Aircraft change
11/06/2019	BE	21:05	21:45	A	GJEDT	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	Aircraft change due to technical issues earlier in the day
12/06/2019	BE	21:20	21:35	A	GJEDP	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	87	AIRPORT FACILITIES, parking stands, ramp congestion, lighting, buildings, gate limitations, etc.	Delays out of LCY due congestion
12/06/2019	BE	19:25	21:51	A	GFLBC	1362	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	87	AIRPORT FACILITIES, parking stands, ramp congestion, lighting, buildings, gate limitations, etc.	Delays out of LCY due congestion
12/06/2019	BE	20:15	22:21	D	GFLBC	696	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
13/06/2019	BE	21:15	21:37	A	GPRPL	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due hold up on earlier sector in LHR due slots
13/06/2019	BZE	21:00	21:33	D	GZENJ	01B	BQH	16	COMMERCIAL PUBLICITY/PASSENGER CONVENIENCE, VIP, press, ground meals and missing personal items			Zenith Aviation. Government charter/air-taxi.
14/06/2019	BE	21:00	22:02	A	GPRPO	990	SOU	63	LATE CREW BOARDING OR DEPARTURE PROCEDURES, other than connection and standby (flight deck or entire crew)			
14/06/2019	BE	20:40	21:34	D	GPRPI	417	BHX	96	operational delay due to tech problems			
14/06/2019	BE	21:15	22:06	A	GECOJ	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
14/06/2019	BE	19:25	21:54	A	GJEDP	1362	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	7	Transfer bags received	Awaiting transfer bags in LCY
14/06/2019	BE	20:15	22:34	D	GJEDP	696	EDI	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical			Awaiting aircraft from LCY as original aircraft had technical problem
14/06/2019	BE	21:20	22:11	A	GPRPL	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	36	FUELLING/DEFUELLING, fuel supplier	Reactionary from earlier sector. Awaiting fuel in LCY
16/06/2019	BE	21:15	21:56	A	GPRPE	697	EDI	46	AIRCRAFT CHANGE, for technical reasons.			Aircraft had technical issues in EDI and had to be changed
16/06/2019	BE	21:00	21:38	D	GFBJA	4558	CWL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
17/06/2019	EI	21:20	Diverted	A	EISTA	949	AGP		Had diverted to DUB en route to AGP due tech issues - eta was 2345 back at BHD so diverted to BFS			ETA was 2345 back at BHD so diverted to BFS
17/06/2019	BE	20:25	21:37	D	ESATA	131	GLA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Delayed on a previous sector due the loading and securing of a 117kg Mobility Scooter
18/06/2019	BE	19:45	21:33	A	GFBJD	486	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to earlier technical problems
18/06/2019	BE	20:45	22:49	D	GFBJD	489	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to earlier technical issues, crew meals at BHD, sorting a prisoner and three escorts and trim issue with the loadsheet
19/06/2019	BE	21:20	22:00	A	GECOB	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Technical problem on the previous sector from BHD to BHX
20/06/2019	BE	21:10	21:38	A	GJEDT	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Multiple technical problems and aircraft changes
21/06/2019	BE	21:10	21:41	A	GPRPF	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Multiple technical problems and aircraft changes
21/06/2019	BE	21:20	21:44	A	GPRPE	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	19	REDUCED MOBILITY, boarding / deboarding of passengers with reduced mobility.	
21/06/2019	BE	20:40	21:56	D	GECOC	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Multiple technical issues at EXT and subsequent aircraft changes
22/06/2019	BE	19:50	22:47	A	GPRPE	486	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			IT failure at MAN airport caused long delays
23/06/2019	BE	21:15	23:05	A	GECOJ	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	16	COMMERCIAL PUBLICITY/PASSENGER CONVENIENCE, VIP, press, ground meals and missing personal items	Technical problem on earlier sector and awaiting police to off load drunk passenger
24/06/2019	BE	21:00	21:33	D	GFBJA	4558	CWL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
24/06/2019	BE	19:25	21:44	A	GFLBE	1362	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Slots on earlier secotr due to weather
24/06/2019	BE	21:15	21:44	A	GPRPD	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	16	COMMERCIAL PUBLICITY/PASSENGER CONVENIENCE, VIP, press, ground meals and missing personal items	
24/06/2019	BE	20:15	22:26	D	GFLBE	696	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
24/06/2019	BE	19:55	21:35	A	GKKEV	414	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	15	BOARDING, discrepancies and paging, missing checked-in passenger	Handling delays at BHX airport
24/06/2019	BE	20:40	22:19	D	GKKEV	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
24/06/2019	BE	21:10	22:32	A	GPRPH	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
26/06/2019	BE	21:15	21:31	A	GJEDP	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
26/06/2019	BE	21:00	21:47	D	GFBJC	4558	CWL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
27/06/2019	BE	21:15	21:36	A	GPRPE	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
27/06/2019	BE	20:05	22:01	D	GJECR	991	SOU	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Aircraft change at SOU airport due to technical problems
27/06/2019	EI	20:40	22:22	A	EIDEG	937	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to earlier ATC delays and technical issues
28/06/2019	BE	21:05	21:33	A	GPRPH	738	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due earlier technical issues
28/06/2019	BE	21:15	21:37	A	GJEDP	488	MAN	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical			Awaiting crew of another delayed flight
28/06/2019	BE	21:15	21:44	A	GECOH	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due earlier technical issues
28/06/2019	BE	21:20	21:53	A	GJEDR	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due earlier cabin crew shortage
28/06/2019	BE	20:20	22:37	A	GFBJI	4557	CWL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to earlier technical problems and aircraft change required
28/06/2019	BE	21:00	23:17	D	GFBJI	4558	CWL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to earlier technical problems and aircraft change required
29/06/2019	BE	20:45	23:04	A	GPRPM	742	NQY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due to a power failure at NQY
30/06/2019	BE	21:10	21:35	A	GECOA	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due technical issues on a previous sector
30/06/2019	BE	21:20	21:52	A	GFLBC	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due earlier technical issues
30/06/2019	BE	20:25	21:48	D	GECOO	131	GLA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due earlier technical issues
30/06/2019	BE	21:00	22:09	D	GFBJI	4558	CWL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Reactionary due earlier technical issues
01/07/2019	EI	21:20	21:58	A	EISTA	949	AGP	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
01/07/2019	BE	21:00	21:41	D	GFBJI	4558	CWL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector		CREW SHORTAGES	
01/07/2019	BE	21:15	21:36	A	GPRPH	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector		CREW SHORTAGES	
01/07/2019	BE	21:15	21:45	A	GPBPR	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector		CREW SHORTAGES	
02/07/2019	BE	20:25	22:00	D	ESATA	131	GLA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
02/07/2019	BE	21:15	21:36	A	GPRPD	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
02/07/2019	BE	21:05	22:33	A	GECOA	368	GLA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
03/07/2019	BE	21:10	22:07	A	GPRPB	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
04/07/2019	BE	21:15	21:33	A	GPRPM	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	32	LOADING/UNLOADING, bulky, special load, cabin load, lack of loading staff	
04/07/2019	BE	21:00	21:39	A	GPRPH	990	SOU	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	42	SCHEDULED MAINTENANCE, late release.	a/c tech in LCY, swaps done, also flight crew shortage
04/07/2019	PVT	21:00	21:48	D	DIPPY		MAN	16	COMMERCIAL PUBLICITY/PASSENGER CONVENIENCE, VIP, press, ground meals and missing personal items			
04/07/2019	BE	20:40	21:51	D	GJECP	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
05/07/2019	BE	20:45	21:38	D	GFBJD	489	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	63	LATE CREW BOARDING OR DEPARTURE PROCEDURES, other than connection and standby (flight deck or entire crew)	
05/07/2019	BE	21:05	21:45	A	GPRPM	738	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			running
05/07/2019	BE	21:15	22:28	A	GPRPO	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			aircraft had went tech in LHR earlier
07/07/2019	BE	21:20	21:58	A	GJRPH	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	14	OVERSALES, booking errors	late on previous sectors and errors in LCY
07/07/2019	BE	21:10	22:27	A	GJECX	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			delays due tech on other sectors caused reac
07/07/2019	BE	21:15	22:39	A	GECOT	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	a/c rtn to stand in EDI
08/07/2019	BE	21:10	21:44	A	GJECM	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
08/07/2019	BE	19:55	22:02	A	GJECO	414	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
08/07/2019	BE	20:40	22:25	D	GJECO	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			IN & BACK OUT TO bhx LATE 73 PAXS IN DEPARTURES
09/07/2019	BE	20:45	21:31	D	GEBJK	489	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
09/07/2019	BE	21:15	21:34	A	GFLBC	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
09/07/2019	BE	21:05	21:50	A	GFLBD	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	13	CHECK-IN ERROR, passenger and baggage	
10/07/2019	BE	21:05	21:32	A	GPRPH	738	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
10/07/2019	BE	20:40	22:36	D	GJECO	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	99	OTHER REASON, not matching any code above	INTOXICATED PAX REFUSED FLIGHT AND BROUGHT LANDSIDE BY SECURITY
11/07/2019	BE	21:15	21:32	A	GFLBD	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
11/07/2019	BE	21:05	21:35	A	GJECM	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
11/07/2019	BE	21:05	21:47	A	GJEDV	738	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
11/07/2019	BE	21:10	21:51	A	GECOB	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
11/07/2019	BE	21:15	22:13	A	GPRPH	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
11/07/2019	BE	20:25	21:34	D	ESATA	131	GLA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
11/07/2019	BE	20:40	21:44	D	GJEDR	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
11/07/2019	BE	20:45	22:05	D	GFBJJ	489	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical	
11/07/2019	BE	20:40	22:12	D	GFBJK	4484	DSA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical	
12/07/2019	BE	20:20	21:39	A	GFBJA	4557	CWL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	83	ATFM due to RESTRICTION AT DESTINATION AIRPORT, airport and/or runway closed due to obstruction, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	
12/07/2019	BE	21:10	21:32	A	GPRPM	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	83	ATFM due to RESTRICTION AT DESTINATION AIRPORT, airport and/or runway closed due to obstruction, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	
12/07/2019	BE	21:05	21:43	A	GPRPI	738	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	83	ATFM due to RESTRICTION AT DESTINATION AIRPORT, airport and/or runway closed due to obstruction, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	
12/07/2019	BE	21:15	21:48	A	GJECM	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	83	ATFM due to RESTRICTION AT DESTINATION AIRPORT, airport and/or runway closed due to obstruction, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	
12/07/2019	BE	21:15	21:58	A	GFLBD	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	83	ATFM due to RESTRICTION AT DESTINATION AIRPORT, airport and/or runway closed due to obstruction, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	
12/07/2019	BE	20:25	21:35	D	ESATB	131	GLA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	83	ATFM due to RESTRICTION AT DESTINATION AIRPORT, airport and/or runway closed due to obstruction, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	
12/07/2019	BE	21:00	22:17	D	GFBJA	4558	CWL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	83	ATFM due to RESTRICTION AT DESTINATION AIRPORT, airport and/or runway closed due to obstruction, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	
12/07/2019	BE	21:20	21:52	A	GPRPJ	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	83	ATFM due to RESTRICTION AT DESTINATION AIRPORT, airport and/or runway closed due to obstruction, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	
12/07/2019	BE	19:55	Diverted			414	BHX		Extension declined. Aircraft diverted to BFS. ATC slot on an earlier sector BHX-DUS			
13/07/2019	BE	20:45	21:32	A	GECOC	742	NQY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	83	ATFM due to RESTRICTION AT DESTINATION AIRPORT, airport and/or runway closed due to obstruction, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	
13/07/2019	BE	21:10	22:18	A	GPRPJ	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	83	ATFM due to RESTRICTION AT DESTINATION AIRPORT, airport and/or runway closed due to obstruction, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	
14/07/2019	BE	21:00	21:43	D	GFBJA	4558	CWL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical	
14/07/2019	BE	21:20	22:07	A	GPRPM	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
14/07/2019	BE	21:15	23:37	A	GPRPK	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	aircraft defect / aircraft swop	
15/07/2019	BE	21:10	21:46	A	GECOC	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
15/07/2019	BE	21:15	21:31	A	GJECX	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	07	taking oversize hand baggage at the gate	
16/07/2019	BE	21:05	21:56	A	GPRPK	738	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			all delays today due tech a/c, mulitple swaps and a local standby
16/07/2019	BE	21:10	22:37	A	GJECP	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			all delays today due tech a/c, mulitple swaps and a local standby
16/07/2019	BE	21:15	22:06	A	GJECO	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			all delays today due tech a/c, mulitple swaps and a local standby
16/07/2019	BE	21:15	22:24	A	GJEDU	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			all delays today due tech a/c, mulitple swaps and a local standby
16/07/2019	BE	21:20	22:41	A	GPRPO	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			all delays today due tech a/c, mulitple swaps and a local standby
16/07/2019	BE	21:15	21:46	A	GJEDP	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
19/07/2019	BE	21:10	21:52	A	GECOB	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
19/07/2019	BE	20:45	21:38	D	GFBJJ	489	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
21/07/2019	BE	21:20	21:34	A	GPRPH	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
21/07/2019	BE	21:15	21:55	A	GECOF	697	EDI	41	AIRCRAFT DEFECTS.	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	
22/07/2019	BE	21:05	23:07	A	GPRPH	738	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector		AMBI LIFT BROKE DOWN AT SIDE OF AIRCRAFT ON EARLIER SECTOR BE737	
22/07/2019	BE	20:40	22:04	D	GECOB	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical	
23/07/2019	BE	21:15	23:45	A	GJEDP	697	EDI	46	AIRCRAFT CHANGE, for technical reasons.			
24/07/2019	BE	20:15	21:41	D	GPRPG	696	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	35	AIRCRAFT CLEANING	
24/07/2019	BE	20:40	21:36	D	GJECP	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	7	Transfer bags received	
24/07/2019	BE	20:45	21:59	D	GFBJC	489	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
24/07/2019	BE	21:15	21:31	A	GPRPI	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	89	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runway closed due to obstruction or weather, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	
24/07/2019	BE	21:05	21:56	A	GJEDU	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS - MULTIPLE SWOPS	
24/07/2019	BE	21:20	22:08	A	GJEDP	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS - MULTIPLE SWOPS	
25/07/2019	BE	21:05	21:58	A	GJEDU	738	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	7	Transfer bags received	
25/07/2019	BE	21:15	22:05	A	GECOF	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	65	FLIGHT DECK CREW SPECIAL REQUEST, not within operational requirements	
25/07/2019	BE	21:20	21:50	A	GJEDP	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	87	AIRPORT FACILITIES, parking stands, ramp congestion, lighting, buildings, gate limitations, etc.	
25/07/2019	BE	21:10	21:39	A	GPRPN	416	BHX	19	REDUCED MOBILITY, boarding / deboarding of passengers with reduced mobility.			
26/07/2019	BE	21:05	22:47	A	GKKEV	738	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
26/07/2019	BE	20:40	21:47	D	GPRPL	417	BHX	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical			
26/07/2019	BE	21:15	21:32	A	GJEDU	488	MAN	15	Boarding discrepancy	16	pax convenience	
26/07/2019	EI	20:40	21:35	A	EIDEC	937	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	89	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runway closed due to obstruction or weather, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	
26/07/2019	BE	20:45	22:11	D	GFBJC	489	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	65	FLIGHT DECK CREW SPECIAL REQUEST, not within operational requirements	
27/07/2019	BE	20:45	21:55	A	GJECM	742	NQY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector		A LOT OF TECH AIRCRAFT TODAY CAUSED DELAYS ON MOST FLIGHTS	
28/07/2019	BE	21:05	21:46	A	GECOB	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector		CREW SHORTAGE EARLIER AFFECTED ROTATIONS	
28/07/2019	BE	21:15	21:42	A	GJEDW	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
28/07/2019	EI	20:40	21:37	A	EIDEC	937	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
28/07/2019	BE	21:20	21:55	A	GJECM	488	MAN	18	BAGGAGE PROCESSING, sorting etc.			
29/07/2019	BE	21:05	21:55	A	GJECM	738	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector		earlier tech problems	
29/07/2019	BE	21:15	21:33	A	GJEDU	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector		earlier tech problems	

Date	Airline Code	Sch Time	Actual Time	Arr / Dep	Registration	Flight #	Airport	Delay code 1	Description 1	Delay code 2	Description 2	Additional Info
30/07/2019	BE	19:55	Diverted						Extension declined. Aircraft diverted to BFS.			This flight delayed due an aircraft change required due to tech issues - Flybe Ops then advised that it was further delayed with eta of approx 2300 and the
30/07/2019	BE	21:10	22:14	A	GJECP	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
30/07/2019	BE	21:15	21:44	A	GJECX	697	EDI	36	FUELLING/DEFUELLING, fuel supplier			
30/07/2019	BE	21:20	21:35	A	GPRPF	1364	LCY	35	AIRCRAFT CLEANING			
30/07/2019	BE	20:15	21:41	D	GJEDW	696	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector		react due to earlier tech issues	
30/07/2019	BE	20:45	21:38	D	GFBJD	489	MAN	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical		acft swap with BE4558 + accomodating pax off the canx BE417	
30/07/2019	BE	21:00	21:48	D	GFBJC	4558	CWL	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical		acft swap with BE489	
01/08/2019	BE	21:00	21:53	A	GECOF	990	SOU	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical			
02/08/2019	EI	20:40	22:26	A	EIGAM	937	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	46	AIRCRAFT CHANGE, for technical reasons.	
02/08/2019	BE	20:00	21:56	A	GSAJJ	130	GLA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	46	AIRCRAFT CHANGE, for technical reasons.	
02/08/2019	BE	20:25	22:43	D	GSAJJ	131	GLA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	46	AIRCRAFT CHANGE, for technical reasons.	
04/08/2019	BE	20:45	22:09	D	GJEDW	696	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	83	ATFM due to RESTRICTION AT DESTINATION AIRPORT, airport and/or runway closed due to obstruction, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	
04/08/2019	BE	21:00	21:52	D	GFBJI	4558	CWL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	64	FLIGHT DECK CREW SHORTAGE, sickness, awaiting standby, flight time limitations, crew meals, valid visa, health documents, etc.	
04/08/2019	BE	21:10	21:57	A	GPRPG	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	19	REDUCED MOBILITY, boarding / deboarding of passengers with reduced mobility.	
04/08/2019	BE	21:20	21:33	A	GJEDT	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	89	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runway closed due to obstruction or weather, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	
04/08/2019	BE	21:15	22:57	A	GPRPK	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
05/08/2019	BE	21:05	21:47	A	GPRPK	368	EMA	41	AIRCRAFT DEFECTS.	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	
06/08/2019	BE	21:10	21:33	A	GJEDV	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
06/08/2019	BE	19:45	21:54	A	GFBJF	486	MAN	41	AIRCRAFT DEFECTS.	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	AC tech earlier in the day at BHD lots of swops
06/08/2019	BE	20:45	22:26	D	GFBJF	489	MAN	41	AIRCRAFT DEFECTS.	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	
07/08/2019	BE	21:15	21:34	A	GPRPE	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
07/08/2019	BE	20:25	22:20	D	GRJXI	131	GLA	41	AIRCRAFT DEFECTS.	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	
07/08/2019	BE	21:15	21:56	A	GJECN	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
08/08/2019	BE	21:05	22:36	A	GJECY	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
08/08/2019	BE	21:15	21:33	A	GECOR	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
08/08/2019	BE	20:40	21:36	D	GFBJA	417	BHX	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical			
08/08/2019	BE	20:45	21:31	D	GFBJD	489	MAN	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical			
08/08/2019	PVT	20:00	22:04	A	GOMSL		SKL	41	AIRCRAFT DEFECTS.			
08/08/2019	BA	20:30	23:01	A	GTTNF	1426	LHR	64	FLIGHT DECK CREW SHORTAGE, sickness, awaiting standby, flight time limitations, crew meals, valid visa, health documents, etc.			
09/08/2019	BE	20:25	23:19	D	GSAJF	131	GLA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
09/08/2019	BE	20:40	23:07	D	GFLBD	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
09/08/2019	BE	21:00	22:08	D	GFBJD	4558	CWL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
09/08/2019	BE	17:45	22:04	D	GRJXH	129	GLA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
09/08/2019	BE	20:00	22:12	A	GSAJF	130	GLA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
09/08/2019	BE	21:05	22:41	A	GECOT	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
09/08/2019	BE	21:15	22:01	A	GPRPB	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical	
09/08/2019	BE	21:15	21:42	A	GPRPL	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
09/08/2019	BE	19:55	21:49	A	GECOC	414	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
09/08/2019	BE	21:20	21:45	A	GFLBD	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
09/08/2019	BE	21:05	21:37	A	GPRPD	738	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
11/08/2019	BE	21:15	22:08	A	GPRPD	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
11/08/2019	BE	21:20	21:43	A	GJEDR	1364	LCY	81	ATFM due to ATC EN-ROUTE DEMAND/CAPACITY, standard demand/capacity problems			
11/08/2019	BE	21:20	21:32	A	GPRPK	488	MAN	67	CABIN CREW SHORTAGE, sickness, awaiting standby, flight time limitations, crew meals, valid visa, health documents, etc.	89	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runway closed due to obstruction or weather, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	
11/08/2019	BE	21:00	21:35	D	GFBJJ	4558	CWL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
11/08/2019	BA	20:10	22:37	D	GEUYF	1421	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	67	CABIN CREW SHORTAGE, sickness, awaiting standby, flight time limitations, crew meals, valid visa, health documents, etc.	
12/08/2019	BE	21:15	21:53	A	GPRPK	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
12/08/2019	BE	20:25	21:56	D	GRJXH	131	GLA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	43	NON-SCHEDULED MAINTENANCE, special checks and/or additional works beyond normal maintenance schedule	
12/08/2019	BE	21:00	21:35	D	GFBJI	4558	CWL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	89	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runway closed due to obstruction or weather, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	
12/08/2019	BA	19:05	21:48	D	GTTNA	1419	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	83	ATFM due to RESTRICTION AT DESTINATION AIRPORT, airport and/or runway closed due to obstruction, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	
12/08/2019	BA	20:15	22:18	D	GEUOD	1421	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	83	ATFM due to RESTRICTION AT DESTINATION AIRPORT, airport and/or runway closed due to obstruction, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	
14/08/2019	BE	21:20	21:38	A	GPRPN	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
14/08/2019	BE	21:10	21:55	A	GECOM	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	32	LOADING/UNLOADING, bulky, special load, cabin load, lack of loading staff	
14/08/2019	BE	21:05	22:27	A	GECOT	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	77	GROUND HANDLING IMPAIRED BY ADVERSE WEATHER CONDITIONS	
15/08/2019	BE	19:55	22:14	A	GFLBE	414	BHX	41	AIRCRAFT DEFECTS.	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	
15/08/2019	BE	20:40	22:51	D	GFLBE	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
16/08/2019	BE	21:05	21:35	A	GPRPK	738	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
16/08/2019	BE	21:10	21:49	A	GJECK	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
16/08/2019	BE	21:05	21:31	A	GECOT	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
18/08/2019	BE	21:00	21:58	D	GFBJE	4558	CWL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
18/08/2019	BE	21:05	21:36	A	GJEDW	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
18/08/2019	BE	21:20	21:55	A	GPRPK	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
19/08/2019	BE	20:40	21:35	D	GKKEV	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
20/08/2019	BE	21:15	21:36	A	GPRPA	488	MAN	65	FLIGHT DECK CREW SPECIAL REQUEST, not within operational requirements			The captain was unhappy about the bag weight in the holds so needed to be rechecked / a number of very heavy rush bags
21/08/2019	BE	21:15	21:36	A	GPRPB	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
22/08/2019	BE	21:05	22:34	A	GJEDM	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	46	AIRCRAFT CHANGE, for technical reasons.	
23/08/2019	BE	21:05	21:54	A	GJECM	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	46	AIRCRAFT CHANGE, for technical reasons.	LOGANAIR EMBRAER TECH - POSITIONED TO ABZ THEN SWOPPED
23/08/2019	BE	21:10	21:41	A	GJECR	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	46	AIRCRAFT CHANGE, for technical reasons.	
23/08/2019	BE	19:55	21:34	A	GKKEV	414	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	46	AIRCRAFT CHANGE, for technical reasons.	AIRCRAFT SWOP - ORIGINAL AIRCRAFT TOO WARM AND CREW REFUSED TO USE
23/08/2019	BE	20:40	22:17	D	GKKEV	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	46	AIRCRAFT CHANGE, for technical reasons.	
25/08/2019	BE	21:20	21:32	A	GPRPB	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
25/08/2019	BE	21:05	21:35	A	GPRPI	738	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
25/08/2019	BE	21:10	21:47	A	GPRPN	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
26/08/2019	BE	20:30	21:47	D	GJEDR	493	EXT	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	46	AIRCRAFT CHANGE, for technical reasons.	
26/08/2019	BE	21:05	22:05	A	GPRPJ	738	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	65	FLIGHT DECK CREW SPECIAL REQUEST, not within operational requirements	Aircraft swap, due a/c going tech here earlier
28/08/2019	BE	20:05	21:32	D	GJECP	991	SOU	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
28/08/2019	BE	21:15	21:58	A	GPRPL	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			a/c grounded with tech and safety issue so swaps done
28/08/2019	BE	21:20	21:46	A	GJEDM	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			a/c grounded with tech and safety issue so swaps done
01/09/2019	BE	20:40	22:07	D	GPRPL	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
01/09/2019	BE	21:00	22:08	D	GFBJI	4558	CWL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
01/09/2019	BE	21:05	21:34	A	GJEDU	738	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
01/09/2019	BE	21:20	21:31	A	GPRPH	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
01/09/2019	BE	21:20	21:36	A	GPRPI	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
02/09/2019	BE	21:15	21:35	A	GFLBE	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical	
02/09/2019	BE	21:05	21:47	A	GPRPI	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	89	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runway closed due to obstruction or weather, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	
02/09/2019	BE	21:00	21:32	D	GFBJI	4558	CWL	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
02/09/2019	BE	20:30	21:37	D	GJECO	493	EXT	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
04/09/2019	BE	21:10	21:32	A	GPRPI	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
04/09/2019	BE	20:40	21:35	D	GJEDR	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
04/09/2019	BE	21:05	22:20	A	GFLBC	368	EMA	41	AIRCRAFT DEFECTS.	93		
05/09/2019	BE	21:15	21:31	A	GFLBC	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
06/09/2019	EI	21:20	21:45	A	EISTA	949	AGP	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Aircraft returned to stand earlier at Belfast City Airport due to technical issue
06/09/2019	BE	21:20	21:48	A	GFLBC	1364	LCY	36	FUELLING/DEFUELLING, fuel supplier			Handling issues in London City Airport
06/09/2019	BE	21:15	22:03	A	GJEDU	697	EDI	89	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runway closed due to obstruction or weather, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights			
07/09/2019	BE	21:10	22:20	A	GJECR	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Aircraft returned to stand in Birmingham Airport, then aircraft was swapped
08/09/2019	BE	20:25	21:39	A	GFBJD	4557	CWL	67	CABIN CREW SHORTAGE, sickness, awaiting standby, flight time limitations, crew meals, valid visa, health documents, etc.			
08/09/2019	BE	21:00	22:23	D	GFBJD	4558	CWL	67	CABIN CREW SHORTAGE, sickness, awaiting standby, flight time limitations, crew meals, valid visa, health documents, etc.			
08/09/2019	BE	21:20	21:40	A	GPRPD	488	MAN	89	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushbac	85	MANDATORY SECURITY	
08/09/2019	BE	20:45	21:43	D	GJEDU	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
08/09/2019	BE	20:40	21:32	D	GJEDM	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
08/09/2019	BE	21:15	21:45	A	GJEDR	696	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
08/09/2019	BE	21:20	21:48	A	GPRPI	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
08/09/2019	BE	21:45	22:15	A	GJECX	45P	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Security issue in Birmingham Airport
09/09/2019	BE	21:10	22:04	A	GJECN	416	BHX	65	FLIGHT DECK CREW SPECIAL REQUEST, not within operational requirements			Security issue in Birmingham Airport
10/09/2019	EI	21:15	21:56	A	EISTA	973	FAO	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
10/09/2019	BE	21:15	22:17	A	GFLBD	697	EDI	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical			
10/09/2019	BE	20:40	21:33	D	GJEDM	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
11/09/2019	BE	21:15	21:47	A	GPRPI	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
11/09/2019	BE	21:05	21:36	A	GJEDR	738	LBA	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical			
11/09/2019	BE	21:10	21:43	A	GPRPB	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
11/09/2019	BE	21:15	21:51	A	GPRPF	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
11/09/2019	BE	20:05	21:42	D	GPRPL	991	SOU	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
12/09/2019	BE	20:25	21:36	D	GSAJI	131	GLA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	46	AIRCRAFT CHANGE, for technical reasons.	
12/09/2019	BE	21:15	21:44	A	GJEDV	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
12/09/2019	BE	21:00	21:58	A	GPRPH	990	SOU	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
13/09/2019	BE	21:00	22:31	A	GJECZ	990	SOU	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	46	AIRCRAFT CHANGE, for technical reasons.	
13/09/2019	BE	21:05	23:34	A	GPRPG	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	34	SERVICING EQUIPMENT, lack of or breakdown, lack of staff, e.g. steps	
18/09/2019	BE	21:20	21:32	A	GJEDM	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
18/09/2019	BE	20:25	21:46	D	GRJXH	131	GLA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
19/09/2019	BE	21:20	21:31	A	GJEDV	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
19/09/2019	BE	21:00	21:42	A	GJECL	990	SOU	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical			
20/09/2019	BE	21:20	21:57	A	GJEDP	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
22/09/2019	BE	20:45	21:59	D	GPRPN	696	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
23/09/2019	BE	21:05	21:52	A	GPRPA	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	46	AIRCRAFT CHANGE, for technical reasons.	
23/09/2019	BE	21:20	22:01	A	GJEDR	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	46	AIRCRAFT CHANGE, for technical reasons.	
23/09/2019	BE	21:15	21:57	A	GPRPI	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	89	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runway closed due to obstruction or weather, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights	ATC restrictions throughout the afternoon
26/09/2019	BE	21:00	21:45	A	GFLBD	990	SOU	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
26/09/2019	BE	21:15	22:21	A	GJEDW	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
26/09/2019	BE	21:15	22:06	A	GPRPE	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
27/09/2019	BE	20:25	22:01	D	GSAJC	131	GLA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
27/09/2019	BE	21:15	21:51	A	GFLBD	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
27/09/2019	BE	21:20	22:21	A	GJEDW	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	87	AIRPORT FACILITIES, parking stands, ramp congestion, lighting, buildings, gate limitations, etc.	
29/09/2019	EI	20:40	21:54	A	EIDEC	937	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
29/09/2019	BE	21:10	21:32	A	GECOI	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
29/09/2019	BE	21:20	21:37	A	GPRPK	488	MAN	95	CREW ROTATION, awaiting crew from another flight (flight deck or entire crew)			
30/09/2019	BE	21:10	21:45	A	GECOH	4557	CWL	72	WEATHER DESTINATION STATION	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	
30/09/2019	BE	21:05	22:09	A	GPRPD	738	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
30/09/2019	BE	21:20	22:30	A	GJEDW	1364	LCY	41	AIRCRAFT DEFECTS.	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	
30/09/2019	BE	21:15	21:40	A	GFLBB	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
01/10/2019	EI	20:40	21:51	A	EIDEG	937	LHR	71	WEATHER DEPARTURE STATION			
03/10/2019	BE	21:15	21:35	A	GPRPD	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
03/10/2019	BA	20:10	21:42	D	GEUYR	1421	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	18	BAGGAGE PROCESSING, sorting etc.	Bags late to aircraft
04/10/2019	BE	21:15	22:03	A	GPRPH	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
07/10/2019	BE	20:45	21:56	D	GFBJE	489	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
08/10/2019	BE	21:20	21:43	A	GPRPH	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
09/10/2019	BE	21:15	21:43	A	GPRPH	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			aircraft delayed out of London Heathrow
10/10/2019	BE	21:15	21:31	A	GECOF	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
10/10/2019	BE	18:20	21:35	A	GJEDU	1360	LCY	67	CABIN CREW SHORTAGE, sickness, awaiting standby, flight time limitations, crew meals, valid visa, health documents, etc.			Cabin crew shortage
11/10/2019	EI	20:40	21:43	A	EIDVM	937	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
11/10/2019	BE	19:50	21:54	A	GFBJH	4483	DSA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			ATC delays in Amsterdam on a previous sector
11/10/2019	BE	21:20	21:51	A	GPRPI	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
11/10/2019	BE	20:40	22:32	D	GFBJH	4484	DSA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
12/10/2019	BE	21:10	22:03	A	GPRPL	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
17/10/2019	BE	21:20	21:48	A	GPRPF	1364	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	87	AIRPORT FACILITIES, parking stands, ramp congestion, lighting, buildings, gate limitations, etc.	
18/10/2019	BE	21:20	22:21	A	GPRPF	1364	LCY	84	ATFM due to WEATHER AT DESTINATION			
18/10/2019	BE	21:05	21:40	A	GKKEV	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	87	AIRPORT FACILITIES, parking stands, ramp congestion, lighting, buildings, gate limitations, etc.	
23/10/2019	BE	21:00	21:40	A	GJECL	990	SOU	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical			
23/10/2019	BE	21:15	21:31	A	GJEDP	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
23/10/2019	BE	21:15	23:22	A	GPRPL	488	MAN	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical			
23/10/2019	BE	20:40	22:42	D	GPRPI	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical	Potential water contamination issue with crew bottled water
24/10/2019	BE	20:25	21:40	D	GPRPG	131	GLA	41	AIRCRAFT DEFECTS.			Potential water contamination issue with crew bottled water
24/10/2019	BE	21:15	21:37	A	GECOF	697	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Potential water contamination issue with crew bottled water
24/10/2019	BE	21:05	22:21	A	GPRPN	368	EMA	41	AIRCRAFT DEFECTS.			Aircraft swop
25/10/2019	BE	18:30	22:15	D	GPRPE	415	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	Multiple technical issues and aircraft swaps
25/10/2019	BE	18:50	21:42	D	GPRPL	487	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	Multiple technical issues and aircraft swaps
25/10/2019	BE	20:45	21:31	D	GFBJK	489	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
25/10/2019	BE	21:05	21:44	A	GPRPO	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	Multiple technical issues and aircraft swaps
25/10/2019	BE	21:05	21:58	A	GFLBC	738	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	19	REDUCED MOBILITY, boarding / deboarding of passengers with reduced mobility.	Passenger with reduced mobility
25/10/2019	BE	21:15	23:39	A	GPRPL	488	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	Multiple technical issues and aircraft swaps

Date	Airline Code	Sch Time	Actual Time	Arr / Dep	Registration	Flight #	Airport	Delay code 1	Description 1	Delay code 2	Description 2	Additional Info
29/10/2019	BE	21:10	21:31	A	GJECX	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
30/10/2019	BE	21:10	22:34	A	GJEDP	416	BHX	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical			Aircraft changes and an ATC staff shortage
01/11/2019	BE	21:00	21:47	D	GFBEJ	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
07/11/2019	BE	21:10	21:33	A	GPRPB	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
07/11/2019	BE	21:15	21:59	A	GFCOB	486	MAN	89	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runwa			Incident in Manchester
07/11/2019	BE	20:45	22:09	D	GPRPJ	487	MAN	89	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runwa			
10/11/2019	BE	20:35	21:54	A	GJECX	996	SOU	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
10/11/2019	BE	20:35	22:00	A	GJECP	487	MAN	46	AIRCRAFT CHANGE, for technical reasons.			
12/11/2019	BE	20:50	21:42	D	GJBJB	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Earlier technical issues in Birmingham
13/11/2019	BE	21:15	21:54	A	GJECK	486	MAN	41	AIRCRAFT DEFECTS.			
14/11/2019	BE	20:30	21:43	D	GPRPH	996	SOU	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
14/11/2019	BE	20:55	22:30	A	GPRPD	368	EMA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	41	AIRCRAFT DEFECTS.	
16/11/2019	BE	20:40	21:57	A	GPRPF	484	MAN	67	CABIN CREW SHORTAGE, sickness, awaiting standby, flight time limitations, crew meals, valid visa, health documents, etc.			
18/11/2019	BE	21:15	21:31	A	GJECM	486	MAN	95	CREW ROTATION, awaiting crew from another flight (flight deck or entire crew)			
20/11/2019	BE	21:00	21:32	A	GPRPO	740	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Late due to an earlier medical diversion
21/11/2019	BE	21:15	21:37	A	GPRPK	1360	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Late due to an earlier ATC slot delay at London City Airport
22/11/2019	BE	20:45	22:02	D	GPRPH	487	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical	Late due to an earlier technical problem
27/11/2019	BE	20:55	21:31	D	GPRPO	129	GLA	41	AIRCRAFT DEFECTS.			Aircraft swap due to technical issue
27/11/2019	BA	19:25	21:45	D	GEUXL	1421	LHR	41	AIRCRAFT DEFECTS.			Aircraft swap due to technical issue
28/11/2019	BA	20:10	21:40	A	GEUYJ	1422	LHR	46	AIRCRAFT CHANGE, for technical reasons.			
01/12/2020	BE	21:10	21:32	D	GPRPK	688	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
08/12/2019	BE	21:10	21:38	D	GPRPM	688	EDI	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Poor weather on UK Mainland
08/12/2019	BE	21:15	21:44	A	GJEDW	1360	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	87	AIRPORT FACILITIES, parking stands, ramp congestion, lighting, buildings, gate limitations, etc.	Poor weather on UK Mainland
10/12/2019	BE	21:15	21:33	A	GPRPI	486	MAN	1	Catering equip			
10/12/2019	BE	21:15	21:58	A	GJEDW	1360	LCY	89	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runwa			
10/12/2019	BE	20:55	22:01	D	GFLBE	129	GLA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	46	AIRCRAFT CHANGE, for technical reasons.	
11/12/2019	BE	21:15	21:37	A	GPRPA	1360	LCY	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
13/12/2019	EI	21:05	21:34	A	EIDVE	937	LHR	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Due to earlier ATC delays at Heathrow due to strong winds
15/12/2019	BE	21:20	21:55	A	GPRPJ	486	MAN	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Due to earlier aircraft change for technical reasons
17/12/2019	BE	20:50	21:46	D	GECOB	417	BHX	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical	71	WEATHER DEPARTURE STATION	Aircraft de-icing accounted for 10 mins of this delay
19/12/2019	BE	20:55	21:31	D	GFLBE	417	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
19/12/2019	BE	21:10	22:03	A	GECOI	416	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			
21/12/2019	BE	20:40	22:18	A	GJECN	408	BHX	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Late due to earlier fog
26/12/2019	BE	21:00	21:34	D	GPRPO	4527	DUB	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical			
27/12/2019	BE	21:15	21:58	A	EIGHK	1360	LCY	41	AIRCRAFT DEFECTS.	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical	
28/12/2019	BE	21:05	22:13	A	GECOI	4558	CWL	41	AIRCRAFT DEFECTS.	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical	
29/12/2019	BE	20:30	22:10	D	GECOI	996	SOU	41	AIRCRAFT DEFECTS.	96	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical	Aircraft swap due to technical issues
30/12/2019	BE	21:00	22:20	A	GPRPA	740	LBA	93	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector			Aircraft that was to operate this flight had diverted on its previous sector to do an aircraft change due to techncal problems

Total number of extensions for 2019 **536**

1	EQ	Ground Servicing	Catering equip	Catering equip
2	RT	Misc.	Thru check-in error	Thru check-in error
3	GA	Ground Servicing	A/C dispatch	A/C dispatch
4	GH	Ground Servicing	A/C handling	A/C handling
5	TW	Ground Servicing	Aircraft towing	Aircraft towing
6	OA	Airline	No gate due to company aircraft	NO GATE/STAND AVAILABILITY DUE TO OWN AIRLINE ACTIVITY
7	PX	Misc.	Transfer bags received	Transfer bags received
8	TX	Airport	Taxiway congestion	Taxiway congestion
9	SG	Misc.	Scheduled ground time	SCHEDULED GROUND TIME LESS THAN DECLARED MINIMUM GROUND TIME
10	AC	Misc.	Missed slot	Missed slot
11	PD	Misc.	Late check-in	LATE CHECK-IN, acceptance after deadline
12	PL	Misc.	Check-in congestion	LATE CHECK-IN, congestions in check-in area
13	PE	Misc.	Check-in error	CHECK-IN ERROR, passenger and baggage
14	PO	Misc.	Oversales	OVERSALES, booking errors
15	PH	Misc.	Board discrepancy	BOARDING, discrepancies and paging, missing checked-in passenger
16	PS	Misc.	PR/Pax convenience/VIP	COMMERCIAL PUBLICITY/PASSENGER CONVENIENCE, VIP, press, ground meals and missing personal items
17	PC	Misc.	LT CAT/BOND ORD	CATERING ORDER, late or incorrect order given to supplier
18	PB	Misc.	Late bags to aircraft	BAGGAGE PROCESSING, sorting etc.
19	PW	Airport	PRM	REDUCED MOBILITY, boarding / deboarding of passengers with reduced mobility.
21	CD	Ground Servicing	Cargo documents	DOCUMENTATION, errors etc.
22	CP	Ground Servicing	Cargo late posn	LATE POSITIONING
23	CC	Ground Servicing	Cargo sales dec.	LATE ACCEPTANCE
24	CI	Ground Servicing	Cargo-packing	INADEQUATE PACKING
25	CO	Ground Servicing	Cargo oversales	OVERSALES, booking errors
26	CU	Ground Servicing	Cargo incorrect	LATE PREPARATION IN WAREHOUSE
27	CE	Ground Servicing	Mail doc and pack	DOCUMENTATION, PACKING etc (Mail Only)
28	CL	Ground Servicing	mail late posn	LATE POSITIONING (Mail Only)
29	CA	Ground Servicing	Mail late acceptance	LATE ACCEPTANCE (Mail Only)
31	GD	Ground Servicing	Aircraft documents	AIRCRAFT DOCUMENTATION LATE/INACCURATE, weight and balance, general declaration, pax manifest, etc.
32	GL	Ground Servicing	Loading/unload	LOADING/UNLOADING, bulky, special load, cabin load, lack of loading staff
33	GE	Ground Servicing	Loading equipment	LOADING EQUIPMENT, lack of or breakdown, e.g. container pallet loader, lack of staff
34	GS	Ground Servicing	Servicing equipment	SERVICING EQUIPMENT, lack of or breakdown, lack of staff, e.g. steps
35	GC	Ground Servicing	Aircraft cleaning	AIRCRAFT CLEANING
36	GF	Ground Servicing	Fuelling	FUELLING/DEFUELLING, fuel supplier
37	GB	Ground Servicing	LT CAT/Bond Del	CATERING, late delivery or loading
38	GU	Ground Servicing	ULD lack of	ULD, lack of or serviceability
39	GT	Ground Servicing	Tech equipment	TECHNICAL EQUIPMENT, lack of or breakdown, lack of staff, e.g. pushback
41	TD	Airline	Aircraft defect	AIRCRAFT DEFECTS.
42	TM	Airline	Scheduled maintenance	SCHEDULED MAINTENANCE, late release.
43	TN	Airline	Unscheduled maintenance	NON-SCHEDULED MAINTENANCE, special checks and/or additional works beyond normal maintenance schedule
44	TS	Airline	Lack of spares	SPARES AND MAINTENANCE EQUIPMENT, lack of or breakdown.
45	TA	Airline	AOG spares	AOG SPARES, to be carried to another station.
46	TC	Airline	Aircraft change	AIRCRAFT CHANGE, for technical reasons.
47	TL	Airline	Standby aircraft lackof	STAND-BY AIRCRAFT, lack of planned stand-by aircraft for technical reasons.
48	TV	Airline	Scheduled cabin config	SCHEDULED CABIN CONFIGURATION/VERSION ADJUSTMENTS.
51	DF	Misc.	Acft damage-flt	DAMAGE DURING FLIGHT OPERATIONS, bird or lightning strike, turbulence, heavy or overweight landing,collision during taxiing
52	DG	Misc.	Acft damage-gnd	DAMAGE DURING GROUND OPERATIONS, collisions (other than during taxiing), loading/off-loading damage, contamination, towing, extreme weather conditions
55	ED	Misc.	Auto equip fail	DEPARTURE CONTROL
56	EC	Misc.	Cargo doc fail	CARGO PREPARATION/DOCUMENTATION
57	EF	Misc.	Flt pln eq fail	FLIGHT PLANS
58	EO	Misc.	Other auto eqp	OTHER AUTOMATED SYSTEM
61	FP	Airline	Flight plan	FLIGHT PLAN, late completion or change of, flight documentation
62	FF	Airline	Ops requirement	OPERATIONAL REQUIREMENTS, fuel, load alteration
63	FT	Airline	Late crew procedure	LATE CREW BOARDING OR DEPARTURE PROCEDURES, other than connection and standby (flight deck or entire crew)
64	FS	Airline	Fltcrew short	FLIGHT DECK CREW SHORTAGE, sickness, awaiting standby, flight time limitations, crew meals, valid visa, health documents, etc.
65	FR	Airline	Fltcrew specreq	FLIGHT DECK CREW SPECIAL REQUEST, not within operational requirements
66	FL	Airline	Late cabin crew	LATE CABIN CREW BOARDING OR DEPARTURE PROCEDURES, other than connection and standby
67	FC	Airline	Cabcrew short	CABIN CREW SHORTAGE, sickness, awaiting standby, flight time limitations, crew meals, valid visa, health documents, etc.
68	FA	Airline	Cabcrew specreq	CABIN CREW ERROR OR SPECIAL REQUEST, not within operational requirements
69	FB	Airline	Capt req sec ck	CAPTAIN REQUEST FOR SECURITY CHECK, extraordinary
71	WO	Weather	Weather at origin	WEATHER DEPARTURE STATION
72	WT	Weather	Weather at destination	WEATHER DESTINATION STATION
73	WR	Weather	Weather en route	WEATHER EN ROUTE OR ALTERNATE
75	WI	Weather	De-ice/De-snow	DE-ICING OF AIRCRAFT, removal of ice and/or snow, frost prevention excluding unserviceability of equipment
76	WS	Weather	Removal snow from airport	REMOVAL OF SNOW, ICE, WATER AND SAND FROM AIRPORT
77	WG	Weather	G/H VS bad weather	GROUND HANDLING IMPAIRED BY ADVERSE WEATHER CONDITIONS
81	AT	ATC	ATC Clearance	ATFM due to ATC EN-ROUTE DEMAND/CAPACITY, standard demand/capacity problems
82	AX	ATC	ATC Staff/Equipment problem	ATFM due to ATC STAFF/EQUIPMENT EN-ROUTE, reduced capacity caused by industrial action or staff shortage, equipment failure, military exercise or extraordinary demand due to capacity reduction in neighbouring area
83	AE	ATC	Slot due to regs at dest	ATFM due to RESTRICTION AT DESTINATION AIRPORT, airport and/or runway closed due to obstruction, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights
84	AW	ATC	Slot due to weather (dest)	ATFM due to WEATHER AT DESTINATION
85	AS	Airport	Mandatory Security	MANDATORY SECURITY
86	AG	Misc.	Imm/Cust/Health	IMMIGRATION, CUSTOMS, HEALTH
87	AF	Airport	Airport Facilities	AIRPORT FACILITIES, parking stands, ramp congestion, lighting, buildings, gate limitations, etc.
88	AD	Misc.	Restriction at destination	RESTRICTIONS AT AIRPORT OF DESTINATION, airport and/or runway closed due to obstruction, industrial action, staff shortage, political unrest, noise abatement, night curfew, special flights
89	AM	Airport	ATC/Ground control	RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS, including Air Traffic Services, start-up and pushback, airport and/or runway closed due to obstruction or weather, industrial action, staff shortage, politcal unrest, noise abatement, night curfew, special flights
91	RL	Airline	Load connection	LOAD CONNECTION, awaiting load from another flight
92	RC	Airline	Flight crew rotation	THROUGH CHECK-IN ERROR, passenger and baggage
93	RA	Airline	Reactionary	AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector
94	RS	Airline	Cabin crew rotation	CABIN CREW ROTATION, awaiting cabin crew from another flight
95	RE	Airline	Crew rotation	CREW ROTATION, awaiting crew from another flight (flight deck or entire crew)
96	RO	Airline	Ops control	OPERATIONS CONTROL, re-routing, diversion, consolidation, aircraft change for reasons other than technical
97	MI	Misc.	Industrial action	INDUSTRIAL ACTION WITH OWN AIRLINE
98	MO	Misc.	Industrial action	INDUSTRIAL ACTION OUTSIDE OWN AIRLINE, excluding ATS
99	MX	Misc.	Misc.	OTHER REASON, not matching any code above

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GEORGE BEST BELFAST CITY AIRPORT

2019 ANNUAL REPORT

Report to

George Best Belfast City Airport
Sydenham By-Pass
Belfast
BT3 9JH

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Bickerdike Allen Partners LLP is an integrated practice of Architects, Acousticians, and Construction Technologists, celebrating over 50 years of continuous practice.

Architects: Design and project management services which cover all stages of design, from feasibility and planning through to construction on site and completion.

Acoustic Consultants: Expertise in planning and noise, the control of noise and vibration and the sound insulation and acoustic treatment of buildings.

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Appendices

1.0 INTRODUCTION

The planning agreement[1] between Belfast City Airport Limited (BCA) and the Department for Infrastructure dated 22 July 2019 sets out regular reporting that the airport is required to make. The required reporting includes an Annual Performance Report (APR) which is to be submitted annually on 31 March. The content of the APR is detailed in paragraphs 6.7.1 to 6.7.15 of *PART II The Covenants* of the agreement.

Bickerdike Allen Partners LLP (BAP) have been retained by George Best Belfast City Airport (GBBCA) to produce some of the information required for the APR, specifically the information related to the following paragraphs:

- 6.7.1 Noise exposure contours
- 6.7.2 Comparison of noise contour areas
- 6.7.3 Air traffic movements the contours are based on
- 6.7.6 The Quota Count for the previous year
- 6.7.7 A record of movements by aircraft types not permitted to use the airport in the previous year (those only marginally compliant with Chapter 3)
- 6.7.14 (Partial) An evaluation of the data reported, specifically that we are preparing.

Noise contours have been produced for 2019 based on the actual aircraft movements over the 92 day summer period, and for 2020 and 2021 based on forecasts provided by GBBCA. All of the noise contours have been produced using the Federal Aviation Administration's prediction software, the Integrated Noise Model (INM) version 7.0d. This methodology has been validated for the key aircraft types operating at the airport, using results from the Noise Monitoring Terminals (NMTs) installed at GBBCA.

Section 2 of this report gives details of the air traffic movements used to produce the noise contours. Section 3 gives details of the methodology used to produce the noise contours. Section 4 reports the areas of the noise contours and compares them with the 57 dB $L_{Aeq,16h}$ noise contour area limit. Population counts for the key noise exposure contours are also provided. Section 5 reports the results of the quota count assessment for 2019. Section 6 gives details of movements in 2019 by aircraft types that were only marginally compliant with Chapter 3.

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[1] Agreement Pursuant to Section 77(1)(a) of the Planning Act (Northern Ireland) 2011

A glossary of acoustic and aviation terms can be found in Appendix 1, with Appendix 2 containing details of BAP's validation exercise with respect to noise.

2.0 AIRCRAFT MOVEMENTS

The basis for the 2019 noise contours are the actual movements during the 92 day summer period, 16 June to 15 September inclusive. Detailed information was provided by GBBCA for all aircraft movements during this period. Although a small proportion of movements occur early in the morning between 6:30 and 7:00 or late in the evening between 23:00 and 23:30 over the 92 day period, for the production of the noise contours all movements have been modelled as taking place within the "daytime period" of 07:00 to 23:00.

The actual movements in 2019 include 24 movements by helicopters. Historically helicopters have not been modelled at GBBCA, as they typically comprise less than 1% of the total movements, and this was also the case in 2019. Their continued omission is not considered significant to the overall contours due to their small number of movements and maintains consistency with previous contouring.

Forecasts for 2020 and 2021 have been provided in the form of 92 day summer schedules. As these are schedules they do not allow for unscheduled movements. Therefore the movements by general aviation aircraft and business jets from summer 2019 have been added to the forecast schedules.

The INM software includes noise information for many common aircraft types, but as with all noise modelling software, it does not include every aircraft type. This means that substitutions are required, where an alternative aircraft type is used to model the actual type. For larger aircraft this generally does not involve a change but for the smaller types, and in particular the general aviation aircraft, substitutions occur. Where INM has no guidance, an aircraft type has been assigned based on the aircraft size and engine details. Table 1 below shows the aircraft movements by aircraft type in summer 2019 and those forecast for 2020 and 2021. It also includes the INM type used for each aircraft type in the modelling.

Total movements are forecast to increase by around 4% from 2019 to 2020. In terms of the aircraft fleet, movements by the ATR-72 and Boeing 737-300 are forecast to cease, and movements by the Embraer E175 are forecast to reduce significantly. Movements by the Dash 8-Q400, the Embraer E190 and the Saab 340 are forecast to increase. From 2020 to 2021 movements by the Airbus A320ceo are forecast to increase by one rotation a day.

Aircraft Type	INM Type(s)	Summer Fixed Wing Movements		
		2019 Actual	2020 Forecast	2021 Forecast
Airbus A319ceo	A319-131[(1)]	369	420	420
Airbus A320ceo	A320-211[(1)]	984	896	1,080
Airbus A320neo	A320-211[(1)]	78	132	132
ATR72-600	DO328	318	0	0
Beechcraft Super King Air	CNA441	18	18	18
Boeing 737-300	737300[(1)]	354	0	0
Boeing 737-700	737700	12	0	0
Bombardier Dash 8-Q400	SD330/DHC6[(1)]	6,057	7,176	7,176
Bombardier Global Express	GV	10	10	10
Cessna Citation Excel	CNA560XL	30	30	30
Cessna Citation Sovereign	CNA680	12	12	12
Cessna CitationJet 2	CNA525C	12	12	12
Embraer E145	EMB145	310	0	0
Embraer E175	EMB175/737500[(1)]	688	52	52
Embraer E190	EMB190	124	684	684
Embraer E195	EMB195	12	0	0
Embraer Phenom 300	CNA510	12	12	12
Gulfstream V	GV	16	16	16
Pilatus PC12	CNA208	65	65	65
Saab 340	SF340	108	496	496
Other (less than 10 movements by any one type)	Various	156	138	138
Total		**9,745**	**10,169**	**10,353**

[(1)] INM type modified based on results of a validation exercise.

Table 1: 2019, 2020 and 2021 Summer Fixed Wing Movements

3.0 NOISE CONTOUR METHODOLOGY

3.1 General

The aircraft movement data, provided by GBBCA, has been assessed in relation to aircraft type, departure and arrival route, flight profiles and runway usage to enable input into the noise computation program, the Integrated Noise Model (INM). This section of the report describes how this information has been compiled in a form suitable for analysis purposes.

3.2 Runway Usage

The overall split of movements by runway during the 2019 summer period is given in Table 2, and is compared with the long term average (2015-2019). For the 2019 actual contours, the actual runway usage for each individual movement was used. For the 2020 and 2021 forecast contours the long term average modal split has been used.

Runway	% of Summer Movements			
	2019		2015-2019 Average	
	Arrivals	Departures	Arrivals	Departures
04	23%	26%	26%	30%
22	77%	74%	74%	70%

Table 2: 2019 and Long Term Average Summer Modal Split

The usage of the runways is dependent on the direction of the wind, therefore some variation is to be expected between individual years. Compared to the long term average there was around 3% less usage of runway 04 by arrivals and around 4% less usage of runway 04 by departures in 2019, with corresponding increases in the usage of runway 22.

3.3 Flight Tracks

For each runway there is a single modelled arrival route, which follows the runway centreline. There is one modelled initial departure route on runway 22, but four modelled initial departure routes on runway 04.

A validation exercise was undertaken in 2011 to validate the flight tracks used in the INM software. The details of this exercise are shown in Appendix B of BAP's report Ref: A9443-R01-NW dated November 2011. The resulting main departure tracks are shown in Figure 01 and have been used for the contours as there have been no changes to the published routes since 2011.

The method of determining the split of aircraft between the routes from runway 04 takes into account both aircraft type and destination. Where the destination is in Scotland or in Northern Europe (Iceland, Norway, etc.) the initial route heading in a north easterly direction is used. The remaining traffic is split amongst the three routes which turn south. The particular route depends on the distance at which the aircraft type involved is expected to have achieved one of a set of specific altitudes, as required by the airport's noise abatement procedures. These altitudes are 1,500 ft for small propeller aircraft (maximum takeoff weight of up to 13,000 kg); 2,000 ft for large propeller aircraft; and 3,000 ft for jet aircraft.

3.4 Dispersion

Aircraft on departure are allocated a departure route to follow. In practice, this route is not followed precisely by all aircraft. To allow for this the INM software was used to generate a mean track for each of the five initially distinct routes, and these mean tracks were then dispersed as described below.

The dispersion model has the common assumption that there are five "dispersed" tracks associated with each departure route; these comprise the mean track of each route and two sub-tracks either side, as the actual pattern of departing aircraft is dispersed about the route's centreline. The degree of dispersion is normally a function of the distance travelled by an aircraft along the route after take-off and also on the form of the route.

When considering many departures, it is commonly found that the spread of aircraft approximates to a "normal distribution" pattern. A simplified mathematical model can be adopted to represent a normal distribution of events, based on standard deviations. Five "dispersed" tracks associated have been used to model each departure route; these comprise the mean track of each route and two sub-tracks either side. The resulting allocation of movements to each track is as follows:

- 53.3% departures along the main track;
- 22.2% departures split equally along two inner sub tracks either side of the main track and offset by a distance of 1.355 standard deviations;
- 1.15% departures split equally along two outer sub tracks either side of the main track and offset by a distance of 2.71 standard deviations.

This dispersion model has been used in the INM software, which generates the sub-tracks with distances supplied by the user. The distances and percentages used have been determined by BAP from analysis of similar activity at other airports.

3.5 Flight Profiles

For departure movements the INM software offers a number of standard flight profiles for most aircraft types, particularly for the larger aircraft types. These relate to different departure weights which are greatly affected by the length of the flight, and consequently the fuel load. In the INM software this is referred to as the stage length. The stage length increases in increments of 500 nmi up to 1,500 nmi and then in increments of 1,000 nmi. The INM software assumes all aircraft take off with a full load irrespective of stage length. As the stage length increases, the aircraft has to depart with greater fuel, and so its flight profile is slightly lower than when a shorter stage length is flown.

The actual departure movements for 2019 and most of those forecast for 2020 and 2021 are accompanied by the specific destination airports. Stage lengths have been assigned, where INM offers the option, based on the distance of these airports from GBBCA. For a small number of the 2020 and 2021 movements the forecasts do not provide a destination airport. For these flights a stage length has been assigned based on advice from GBBCA.

3.6 INM Model

All contours and population counts have been determined using the Integrated Noise Model (INM) version 7.0d software. GBBCA data relevant to the INM study is taken from the latest edition of the UK Aeronautical Information Package. A 3.0° approach angle has been used for all aircraft and the ground topography has been assumed to be flat. The INM default headwind of 14.8 km/h has been assumed.

Results from the airport's Noise Monitoring Terminals (NMTs) from the period November 2018 to September 2019 have been used for the 2019 validation exercise to review the INM assumptions for the key aircraft types operating at GBBCA.

The 2019 validation exercise found that modifications were required for six aircraft types, to better model their operations at GBBCA. These included types such as the Bombardier Dash 8-Q400 for which the INM does not contain specific data. The result is that the modelled noise characteristics of these aircraft have been adjusted by modifying the INM aircraft used and/or the noise level of the INM aircraft types. Where modifications have been made to the noise levels, this has been done using a movement multiplier. These adjustments are detailed in Table 3 below.

Aircraft Type	Default INM Type	Modification to INM Assumptions	
		Departures	Arrivals
Airbus A319ceo	A319-131	A319-131 × 1.4	A319-131 × 0.7
Airbus A320ceo	A320-211	A320-211 × 1.1	A320-211
Airbus A320neo	-	A320-211 × 0.4	A320-211 x 0.6
Boeing 737-300	737300	737300 x 2.8	737300 x 1.7
Bombardier Dash 8-Q400	-	DHC6 × 0.8	SD330 × 1.4
Embraer E175	EMB175	737500 × 1.3	EMB175 × 1.2

Table 3: Modifications to INM Assumptions Used for the Contours

The modifications to the INM assumptions are the same for most of the types as those used for the 2018 contours, following the previous validation. The Airbus A320neo has begun operations and so was validated for the first time in 2019. The other change is to the multiplier for departures by the Boeing 737-300, which has been increased from 2.2 to 2.8, because the measured departure noise levels for this aircraft type have increased by around 1 dB. Full details of the 2019 validation exercise are given in Appendix 2.

4.0 NOISE CONTOURS

Noise contours for 2019, 2020 and 2021 in terms of the $L_{Aeq,16h}$ metric have been produced for the 16 hour daytime period, 07:00 to 23:00; although they also include the movements that occur between 06:30 and 07:00 and the small number that occurred between 23:00 and 23:30. They are based on the actual movements for the 92 day summer period in 2019 and the forecasts provided for 2020 and 2021 as detailed in Section 2. The areas of the noise contours are given in Table 4, where they are compared with the 57 dB $L_{Aeq,16h}$ contour area limit.

The 2019 actual, 2020 forecast and 2021 forecast noise contours are shown in Figures 02, 03 and 04 respectively at values from 54 to 69 dB $L_{Aeq,16h}$ in 3 dB steps. The 57 dB contours for all three years are compared in Figure 05.

Contour Level ($dB\ L_{Aeq,16h}$)	Area of Daytime Air Noise Contours (km^2)			Contour Area Limit ($km)^2$
	2019	2020	2021	
54	6.6	5.6	5.8	-
57	3.3	2.7	2.9	5.2
60	1.7	1.4	1.5	-
63	0.9	0.8	0.8	-
66	0.5	0.5	0.5	-
69	0.3	0.3	0.3	-

Table 4: 2019, 2020 and 2021 Noise Contour Areas

The area of the 2019 57 dB $L_{Aeq,16h}$ contour area is 3.3 km^2, which is well below the contour area limit of 5.2 km^2.

The noise contours for 2020 are forecast to be smaller than those for 2019, despite a slight increase in total movements. This is due to the changes to the fleet mix forecast for 2020. In particular the ending of flights by the Boeing 737-300, which is relatively loud compared to other aircraft types that operate at GBBCA. The noise contours for 2021 are slightly larger than those for 2020, due to the forecast increase in movements.

4.1 Population and Dwelling Counts

The population and dwelling data has been derived from a 2018 postcode level database supplied by CACI Ltd. Population counts for the 2019, 2020 and 2021 $L_{Aeq,16h}$ daytime contours are given in Table 5 and Table 6 below, the corresponding dwelling counts are given in Table 7 and Table 8.

Contour Level ($dB\ L_{Aeq,16h}$)	2019 Population	2020 Population	2021 Population
54	14,033	10,036	10,819
57	4,085	1,405	2,096
60	32	0	0
63	0	0	0
66	0	0	0
69	0	0	0

Table 5: Comparison of 2019, 2020 and 2021 Population Counts – Cumulative Totals

Year	Population by Contour Band (dB $L_{Aeq,16h}$)						Total
	> 69	69 – 66	66 – 63	63 – 60	60 – 57	57 – 54	
2019	0	0	0	32	4,053	9,948	14,033
2020	0	0	0	0	1,405	8,631	10,036
2021	0	0	0	0	2,096	8,723	10,819

Table 6: Comparison of 2019, 2020 and 2021 Population Counts

Contour Level (dB $L_{Aeq,16h}$)	2019 Dwellings	2020 Dwellings	2021 Dwellings
54	6,699	4,702	5,071
57	1,826	652	963
60	16	0	0
63	0	0	0
66	0	0	0
69	0	0	0

Table 7: Comparison of 2019, 2020 and 2021 Dwelling Counts – Cumulative Totals

Year	Dwellings by Contour Band (dB $L_{Aeq,16h}$)						Total
	> 69	69 – 66	66 – 63	63 – 60	60 – 57	57 – 54	
2019	0	0	0	16	1,810	4,873	6,699
2020	0	0	0	0	652	4,050	4,702
2021	0	0	0	0	963	4,108	5,071

Table 8: Comparison of 2019, 2020 and 2021 Dwelling Counts

The number of people and dwellings within the 2020 contours is smaller than the number within the 2019 contours, largely due to the reduction in the area of the 2020 contours. The 2021 contours contain slightly more people and dwellings than the 2020 contours, due to increase in the area of the 2021 contours. There are 32 people and 16 dwellings within the 63 – 60 dB $L_{Aeq,16h}$ contour band in 2019. No one is forecast to be exposed to over 60 dB $L_{Aeq,16h}$ in 2020 or 2021.

5.0 QUOTA COUNT

As part of their planning agreement BCA are required to report the quota count for the year just completed. The quota count is based on the aircraft movements in the 92 day summer period and is limited to 4,665.

The quota count production methodology is described in paragraphs 6.4 to 6.6 of *PART II The Covenants* of the agreement. In summary, the method requires the certification data for the aircraft type, which is then processed and compared to a scale to determine the quota count for the aircraft type when arriving, and separately when departing.

For the aircraft that operated, the noise certification data has been obtained either from the noise certificate of the specific aircraft, or for those registered in the UK from the CAA G-INFO database[2] and those registered in Switzerland from the FOCA Swiss Aircraft Register[3]. Where certification data was not available, quota count values have been taken from the tables in the latest UK AIP Supplement[4]. In some cases the tables offer more than one value for an aircraft type, in these cases the expected QC value based on available information has been used, and where only limited information is available the higher QC value has been taken.

The resulting quota count total for summer 2019 was 2,216.375, which is less than the limit of 4,665.

Table 9 below gives details of how the quota count for summer 2019 has been calculated, including the specific arrival and departure quota count values used for the key aircraft types. Where more than one quota count value has been used for an aircraft type based on the individual noise certificates, both values are shown.

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[2] https://siteapps.caa.co.uk/g-info/

[3] https://www.bazl.admin.ch/bazl/en/home/specialists/aircraft/aircraft-noise-certification.html

[4] http://www.nats-uk.ead-it.com/public/index.php%3Foption=com_content&task=blogcategory&id=11&Itemid=18.html

<table>
<tr><th>Aircraft Type</th><th>Arrivals</th><th>Arrival QC</th><th>Departures</th><th>Departure QC</th><th>QC Total</th></tr>
<tr><td>Airbus A319ceo</td><td>185</td><td>0.25</td><td>184</td><td>0.25</td><td>92.250</td></tr>
<tr><td rowspan="2">Airbus A320ceo</td><td rowspan="2">492</td><td rowspan="2">0.25</td><td>491</td><td>0.5</td><td rowspan="2">369.500</td></tr>
<tr><td>1</td><td>1</td></tr>
<tr><td>Airbus A320neo</td><td>39</td><td>0.125</td><td>39</td><td>0.125</td><td>9.750</td></tr>
<tr><td>ATR72-600</td><td>159</td><td>0.125</td><td>159</td><td>0.125</td><td>39.750</td></tr>
<tr><td>Boeing 737-300</td><td>177</td><td>0.5</td><td>177</td><td>0.5</td><td>177.000</td></tr>
<tr><td>Bombardier Dash 8-Q400</td><td>3029</td><td>0.25</td><td>3028</td><td>0.125</td><td>1135.750</td></tr>
<tr><td>Embraer E145</td><td>155</td><td>0.125</td><td>155</td><td>0.125</td><td>38.750</td></tr>
<tr><td rowspan="2">Embraer E175</td><td rowspan="2">344</td><td rowspan="2">0.25</td><td>142</td><td>0.25</td><td rowspan="2">222.500</td></tr>
<tr><td>202</td><td>0.5</td></tr>
<tr><td rowspan="2">Embraer E190</td><td rowspan="2">62</td><td rowspan="2">0.125</td><td>58</td><td>0.25</td><td rowspan="2">24.250</td></tr>
<tr><td>4</td><td>0.5</td></tr>
<tr><td>Pilatus PC12</td><td>33</td><td>Exempt</td><td>32</td><td>Exempt</td><td>0.000</td></tr>
<tr><td rowspan="2">Saab 340</td><td>2</td><td>0.125</td><td>2</td><td>0.125</td><td rowspan="2">26.500</td></tr>
<tr><td>52</td><td>0.25</td><td>52</td><td>0.25</td></tr>
<tr><td>Other[1]</td><td>187</td><td>Various</td><td>191</td><td>Various</td><td>80.375</td></tr>
<tr><td>Total</td><td>4,916</td><td>-</td><td>4,917</td><td>-</td><td>2,216.375</td></tr>
</table>

[1] Includes 88 movements by helicopters

Table 9: Summer 2019 Quota Count

6.0 MARGINALLY COMPLIANT CHAPTER 3 AIRCRAFT MOVEMENTS

As part of their planning agreement BCA are required to accept in respect of jet aircraft, only those air traffic movements that comply with the certificate limits, as laid down in Chapter 3 of Annex 16, of the standards adopted by the International Civil Aviation Organisation Council and which are not Marginally Compliant Aircraft. BCA are required to report any movements in the year just completed by any aircraft not permitted to use the airport.

For the aircraft that operated in 2019, the noise certification data has been obtained either from the noise certificate of the specific aircraft, or for those registered in the UK from the CAA G-INFO database[2] and those registered in Switzerland from the FOCA Swiss Aircraft Register[3]. Where specific certification data was not available, certification values have been taken from the latest EASA Approved Noise Levels[5]. In some cases the EASA database offers more than one possible classification for an aircraft type. In cases where one of the possible classifications is for non-compliance with Chapter 3 or only marginal Chapter 3 compliance, then the movements by this aircraft will be counted as “Unknown Classification”. However there were no instances of this in 2019.

The were no movements in 2019 by jet aircraft types that do not meet the requirements of Chapter 3 or are only marginally compliant with Chapter 3, as shown below in Table 10. The table also includes the number of movements that comply with Chapter 3, but not marginally, or comply with Chapter 4 or Chapter 14, and the number where the classification is unknown. The certification of helicopters and light propeller aircraft is to different standards and so these aircraft have been separately recorded.

2019 Aircraft Movements				
Chapter 3 Marginally Compliant	Chapter 3 Fully Compliant / Chapter 4 / Chapter 14	Unknown Classification	Helicopters and Light Propeller Aircraft	Total
0	34,617	0	765	35,382

Table 10: 2019 Aircraft Noise Classification

[5] https://www.easa.europa.eu/easa-and-you/environment/easa-certification-noise-levels

7.0 SUMMARY

$L_{Aeq,16h}$ noise contours and the associated population counts have been produced, based on the actual movements during the 92 day summer period in 2019, and the forecast summer movements for 2020 and 2021. The movements used to produce them have been reported in addition to the contours and the number of people they contain.

The area of the 2019 57 dB $L_{Aeq,16h}$ contour area at 3.3 km^2 is well below the contour area limit of 5.2 km^2. The contours for 2020 and 2021 are smaller than those for 2019 with 57 dB contour areas of 2.7 and 2.9 km^2 respectively. This is due to the forecast changes in the fleet mix, and in particular the ending of flights by the Boeing 737-300 which is relatively noisy.

Due to the reduction in the area of the 2020 and 2021 contours they contain fewer people than the 2019 contours. Considering those most exposed, in 2019 there were 32 people within the 60 to 63 dB $L_{Aeq,16}$ contour band. No one is forecast to be exposed to over 60 dB in 2020 or 2021.

The quota count total for summer 2019 was 2216.375, which is less than the limit of 4,665.

The were no movements in 2019 by jet aircraft types that do not meet the requirements of Chapter 3 or are only marginally compliant with Chapter 3 in compliance with the restriction on the airport.

Duncan Rogers **David Charles**
for Bickerdike Allen Partners **Partner**

LEGEND:

Initial Departure Routes

REVISIONS

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Regular Reporting

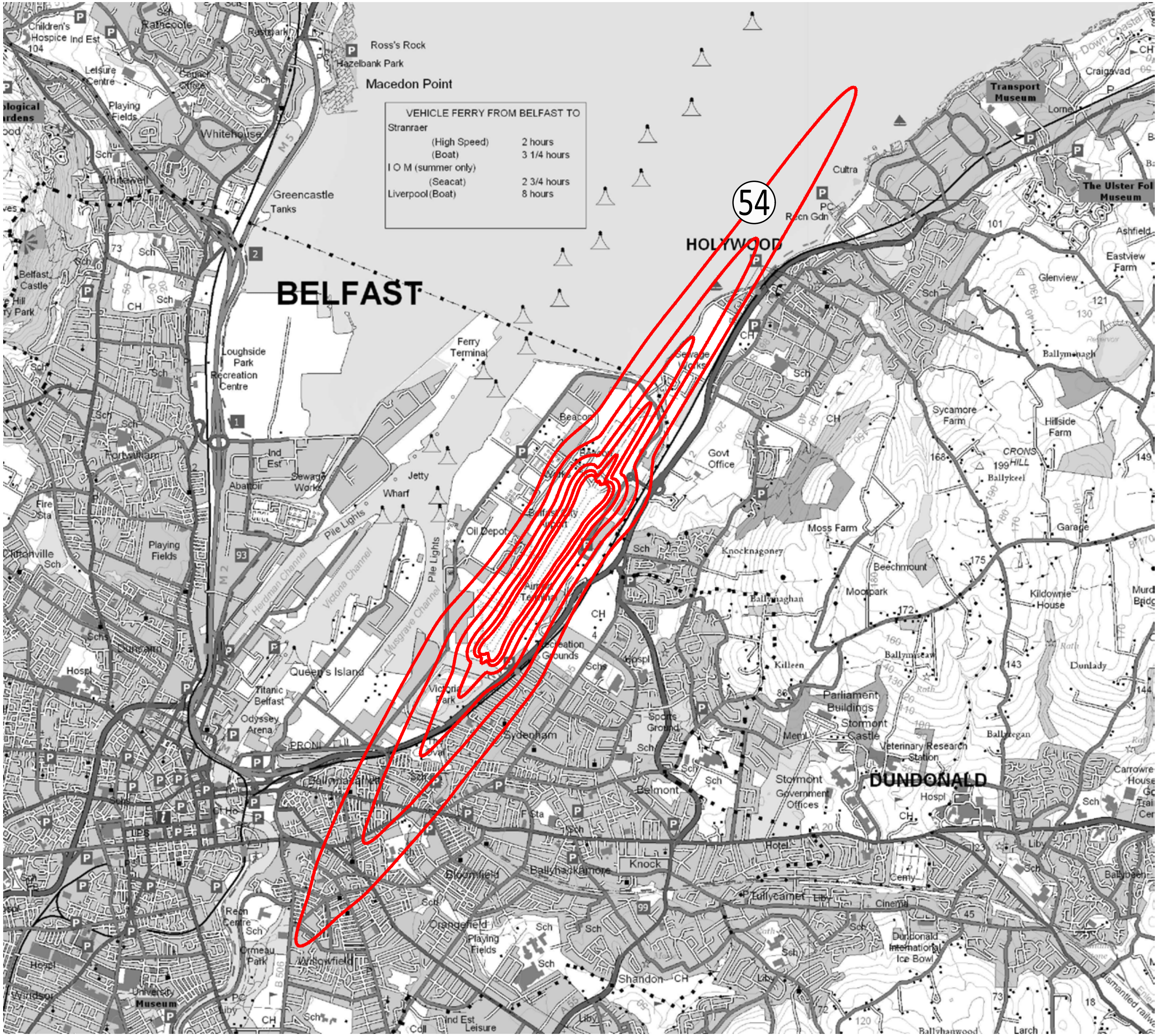
Figure 01
Initial Departure Routes

DRAWN: MP CHECKED: DR

DATE: January 2020 SCALE: 1:125000@A4

FIGURE No:

A11298_02_DR001_2.0



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LEGEND:

Noise Contours,
54 to 69 dB $L_{Aeq,16h}$ in 3 dB steps

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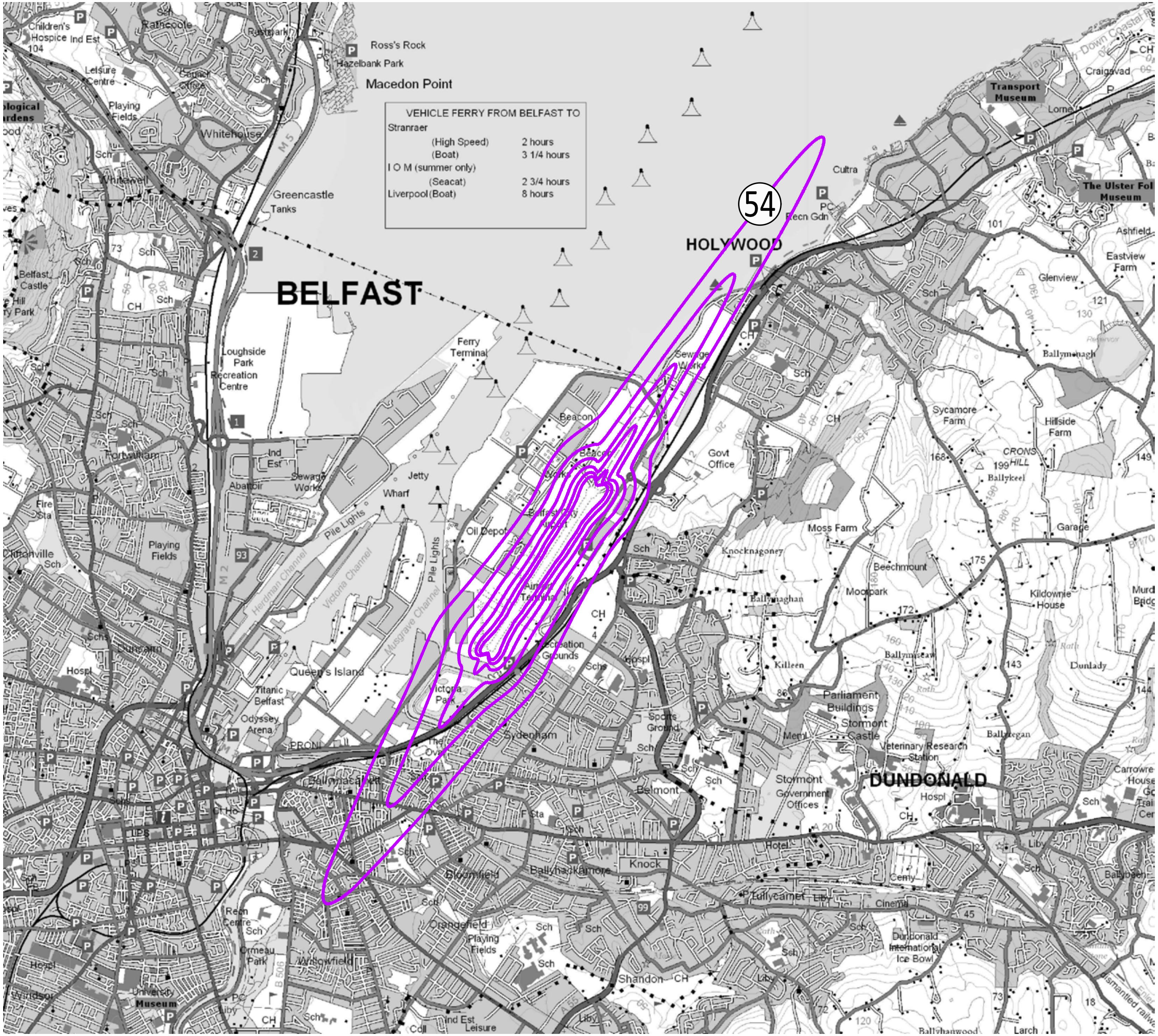
Figure 02
Summer Daytime Noise Contours
2019

DRAWN: MP | CHECKED: DR

DATE: January 2020 | SCALE: 1:50000@A4

FIGURE No:
A11298_02_DR002_2.0



LEGEND:

Noise Contours, 54 to 69 dB $L_{Aeq,16h}$ in 3 dB steps

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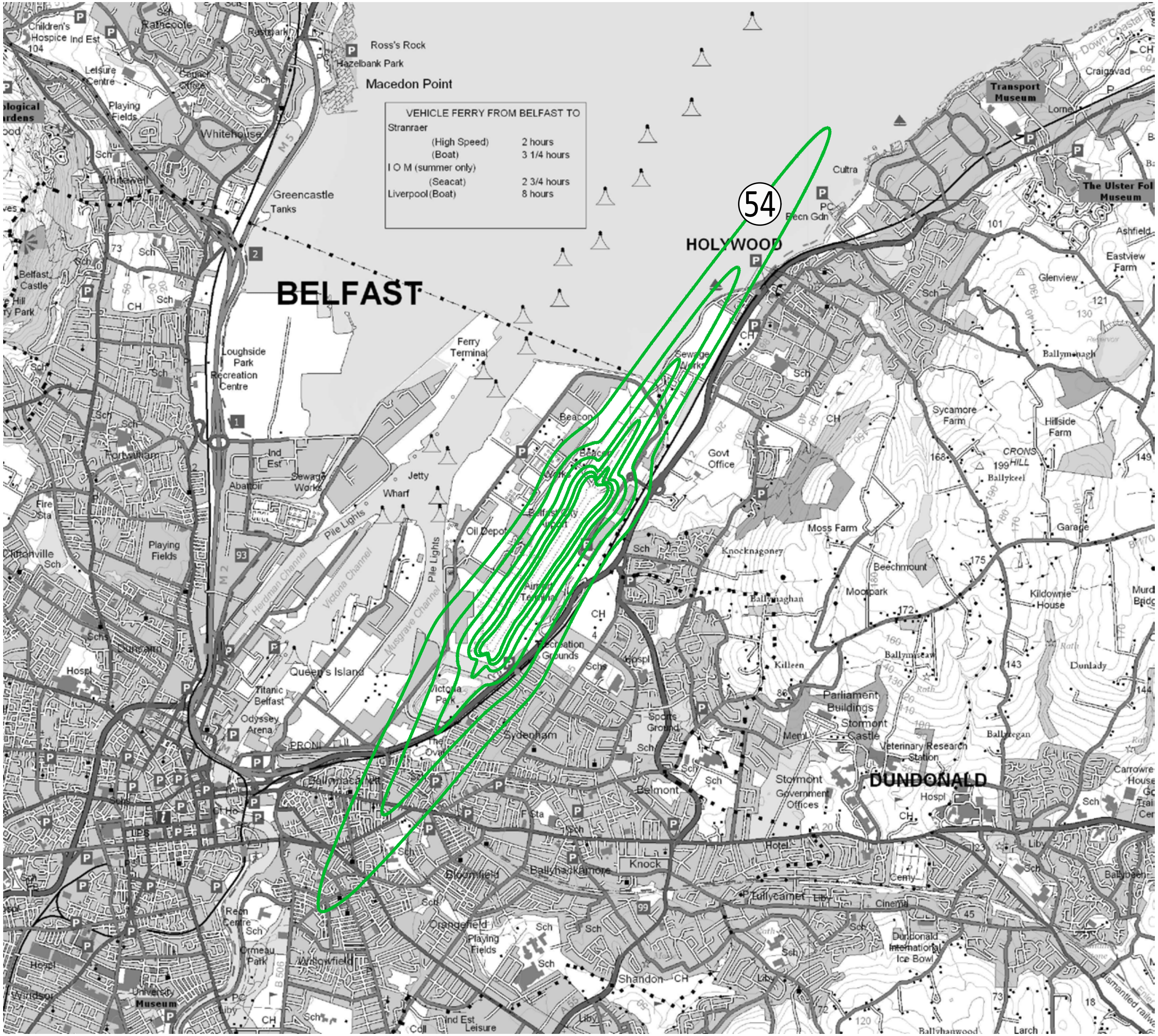
Figure 03
Summer Daytime Noise Contours
2020 Forecast

DRAWN: MP CHECKED: DR

DATE: January 2020 SCALE: 1:50000@A4

FIGURE No:

A11298_02_DR003_1.0



LEGEND:

Noise Contours, 54 to 69 dB $L_{Aeq,16h}$ in 3 dB steps

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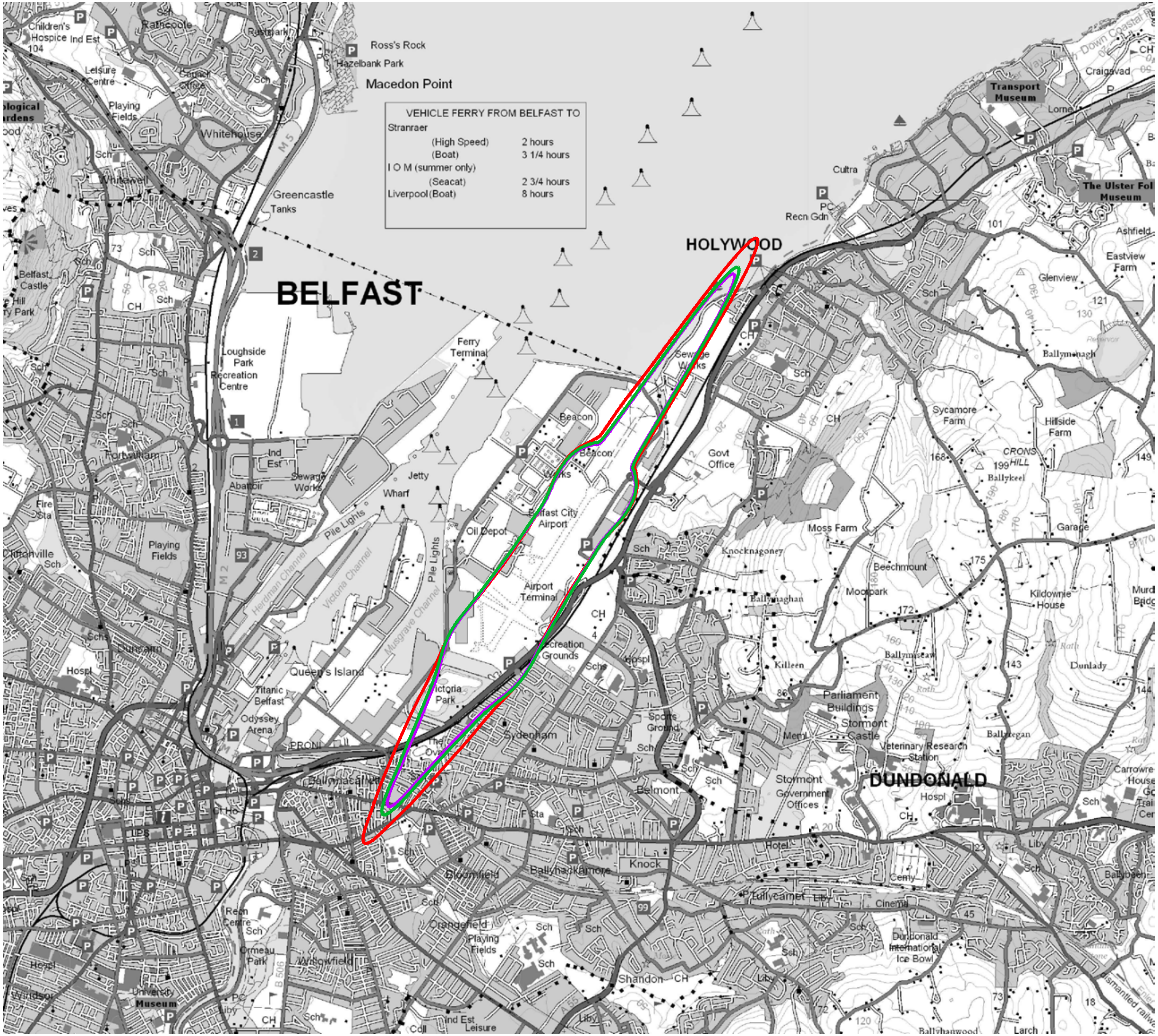
Figure 04
Summer Daytime Noise Contours
2021 Forecast

DRAWN: MP CHECKED: DR

DATE: January 2020 SCALE: 1:50000@A4

FIGURE No:

A11298_02_DR004_1.0



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LEGEND:

Noise Contours,

- 2019 (red)
- 2020 (purple)
- 2021 (green)

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Figure 05
Comparison of 2019, 2020 and 2021
57 dB $L_{Aeq,16h}$ Summer Daytime Noise Contours

DRAWN: MP CHECKED: DR

DATE: January 2020 SCALE: 1:50000@A4

FIGURE No:

A11298_02_DR005_1.0

APPENDIX 1

GLOSSARY OF ACOUSTIC AND AVIATION TERMINOLOGY

Sound

This is a physical vibration in the air, propagating away from a source, whether heard or not.

The Decibel, dB

The unit used to describe the magnitude of sound is the decibel (dB) and the quantity measured is the sound pressure level. The decibel scale is logarithmic and it ascribes equal values to proportional changes in sound pressure, which is a characteristic of the ear. Use of a logarithmic scale has the added advantage that it compresses the very wide range of sound pressures to which the ear may typically be exposed to a more manageable range of numbers. The threshold of hearing occurs at approximately 0 dB (which corresponds to a reference sound pressure of 2 x 10^{-5} Pascals) and the threshold of pain is around 120 dB.

The sound energy radiated by a source can also be expressed in decibels. The sound power is a measure of the total sound energy radiated by a source per second, in Watts. The sound power level, L_w is expressed in decibels, referenced to 10^{-12} Watts.

Frequency, Hz

Frequency is analogous to musical pitch. It depends upon the rate of vibration of the air molecules which transmit the sound and is measure as the number of cycles per second or Hertz (Hz). The human ear is sensitive to sound in the range 20 Hz to 20,000 Hz (20 kHz). For acoustic engineering purposes, the frequency range is normally divided up into discrete bands. The most commonly used bands are octave bands, in which the upper limiting frequency for any band is twice the lower limiting frequency, and one-third octave bands, in which each octave band is divided into three. The bands are described by their centre frequency value and the ranges which are typically used for building acoustics purposes are 63 Hz to 4 kHz (octave bands) and 100 Hz to 3150 Hz (one-third octave bands).

A-Weighting

The sensitivity of the ear is frequency dependent. Sound level meters are fitted with a weighting network which approximates to this response and allows sound levels to be expressed as an overall single figure value, in dB(A).

Effective Perceived Noise Level

Effective Perceived Noise Level (EPNL) is a measure used to express noise levels which involves analyses of frequency spectra of noise events as well as the duration of sound. The measurement unit for EPNL is EPNdB. This measure is used for the noise certification of aircraft, and the subsequent quota count determination.

Quota Count

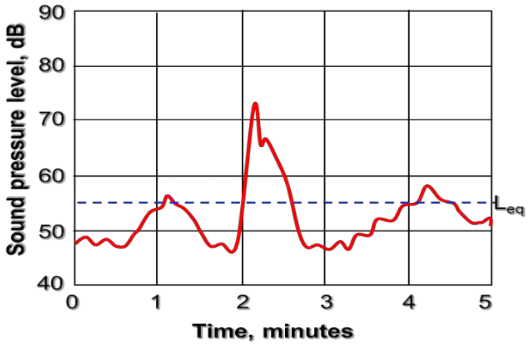
The value assigned to one take-off or to one landing by the aircraft in question, this number being related to its noise classification. The classification is the determined from the noise level band in EPNdB, for take-off or landing, as the case may be, for the aircraft in question, as defined in the individual aircraft's noise certification form.

Environmental noise descriptors

Where noise levels vary with time, it is necessary to express the results of a measurement over a period of time in statistical terms. Some commonly used descriptors follow.

$L_{Aeq,T}$ The most widely applicable unit is the equivalent continuous A-weighted sound pressure level ($L_{Aeq,T}$). It is an energy average and is defined as the level of a notional sound which (over a defined period of time, T) would deliver the same A-weighted sound energy as the actual fluctuating sound.

This is shown in the graph below:



Noise Contour

A line which joins points on the ground which receive the same noise exposure from the nearby airborne aircraft; often for daytime studies the exposure is considered over a 16 hour period ($L_{Aeq,16h}$) and for night studies over a 8 hour period ($L_{Aeq,8h}$) with a range of levels used to express the different exposures.

Sound transmission in the open air

Most sources of sound can be characterised as a single point in space. The sound energy radiated is proportional to the surface area of a sphere centred on the point. The area of a sphere is proportional to the square of the radius, so the sound energy is inversely proportional to the square of the radius. This is the inverse square law. In decibel terms, every time the distance from a point source is doubled, the sound pressure level is reduced by 6 dB.

Meteorological effects

Temperature and wind gradients affect noise transmission, especially over large distances. The wind effects range from increasing the level by typically 2 dB downwind, to reducing it by typically 10 dB upwind – or even more in extreme conditions. Temperature and wind gradients are variable and difficult to predict.

Aviation terms

NPR

Noise preferential route – departure flight ground tracks to be followed by aircraft to minimise noise disturbance on the surrounding population.

Dispersion

Due to the effect of the wind, aircraft speed, and pilot choice differing aircraft tracks about the nominal track are flown; this is known as dispersion around a nominal track.

Start of Roll

The position on a runway where aircraft commence their take-off runs.

Threshold

The beginning of that portion of the runway usable for landing.

Radar Vectoring

Aircraft are provided by Air Traffic Control (ATC) with various instructions which result in changes of heading, altitude and speed. The controller affects safe separation from other traffic by use of radar.

Nominal Tracks

Using recognised international design techniques, tracks across the ground can be delineated for departing and arriving aircraft. These tracks are nominal because they can be influenced by the wind, ATC instructions, the accuracy of navigational systems and the flight characteristics of individual aircraft. In UK it is usual to permit a 1500m swathe to be established about the nominal track for the purposes of assessing whether an aircraft has stayed on track.

Altitude

Height of aircraft above sea level.

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APPENDIX 2

GEORGE BEST BELFAST CITY AIRPORT

CONTOUR VALIDATION – NOISE

INTRODUCTION

Summer noise contours have been prepared for George Best Belfast City Airport (GBBCA) for a number of years. This has involved the use of the Federal Aviation Administration (FAA) prediction methodology, the Integrated Noise Model (INM).

The INM software has been used around the world in over 50 countries and consequently is flexible enough to allow local circumstances to be taken into account. This can be achieved by entering specific departure routes, operational profiles or weather conditions but also by creating or modifying specific noise information for aircraft types.

In order to improve the accuracy of the modelling at GBBCA, validation exercises have been conducted which compare predicted noise levels for individual aircraft movements with noise levels measured at Belfast. This is particularly useful for aircraft types where the INM does not have actual data and so suggests a substitute type.

CURRENT VALIDATION

Validation using NMT Results

The validation exercises use the measured results from the permanent noise monitoring system at GBBCA. Specifically the results from the Noise Monitoring Terminal (NMT) at Nettlefield Primary School (MP01) and at Kinnegar Army Camp (MP02). These NMTs are located approximately 4.5 km from the start of roll location of runway 22 and 3.9 km from the start of roll location of runway 04 respectively. The validation exercise for the 2019 actual and 2020 and 2021 forecast contours uses the most recent results from the NMTs. Specifically the results for the period November 2018 to September 2019 have been used, which comprise over 25,000 individual aircraft measurements.

Five aircraft types have been selected to be analysed in the validation exercise based upon the aircraft types' relative contribution to the noise contours. These are the Airbus A319ceo and A320ceo, the Boeing 737-300, the Bombardier Dash 8-Q400 and the Embraer E175. These aircraft types comprised around 86% of the summer period movements in 2019 and are the same aircraft types that were selected for the 2018 validation.

The Airbus A320neo is one of a new generation of quieter aircraft. It has started operating at GBBCA, although not in significant numbers to date. However as the type is not currently included in the INM database it has also been included in the validation exercise, based on initial measured results. The contours therefore allow for its lower noise levels in comparison to the Airbus A320ceo.

The resulting average measured noise levels used for the 2019 validation exercise are given below in Table A2.1 for these aircraft types. Where they are compared with the corresponding measured results used for the 2018 validation exercise. This shows that the average measured noise levels for these types have not varied by more than 1 dB compared to 2018.

Aircraft Type	Operation	2019 Validation Measured Noise Levels (SEL dB)		2018 Validation Measured Noise Levels (SEL dB)	
		Average	Number	Average	Number
Airbus A319ceo	Arrival Rwy 04	84.5	111	84.4	222
	Arrival Rwy 22	89.1	317	88.6	496
	Departure Rwy 04	90.0	98	89.7	214
	Departure Rwy 22	87.4	298	87.9	369
Airbus A320ceo	Arrival Rwy 04	85.9	314	86.4	421
	Arrival Rwy 22	90.3	984	90.0	1,450
	Departure Rwy 04	90.7	304	90.4	414
	Departure Rwy 22	87.6	904	88.2	1,181
Airbus A320neo	Arrival Rwy 04	84.1	15	-	-
	Arrival Rwy 22	88.9	28	-	-
	Departure Rwy 04	86.5	12	-	-
	Departure Rwy 22	83.5	26	-	-
Boeing 737-300	Arrival Rwy 04	90.3	72	90.3	105
	Arrival Rwy 22	94.1	107	93.2	115
	Departure Rwy 04	95.7	77	94.7	102
	Departure Rwy 22	91.6	76	90.6	112
Bombardier Dash 8-Q400	Arrival Rwy 04	82.6	1,956	82.9	3,125
	Arrival Rwy 22	87.0	6,351	86.4	9,566
	Departure Rwy 04	81.3	1,951	80.6	3,255
	Departure Rwy 22	79.9	5,481	80.3	7,799
Embraer E175	Arrival Rwy 04	85.7	235	85.7	340
	Arrival Rwy 22	89.7	645	89.0	761
	Departure Rwy 04	91.1	230	90.6	316
	Departure Rwy 22	88.2	598	88.3	616

Table A2.1: Measured Noise Levels used for Validation in 2019 and 2018

For each aircraft type there are four sets of measured results; arrivals and departures at each of the two monitors. As the monitors are not located symmetrically with regard to the runway the noise levels at each will differ and so they need to be considered separately. For the individual movements within a set there is some variation, so every arrival by an aircraft type does not produce exactly the same noise level. There are a number of factors which contribute to this, in particular the weather conditions.

Measured Results

The spread of results is illustrated in Figures A2.1 to A2.4 below. These show the distribution of measured noise levels from November 2018 to September 2019 for the most common operations, arrivals from the north and departures to the south, for the most common aircraft types in the summer period of 2019, the Bombardier Dash 8-Q400 and the Airbus A320ceo.

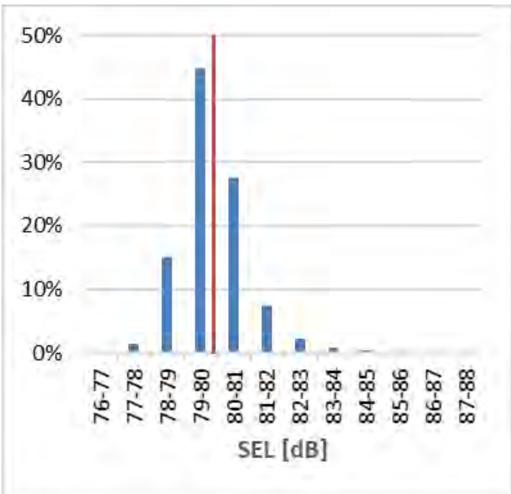

Figure A2.1 – Dash 8-Q400 Arrivals

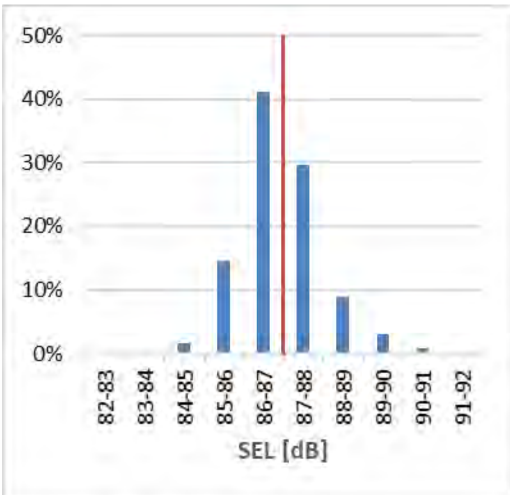

Figure A2.2 – Dash 8-Q400 Departures

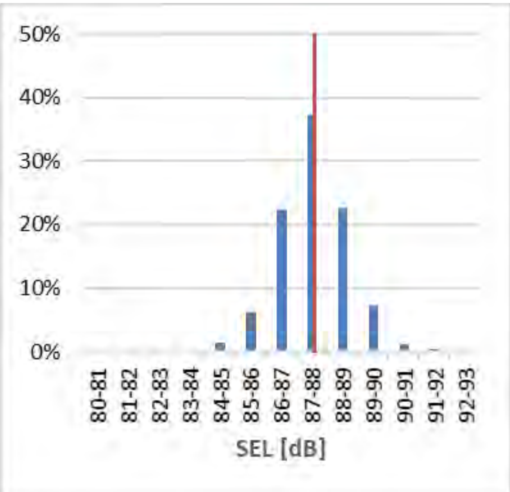

Figure A2.3 – Airbus A320ceo Arrivals

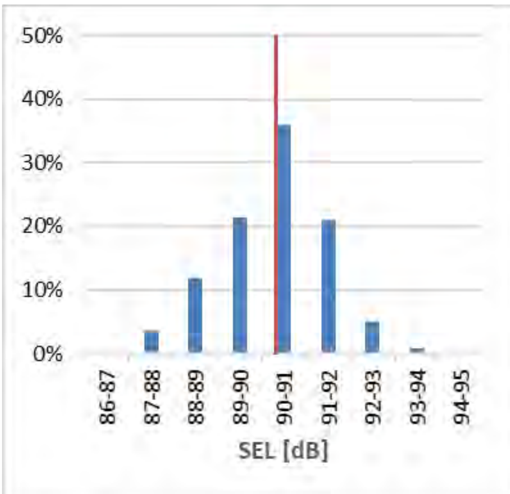

Figure A2.4 – Airbus A320ceo Departures

The distributions have the large majority of measured noise levels closely grouped together around the averages, shown as a vertical red line on the figures, with a pattern that approximates to a normal distribution with a standard deviation of less than 2 dB. Such distributions of measured noise levels are commonly found at airport fixed noise monitors at a similar distance from the runway. From the distributions of measured noise levels for each of the aircraft types considered, the averages have been determined and compared to INM standard predicted noise levels. Table A2.2 gives the latest measured average noise levels for the six aircraft types validated in 2019.

Aircraft Type	Operation	2019 Validation Measured Noise Levels (SEL dB)		INM Standard Assumptions (SEL dB)	
		Average	Number	Type	Level
Airbus A319ceo	Arrival Rwy 04	84.5	111	A319-131	87.0
	Arrival Rwy 22	89.1	317		90.0
	Departure Rwy 04	90.0	98		87.9
	Departure Rwy 22	87.4	298		87.0
Airbus A320ceo	Arrival Rwy 04	85.9	314	A320-211	87.4
	Arrival Rwy 22	90.3	984		90.2
	Departure Rwy 04	90.7	304		89.4
	Departure Rwy 22	87.6	904		88.2
Airbus A320neo(1)	Arrival Rwy 04	84.1	15	A320-211	87.4
	Arrival Rwy 22	88.9	28		90.2
	Departure Rwy 04	86.5	12		89.4
	Departure Rwy 22	83.5	26		88.2
Boeing 737-300	Arrival Rwy 04	90.3	72	737300	88.0
	Arrival Rwy 22	94.1	107		90.9
	Departure Rwy 04	95.7	77		89.0
	Departure Rwy 22	91.6	76		89.2
Bombardier Dash 8-Q400(1)	Arrival Rwy 04	82.6	1,956	SD330	82.2
	Arrival Rwy 22	87.0	6,351		84.5
	Departure Rwy 04	81.3	1,951	DHC6	82.1
	Departure Rwy 22	79.9	5,481		81.6
Embraer E175	Arrival Rwy 04	85.7	235	EMB175	85.5
	Arrival Rwy 22	89.7	645		88.3
	Departure Rwy 04	91.1	230		87.8
	Departure Rwy 22	88.2	598		87.4

(1) INM does not contain specific data for this type so alternatives used.

Table A2.2: Measured and Standard Predicted Noise Levels

Approach to Validation

The approach to validation modifications has been to only change from the INM standard type when the measured results show clear divergence, i.e. an apparent prediction error in excess of 1.5 dB at a single NMT or an average error of over 1.0 dB across both NMTs. If the type has historically been modified from the standard type, then the approach has been to only change from the previous validation when there is an apparent prediction error or change in measured level in excess of 1.0 dB at a single NMT. Also, the approach seeks to determine any modification by aircraft type and aircraft operation, but not by runway used. This means one modification is adopted for all arrivals by an aircraft type, and one for all departures by an aircraft type.

Comparison of Measured and Predicted Results

For the Airbus A319ceo, Airbus A320ceo, Bombardier Dash 8-Q400 and Embraer E175, the measured levels have not changed sufficiently to warrant a change from the validation used for the 2018 contours. Departures by the Boeing 737-300 are around 1 dB louder than in 2018, the multiplier has therefore been increased from 2.2 to 2.8. The A320neo has been included in the validation for the first time.

The final validation modifications are summarised below in Table A2.3. These have been used for the 2019, 2020 and 2021 contours.

Aircraft Type	INM Type	Modification to Movements Numbers	
		Departures	Arrivals
Airbus A319ceo	A319-131	A319-131 × 1.4	A319-131 × 0.7
Airbus A320ceo	A320-211	A320-211 × 1.1	A320-211
Airbus A320neo	A320-211	A320-211 × 0.4	A320-211 x 0.6
Boeing 737-300	737300	737300 x 1.7	737300 x 2.8
Bombardier Dash 8-Q400	DHC6/SD330	DHC6 × 0.8	SD330 × 1.4
Embraer E175	737500/EMB175	737500 × 1.3	EMB175 x 1.2

Table A2.3: 2019 Validation Modifications

Table A2.3 shows that for the three Airbus types, modifications to the number of movements have been made. For the Airbus A319ceo arrival movements have been factored down, while the departure movements factored up. For the Airbus A320ceo, no modification was necessary for arrival movements, and departure movements have been factored up slightly. For the Airbus A320neo both arrival and departure movements have been factored down.

The need for modifications for the larger aircraft types in particular is not unexpected as they are available in a range of specifications with different engine types, sometimes from different manufacturers. This means that the actual type operated by the airline may differ to the one in the INM software and this is the case here for both the Airbus A319ceo and A320ceo. The Airbus A320neo is a new quieter version of the A320ceo and is therefore quieter as expected.

For the Boeing 737-300, modifications to the number of movements have been made. The standard INM type was used, however the movements have been factored up for both the arrivals and departures.

For the Embraer E175, modifications were needed to the INM type as the standard type does not agree well with the measured departure results. On arrival the standard type was used, but with movements factored up.

For the Dash 8-Q400 the INM software does not suggest a type. The validation finds that using the Dash 6 (DHC6) for departures and the Shorts 330 (SD330) for arrivals, with movement numbers factored, agrees well with measured noise levels.

Effect of Validation

The effect of the validation exercise on the predicted noise levels for the six aircraft types is detailed in Table A2.4 which gives the differences between the measured noise levels and those predicted after allowing for the validation modifications.

Aircraft Type	Operation	Noise Levels (SEL dB)			
		Measured Average	INM Validated Prediction	Difference Predicted - Measured	Operation Weighted Average Difference
Airbus A319ceo	Arrival Rwy 04	84.5	85.5	+1.0	-0.2
	Arrival Rwy 22	89.1	88.5	-0.6	
	Departure Rwy 04	90.0	89.4	-0.6	+0.6
	Departure Rwy 22	87.4	88.5	+1.1	
Airbus A320ceo	Arrival Rwy 04	85.9	87.4	+1.5	+0.3
	Arrival Rwy 22	90.3	90.2	-0.1	
	Departure Rwy 04	90.7	89.8	-0.9	+0.6
	Departure Rwy 22	87.6	88.6	+1.0	
Airbus A320neo	Arrival Rwy 04	84.1	85.2	+1.1	-0.2
	Arrival Rwy 22	88.9	88.0	-0.9	
	Departure Rwy 04	86.5	85.4	-1.1	+0.1
	Departure Rwy 22	83.5	84.2	+0.7	
Boeing 737-300	Arrival Rwy 04	90.3	90.3	0.0	-0.5
	Arrival Rwy 22	94.1	93.2	-0.9	
	Departure Rwy 04	95.7	93.5	-2.2	0.0
	Departure Rwy 22	91.6	93.7	+2.1	
Bombardier Dash 8-Q400	Arrival Rwy 04	82.6	83.7	+1.1	-0.5
	Arrival Rwy 22	87.0	86.0	-1.0	
	Departure Rwy 04	81.3	81.1	-0.2	+0.5
	Departure Rwy 22	79.9	80.6	+0.7	
Embraer E175	Arrival Rwy 04	85.7	86.3	+0.6	-0.3
	Arrival Rwy 22	89.7	89.1	-0.6	
	Departure Rwy 04	91.1	88.9	-2.2	-0.4
	Departure Rwy 22	88.2	88.5	+0.3	

Table A2.4: Measured and Validated Predicted Noise Levels

Table A2.4 shows that with the validation modifications there is good correlation between measured and predicted noise levels with differences of less than 1 dB when results from both NMTs are operationally averaged.

The effect of the validation exercises on the contours depends both on the modifications made and the contribution of those aircraft types to the overall noise. Obviously changes to infrequent aircraft types are likely to have very little effect on the contours.

SUMMARY

The validation of noise contours at George Best Belfast City Airport has been continually improved, more recently by checking predictions against the results obtained from GBBCA's noise monitors. This has demonstrated that without validation the standard INM assumptions would be less accurate.

The latest contours have taken into account over 25,000 individual aircraft noise measurements at GBBCA between November 2018 and September 2019. This has identified the need to modify the standard INM assumptions for six aircraft, the Airbus A319ceo, Airbus A320ceo, Airbus A320neo, Boeing 737-300, Bombardier Dash 8-Q400 and Embraer E175.

GBBCA will continue to collect further detailed information from the fixed noise monitors at Nettlefield Primary School and in Kinnegar, which will be used to regularly validate future GBBCA contours. This is in line with the EiP Panel's advice on contour validation.

Extension charges for 2019

Extensions 1 Jan - 30 Jun 2019

	A	D	Total	£	Cost
21:31-22:00	130	49	179	£50	£8,950
22:01-22:30	26	18	44	£100	£4,400
22:31-23:00	9	4	13	£300	£3,900
23:01-23:30	6	3	9	£600	£5,400
23:31-23:59	0	1	1	£600	£600
Total	**171**	**75**	**246**		**£23,250**

Figure 1 - Extensions 1st Jan - 30th Jun 2019

Extensions 1st Jul 2019 - 31 Dec 2019

	A	D	Total	Charge	Total £
21:31 - 21:45	87	40	127	£100	£12,700
21:46 - 22:00	58	18	76	£125	£9,500
22:01 - 22:15	24	14	38	£150	£5,700
22:16 - 22:30	17	6	23	£300	£6,900
22:31 - 22:45	9	5	14	£400	£5,600
22:46 - 23:00	2	1	3	£550	£1,650
23:01 - 23:15	2	1	3	£700	£2,100
23:16 - 23:30	1	1	2	£800	£1,600
23:31 - 23:45	3	0	3	£900	£2,700
23:46 - 23:59	1	0	1	£1,000	£1,000
Total	**204**	**86**	**290**		**£49,450**

Figure 2 - 1st Jul – 31st Dec 19

Extensions for full year 2019

Date Range	No Ext	Cost
1 Jan 19 - 30 Jun 19	246	£23,250
1 Jul 19 - 31 Dec 19	290	£49,450
Totals	536	£72,700
No flts > 480	56	£16,800
Total cost		**£89,500**

Figure 3 - Extensions for full year – 2019

AIRPORT OPERATIONAL INSTRUCTION (AOI)

AOI-07

Issue 7.1

Subject:	**Aircraft Engine Ground Running and Use of Auxiliary Power Units and Ground Power Units**
Date of issue:	**08 April 2019**
Authorised by:	DocuSigned by: 14438788A10A4AE... **Michael McDowell, Airfield Operations Manager**

It is the responsibility of all employers to ensure that relevant Airport Operational Instructions (AOIs) and Operational Safety Notices (OSNs) are brought to the attention of their staff. However, individuals remain responsible for their own actions and those who are in doubt should consult their supervisor or manager within their own organisation.

1. Introduction

Belfast City Airport (BCA) is responsible for taking adequate measures to ensure the safety of aircraft, vehicles and persons using the airside environment.

Environmental Policy:
"Through its programme of sustainable development, GBBCA is committed to achieving a balance between the social and economic benefits of the airport's growth and its environmental impacts. We will work with all airport 'stakeholders', including statutory authorities, airlines, business partners and local residents to minimise the impact of our operations on the environment".

2. Distribution and Control

This AOI is published and distributed electronically to organisations involved with the operation of aircraft and supporting services at BCA. Controlled copies are located in the Airports Online Document Library.

Hard copies are not produced by BCA for distribution, but may be printed for internal office use. Any hard copies printed by recipients of the electronic distribution are not controlled. Care must be taken to ensure that paper copies are disposed of or fully as required.

Comments or queries relating to the contents of this document should be directed to:

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Belfast City Airport
Sydenham Bypass
BELFAST
BT3 9JH

Telephone: 028 9093 5006

3. Acronyms

AOI	Airport Operational Instruction
APU	Auxiliary Power Unit
ATC	Air Traffic Control
BCA	Belfast City Airport
CAA	Civil Aviation Authority
CAP	Civil Aviation Publication
FEGP	Fixed Electrical Ground Power
FOD	Foreign Object Debris
GPU	Ground Power Unit
OPS	Airfield Operations
OSN	Operational Safety Notice
SMS	Safety Management System

4. Requirements

Aircraft Engine Ground Running

Aircraft engine ground runs are required under certain conditions to enable engineers to certify that an aircraft is “fit for service”.

However, engine ground runs cause both significant adverse impact on the environment and create hazards on the apron. They are therefore strictly controlled within the terms of the BCA Environmental Policy, and CAP 642 guidelines.

CAP 642 (Airside Safety Management) advises:
“Engine runs and check starts should be controlled and only carried out with prior approval of the aerodrome operator who should specify the conditions to be applied.” This AOI outlines these conditions.

5. Definitions

Engine Ground Run

An engine ground run is defined in **CAP 642 (Airside Safety Management)** as:

“Any engine start-up not followed immediately by the departure of the aircraft concerned.”

Person in Charge

The Person in Charge is that ground engineer in contact with the flight deck (usually via headset). This person has full view of the surrounding area and can indicate to the flight deck immediately to cut the engine power in the event of an incident or potential hazard.

Auxiliary Power Units (APU)

Small gas turbines normally mounted in the rear fuselage of most aircraft. They are used to power electrical systems on board, to run air circulation and conditioning systems and to supply bleed air for starting main engines before or during push back.

Mobile Ground Power Units (GPU)

A vehicle capable of supplying power to aircraft parked on the ground usually powered by diesel fuel.

Fixed Electrical Ground Power (FEGP)

Ground based power system which uses grid electricity. An electrical supply cable is plugged into the underside of the aircraft and draws its power from the airport’s electricity supply.

6. Hazards

Engine ground runs present an extremely dangerous and complex operation. They carry a high risk of engine ingestion and pose a hazard to ramp personnel and vehicular traffic.

7. General Rules

It must always be ensured that:

- The 'Person in Charge' is in communication with the flight deck (ideally via a headset).
- All the aircraft wheels are chocked (aprons only).
- If on the main apron, the rear of stand roadway has been closed off.

Use of aircraft Auxiliary Power Units (APUs)

Aircraft APUs generate high levels of noise and significant fumes which can cause disturbance to those on nearby aprons, in buildings and in residential areas.

BCA has provided Fixed Electrical Ground Power (FEGP) on Stands 1–10 for the purpose of minimising levels of ambient noise and emissions.

On stands where FEGP is available, it must be used in preference to APUs, where possible.

Airlines and handlers are to ensure that APUs are used for the absolute minimum time necessary to meet operational needs.

APUs are not to be used as a substitute for either FEGP or GPUs.

Use of mobile Ground Power Units (GPUs)

Constantly running mobile GPUs can cause high noise levels on the apron, are an additional obstruction to free movement around a parked aircraft and, if poorly maintained, may deposit oil spillage on the stand.

BCA has provided FEGP on Stands 1–10 for the purpose of minimising levels of ambient noise and emissions.

On stands where FEGP is available, it must be used in preference to GPUs, where possible.

Where there is no alternative to the use of GPUs they should be parked outside the stand (when aircraft parked nose in) and promptly shut down when power is no longer required. The GPU should never be parked over a drain.

When purchasing new GPUs airlines and handling agents are urged to make low working noise levels a prime requirement in the selection process.

8. Approval

Aircraft Engine Ground Running

8.1 Aircraft Parked on Apron Areas (Main Apron & General Aviation Apron)

All engine ground runs shall be subject to the prior approval of Airfield Operations (extension **5027**). Airfield Operations (OPS) will record details electronically for audit purposes.

Requests to carry out engine ground runs must be made no later than 2130 hours' local time.

All engine ground runs are strictly prohibited between 2230 – 0600 hours.

Engine ground runs are permitted on apron areas at "engine idle" setting for short periods of time only. **All other engine runs including high powered runs** require the aircraft to be positioned to the north side of the airfield at "**Sierra**".

A map illustrating the location of "Sierra" on the north side of the airfield is contained at **Annex A**.

Prior to making a request for permission to carry out an engine ground run the 'Person in Charge' must assess the surrounding area for potential hazards.

The 'Person in Charge' should then seek prior permission to conduct the engine ground run by contacting OPS (extension **5027**) or alternatively by contacting Flight Dispatch on the ground handling frequency. Flight Dispatch staff shall in turn contact OPS.

OPS will advise if the engine ground run is approved.

Once approval has been obtained pilots/engineers must seek permission to start engines from Air Traffic Control (ATC) – Radio contact must be maintained with ATC at all times.

8.2 Aircraft parked on "Sierra" (Airfield north side)

Engine ground runs in this area may be of a higher power.

Engine ground runs in this area are permitted between 0630 – 2130 hours. Pilots/engineers who wish to carry out engine grounds runs on the north side of the airfield between these hours should seek prior permission from OPS (extension **5027**).

If it is anticipated that a high powered engine run will be required between 2130 hours – 2230 hours, then permission must be sought from OPS (extension **5027**). A **request for an airfield extension** must also be sought from the BCA Duty Manager (extension **5053**).

Annex B sets out the 'Follow-me' procedure for engineers taxiing aircraft between the apron and Sierra.

8.3 Use of Auxiliary Power Units (APUs)

Use of APUs for aircraft maintenance purposes is strictly prohibited between 2230 – 0600 hours unless there is no alternative power source available (FEGP or GPU).

Should APU use be required outside of permitted hours (0600 hours – 2230 hours), prior approval must be sought from OPS (extension **5027**).

9. Safety

All personnel concerned with engine ground running must be fully conversant with this instruction, which must be complied with at all times.

The 'Person in Charge' of the engine ground run is responsible for ensuring the safety of personnel and equipment in the vicinity of the aircraft.

The use of aircraft strobe lighting is strictly prohibited during engine ground runs.

Consistent with CAA guidance, aircraft strobe lighting should not be displayed for any reason when an aircraft is on the apron or taxiway areas.

Any essential engineering work requiring a strobe light test shall only be carried out when the airport has closed.

9.1 Aircraft Parked on Apron Areas (Main Apron & General Aviation Apron)

The 'Person in Charge' of the engine ground run must ensure that all apron equipment is placed at a safe distance from the aircraft.

The aircraft must be positioned correctly on the stand in such a way that the engine running will not harm persons or cause damage to aircraft, buildings, installations, vehicles or equipment in the vicinity.

On the main apron, the rear of stand road must be closed to safeguard vehicular traffic, before the engine ground run is commenced. This must be undertaken by the airline engineering department or handling agent.

In the event that the closure of the rear of stand road will cause severe disruption to the timely dispatch of other aircraft, OPS may deny approval or request ATC to stop the engine ground run.

If aircraft are parked in a non-standard fashion (e.g. not nose in due to high winds) then all engine ground runs are prohibited on the main apron at this time.

The engine anti-collision beacons must be switched on for the duration of the engine ground run.

The 'Person in Charge' of the engine ground running activities must ensure that all the aircraft wheels are chocked and that the aircraft cannot move under any circumstances.

Engine ground running must not take place and must be ceased when passengers are being embarked/disembarked on any adjacent stands.

The 'Person in Charge' must be in communication with the flight deck at all times during engine ground runs. This will ensure that the engine(s) can be shut down if persons or vehicles move into a dangerous position in front of, behind or in the vicinity of a live engine.

In all instances where aircraft are unserviceable they must be relocated to the General Aviation apron or to the north side of the airfield.

9.2 Aircraft parked on "Sierra" (Airfield north side)

The aircraft must be positioned in such a way that the engine running will not harm persons or cause damage to aircraft, buildings, installations, vehicles or equipment in the vicinity. The aircraft must also be positioned within the white circle provided.

The "Person in Charge" must ensure that the ground area behind the aircraft is free from loose tarmac, stones and other materials.

The engine anti-collision beacon(s) must be switched on for the duration of the ground run.

The "Person in Charge" must be in communication with the flight deck at all times during engine ground runs. This will ensure that the engine(s) can be shut down if persons or vehicles move into a dangerous position in front of, behind or in the vicinity of a live engine.

NOTE: Where OPS find that the procedures outlined here are not being complied with, or where it is necessary in the interests of safety, they will request ATC, or directly to the 'Person in Charge', to have the engine ground run halted.

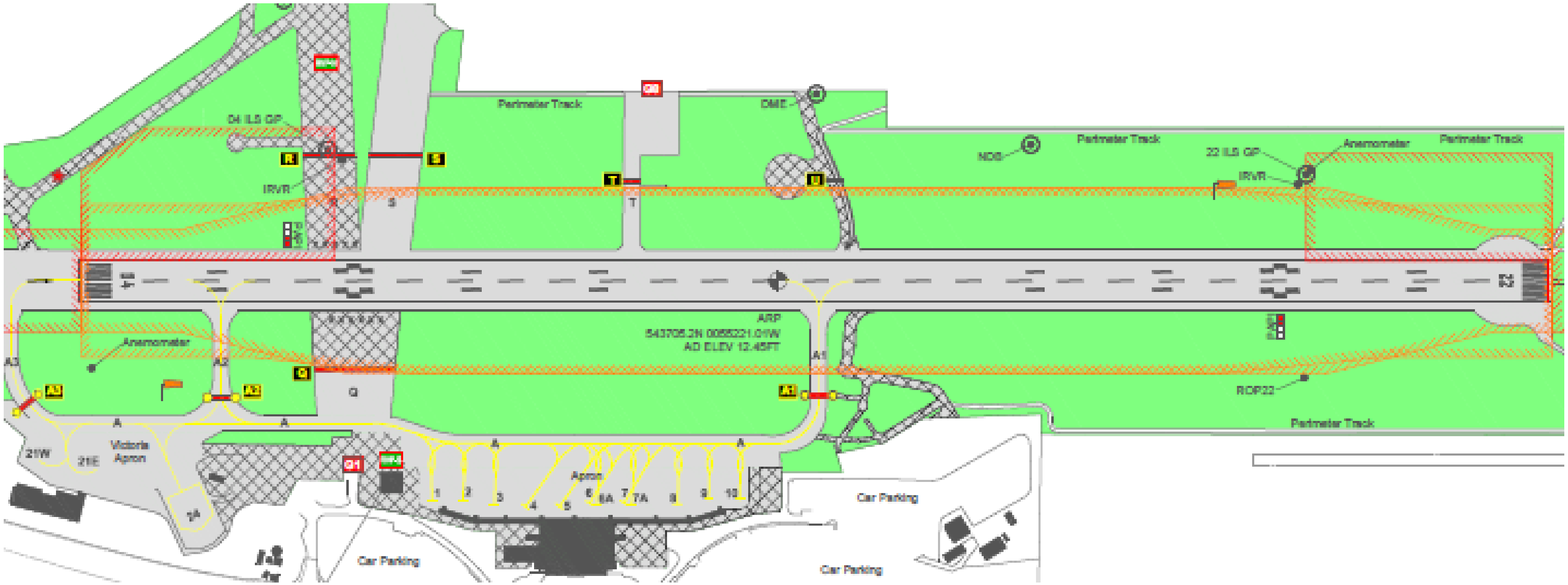
10. Monitoring of Standards

BCA, as the Airport Authority, operates a cautioning mechanism in airside areas.

Where individuals are found to be in breach of regulations, they may be subject to a Written Caution, which shall be formally recorded. This may also involve the issuing of penalty points

Airside Penalty Points will be issued in accordance with **AOI 05 – Airside Safety Regulation Scheme** which contains a sample Caution Slip.

ANNEX A


Perimeter Track
DME
04 ILS GP
IRVR
NDB
22 ILS GP
Anemometer
ARP
AD ELEV 12.45FT
ROP22
Victoria Apron
Apron
Car Parking

ANNEX B

‘Follow-me’ Procedures	
1.	OPS contact ATC and pass the following information: Aircraft registration, type, current stand, and destination e.g. Sierra.
2.	When pushback clearance is received, OPS pass this on to pushback crew (verbally). OPS then move to the ROSR (to halt vehicle movements) and when in place give ‘thumbs-up’ for the pushback to commence.
3.	When the pushback is complete and all equipment and personnel are clear of the aircraft, the pushback team signal to engineers and OPS. OPS now position their ops vehicle in front of the aircraft (so the vehicle is visible from the cockpit).
4.	When the engineers are ready to taxi they should signal to the ops vehicle with their taxi light.
5.	OPS will now request permission to escort aircraft to destination.
6.	On receiving positive clearance, OPS will illuminate the ‘Follow-me’ sign on top of the Ops vehicle and move off slowly. The aircraft will follow. The engineers must keep a listening watch on the frequency so they are aware of clearance i.e. holding point only, or full clearance to Sierra.
7.	Once both ops vehicle and aircraft are clear of the holding point the ops vehicle will call runway vacated. The airline engineers will self-position the aircraft in the circle provided.
8.	Engineers must follow the safety instructions detailed in AOI-07.
9.	OPS are not required to remain with the engineers during the engine runs.
10.	Engineers should contact OPS by telephone when the engine run is complete.
11.	OPS will position the ops vehicle in front of the aircraft and contact ATC for clearance to cross the runway to the allocated stand.
12.	Once positive clearance has been received the ‘follow-me’ sign will be switched on.
13.	The allocated stand should be checked for FOD and stand guidance activated where appropriate.
14.	Once aircraft is on stand OPS will report taxiway and runway vacated.
Exceptions	
15.	If this procedure is from stand 21 then the aircraft engineer will contact ATC and ask for start-up. Then follow points 4 – 14.
16.	If LVPs are in force, then ATC will refer to AOI-12 and MATS part 2.
17.	Overspeed checks may be carried out on the taxiway at the discretion of ATC.

Count of Date	Column Labels		
Airline	High	Low	Grand Total
Aer Lingus		1	1
ASL Engineering		3	3
Flybe	14	122	136
KLM	1		1
Other		1	1
Grand Total	**15**	**127**	**142**

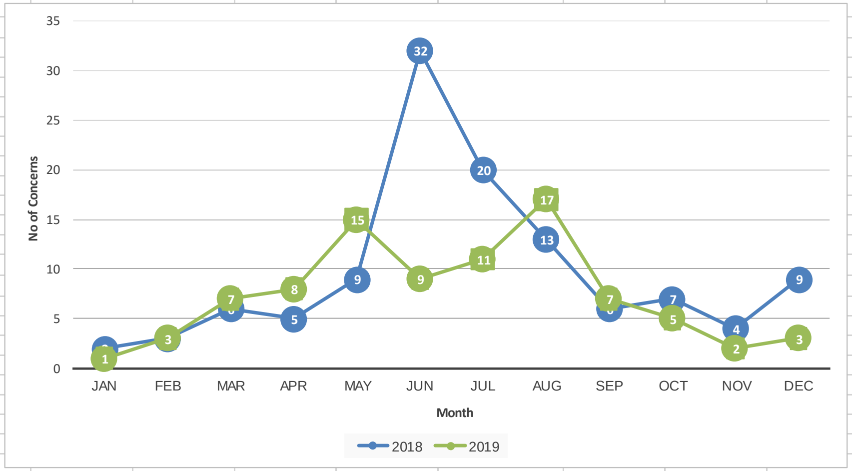
Date	Airline	Reg	Start	Finish	Stand	Power
01-Jan-19	Flybe	GJEDV	11:22	11:25	08	Low
03-Jan-19	Flybe	GDEDM	13:40	13:43	03	Low
03-Jan-19	Flybe	GPRPD	21:50	22:00	10	Low
04-Jan-19	Flybe	GECOK	19:00	19:03	10	Low
04-Jan-19	Flybe	GECOK	19:14	19:17	10	Low
09-Jan-19	Flybe	GJEDV	08:30	08:35	09	Low
10-Jan-19	Flybe	GJEDV	19:29	19:35	24	Low
12-Jan-19	Flybe	GFLBA	20:52	20:55	01	Low
15-Jan-19	Flybe	GPRPJ	10:37	10:46	01	Low
15-Jan-19	Flybe	GPRPJ	14:08	14:12	01	Low
24-Jan-19	Flybe	GPRPD	10:39	10:50	24	Low
25-Jan-19	Flybe	GFLBD	06:40	06:45	02	Low
05-Feb-19	Flybe	GPRPA	09:33	09:37	01	Low
05-Feb-19	Flybe	GPRPA	10:39	10:43	Sierra	High
05-Feb-19	Flybe	GPRPA	10:05	10:08	01	Low
06-Feb-19	Flybe	GPRPN	11:20	11:35	Sierra	High
09-Feb-19	Flybe	GPRPN	15:47	15:53	10	Low
13-Feb-19	Flybe	GPRPG	18:29	18:36	7a	Low
16-Feb-19	Flybe	GJEDU	14:22	14:26	08	Low
19-Feb-19	Flybe	GPRPM	17:38	17:41	7a	Low
22-Feb-19	Flybe	GPRPA	08:34	08:37	03	Low
26-Feb-19	Flybe	GPRPJ	14:36	14:44	6a	Low
26-Feb-19	Flybe	GPRPJ	17:00	17:06	6a	Low
28-Feb-19	Flybe	GJECX	17:38	17:42	02	Low
01-Mar-19	Flybe	GPRPJ	19:40	19:52	24	Low
03-Mar-19	Flybe	GPRPG	19:32	19:37	01	Low
07-Mar-19	Flybe	GFLBE	08:31	08:37	6a	Low
07-Mar-19	Flybe	GECOG	11:39	11:48	Sierra	High
09-Mar-19	Flybe	GECOC	20:40	20:43	08	Low
09-Mar-19	Flybe	GPRPG	20:48	20:51	6a	Low
10-Mar-19	Flybe	GPRPG	08:00	08:12	6a	Low
11-Mar-19	Flybe	GPRPM	14:48	14:54	01	Low
16-Mar-19	Flybe	GPRPF	08:30	08:40	Sierra	High
23-Mar-19	Flybe	GECOF	11:05	11:10	10	Low
04-Apr-19	Flybe	GFLBE	22:02	22:05	01	Low
09-Apr-19	Flybe	GECOT	06:33	06:37	21	Low
09-Apr-19	Flybe	GECOT	07:07	07:17	Sierra	High
18-Apr-19	Flybe	GJEDR	12:35	12:46	21	Low
27-Apr-19	Flybe	GPRPF	17:15	17:18	21	Low
04-May-19	Flybe	GPRPB	18:54	18:58	10	Low
05-May-19	Flybe	GJEDM	09:10	09:15	01	Low
07-May-19	Flybe	GJECR	14:35	14:34	10	Low
07-May-19	Flybe	GJECR	15:03	15:15	Sierra	High
08-May-19	Flybe	GJEDT	09:36	09:38	7a	Low
09-May-19	Flybe	GJECR	12:30	12:45	Sierra	High

09-May-19	KLM	GJECR	19:30	19:45	Sierra	High
14-May-19	Flybe	GFLBA	09:37	09:42	02	Low
18-May-19	Flybe	GJEDM	17:47	17:51	10	Low
18-May-19	Flybe	GECOJ	18:47	18:58	Sierra	High
22-May-19	Flybe	GJEDM	10:12	10:16	21	Low
29-May-19	Flybe	GJEDM	13:32	13:36	09	Low
01-Jun-19	Flybe	GPRPN	19:41	19:46	7a	Low
06-Jun-19	Flybe	GECOI	21:46	21:52	02	Low
14-Jun-19	Flybe	GJECX	17:04	17:09	09	Low
14-Jun-19	Flybe	GJECX	19:05	19:11	Sierra	High
18-Jun-19	Flybe	GPRPF	20:34	20:38	10	Low
20-Jun-19	Flybe	GPRPE	15:43	15:48	Sierra	High
24-Jun-19	Flybe	GECOJ	09:11	09:14	24	Low
24-Jun-19	Flybe	GECOJ	09:42	09:46	24	Low
26-Jun-19	Flybe	GPRPA	19:32	19:36	10	Low
28-Jun-19	Flybe	GPRPK	19:38	19:43	10	Low
28-Jun-19	Flybe	GFLBC	21:50	21:54	24	Low
29-Jun-19	Flybe	GJEDR	07:46	07:52	10	Low
29-Jun-19	Flybe	GJEDR	19:44	19:47	02	Low
30-Jun-19	Flybe	GPROM	21:55	21:58	08	Low
06-Jul-19	Flybe	GPRPO	19:10	19:17	01	Low
11-Jul-19	Flybe	GECOA	14:32	14:49	24	High
11-Jul-19	Flybe	GJEDV	22:23	22:25	10	Low
11-Jul-19	ASL Engineering	EISTA	22:40	22:42	7a	Low
17-Jul-19	Flybe	GPRPN	19:20	19:25	Sierra	High
17-Jul-19	Flybe	GPRPN	19:35	19:37	21	Low
20-Jul-19	Flybe	GECOB	10:00	10:05	7a	Low
20-Jul-19	Flybe	GECOB	12:48	12:52	7a	Low
21-Jul-19	Flybe	GECOB	15:46	15:49	7a	Low
24-Jul-19	Aer Lingus	EISTA	22:08	22:13	6a	Low
25-Jul-19	Flybe	GPRPN	13:19	13:29	21	Low
26-Jul-19	Flybe	GECOM	17:19	17:29	09	Low
29-Jul-19	Flybe	GPRPO	09:55	10:00	02	Low
29-Jul-19	Flybe	GECOB	08:30	08:36	09	Low
29-Jul-19	Flybe	GPRPO	10:02	10:04	02	Low
29-Jul-19	Flybe	GECOB	12:10	12:20	Sierra	High
05-Aug-19	Flybe	GPRPG	11:20	11:23	24	Low
05-Aug-19	Flybe	GPRPG	11:55	12:02	24	Low
05-Aug-19	Flybe	GPRPO	13:55	13:58	09	Low
05-Aug-19	Flybe	GPRPK	13:55	13:58	09	Low
06-Aug-19	Flybe	GJECN	15:41	15:43	09	Low
06-Aug-19	Flybe	GJECY	21:22	21:25	01	Low
06-Aug-19	ASL Engineering	EISTA	21:52	21:58	6a	Low
06-Aug-19	Flybe	GPRPK	22:03	22:10	10	Low
12-Aug-19	Flybe	GPRPK	10:15	10:24	09	Low
12-Aug-19	Flybe	GPRPD	22:02	22:06	24	Low
21-Aug-19	Flybe	GECOD	07:03	07:06	24	Low
21-Aug-19	Flybe	GPRPA	09:03	09:15	6a	Low
22-Aug-19	Flybe	GECOJ	20:44	20:49	08	Low
25-Aug-19	Flybe	GFLBD	17:49	17:55	Sierra	High
27-Aug-19	Flybe	GJECR	06:56	06:59	09	Low
28-Aug-19	Flybe	GECOJ	21:05	21:15	24	Low
04-Sep-19	Flybe	GFLBE	22:01	22:06	01	Low
04-Sep-19	ASL Engineering	EISTA	22:11	22:14	6a	Low
11-Sep-19	Flybe	GFLBD	09:06	09:14	02	Low
11-Sep-19	Flybe	GJEDV	18:23	18:25	08	Low
12-Sep-19	Flybe	GPRPE	20:25	20:29	21	Low
23-Sep-19	Flybe	GPRPI	21:25	21:43	09	Low

23-Sep-19	Flybe	GPRPI	21:51	22:06	09	Low
24-Sep-19	Flybe	GPRPB	19:50	20:01	08	Low
26-Sep-19	Flybe	GJEDM	10:59	11:03	02	Low
26-Sep-19	Flybe	GJEDM	11:52	11:57	02	Low
01-Oct-19	Flybe	GPRPC	22:10	22:17	02	Low
02-Oct-19	Flybe	GPRPC	08:20	08:25	02	Low
02-Oct-19	Flybe	GPRPC	08:40	08:45	02	Low
02-Oct-19	Flybe	GPRPC	10:30	10:40	24	Low
02-Oct-19	Flybe	GPRPC	11:27	11:30	24	Low
02-Oct-19	Flybe	GPRPC	12:40	12:45	24	Low
13-Oct-19	Flybe	GPRPI	19:42	19:45	24	Low
16-Oct-19	Flybe	GPRPK	16:27	16:29	6a	Low
25-Oct-19	Flybe	GJEDR	21:52	21:58	01	Low
26-Oct-19	Flybe	GPRPL	08:29	08:33	09	Low
27-Oct-19	Flybe	GECOO	17:40	17:44	10	Low
28-Oct-19	Flybe	GPRPI	18:55	18:59	02	Low
30-Oct-19	Flybe	GPRPO	14:18	14:28	03	Low
30-Oct-19	Flybe	GPRPK	21:50	21:55	02	Low
01-Nov-19	Flybe	GPRPE	09:26	09:30	09	Low
01-Nov-19	Flybe	GPRPE	09:27	09:30	09	Low
03-Nov-19	Flybe	GECOA	13:12	13:17	09	Low
13-Nov-19	Flybe	GECOG	19:30	19:33	02	Low
27-Nov-19	Flybe	GJEDP	21:10	21:17	03	Low
29-Nov-19	Flybe	GJEDR	10:50	11:04	24	Low
29-Nov-19	Flybe	GJEDR	13:58	14:04	24	Low
30-Nov-19	Flybe	GJEDR	10:08	10:24	24	Low
01-Dec-19	Flybe	GJEDR	10:00	10:10	24	Low
01-Dec-19	Flybe	GJEDR	16:15	16:21	24	Low
02-Dec-19	Flybe	GJEDR	08:09	08:21	24	Low
02-Dec-19	Flybe	GPRPL	20:45	20:49	7a	Low
02-Dec-19	Flybe	GPRPL	20:48	20:52	7a	Low
13-Dec-19	Flybe	GJEDR	09:55	10:05	24	Low
13-Dec-19	Flybe	EIGHK	10:52	10:59	08	Low
17-Dec-19	Flybe	GECOK	09:14	09:19	24	Low
17-Dec-19	Other	GRMBH	12:28	12:31	21	Low
18-Dec-19	Flybe	GPRPM	10:54	10:59	03	Low
21-Dec-19	Flybe	GPRPA	07:53	07:57	01	Low
26-Dec-19	Flybe	GECOI	21:36	21:40	08	Low
29-Dec-19	Flybe	GJEDU	19:19	19:21	01	Low

Concerns by Type and Area, 2019																
Area	Bias over City / Flight paths	Low	Noise	Track keeping	After 2130	Disturbed Sleep / Pre-0700 / Early / Weekend	Aircraft Type / Size	Frequency / Too many flights	Ground Noise	Air Quality / Pollution	Specific Aircraft	Other	TOTAL Concerns by Area	% Concerns by Area	TOTAL Individuals logging Concerns By Area	Concern Area by Runway End
Comber / D'adee / Bangor / Dundonald								1					**1**	**1%**	**1**	Lough
Carnalea / Crawfordsburn													**0**	**0%**		Lough
Helen's Bay													**0**	**0%**		Lough
Craigavad													**0**	**0%**		Lough
Seahill / Cultra / Marino		2			5						3		**10**	**11%**	**1**	Lough
Holywood				1	2								**3**	**3%**	**2**	Lough
Kinnegar													**0**	**0%**		Lough
Knocknagoney / Old Holywood Road													**0**	**0%**		Lough
Sydenham / Inverary						1					2		**3**	**3%**	**2**	City
Ballymacarret													**0**	**0%**		City
City Centre													**0**	**0%**		City
Beersbridge / Albertbridge													**0**	**0%**		City
Newtownards Road / Ballymacarret / Connswater			1		28						1		**30**	**34%**	**1**	City
Donegall Road													**0**	**0%**		City
Ravenhill / Cregagh / Castlereagh	1	1	3			2					2		**9**	**10%**	**2**	City
Ormeau / Annadale	1	3	1							8			**13**	**15%**	**3**	City
Stranmillis / Malone	6				4								**10**	**11%**	**4**	City
Drumbeg / Tullyard													**0**	**0%**		City
G'wally / C'duff / N'breda / K'breda / Rosetta / Four Winds	2	2				1		1					**6**	**7%**	**5**	City
Not Given	1		1		1								**3**	**3%**	**2**	Not given
TOTALS	**11**	**8**	**6**	**1**	**40**	**4**	**0**	**2**	**0**	**8**	**8**	**0**	**88**	**100%**	**23**	
Percent	**13%**	**9%**	**7%**	**1%**	**45%**	**5%**	**0%**	**2%**	**0%**	**9%**	**9%**	**0%**	**100%**			

Concerns by Month		
	2018	2019
Jan	2	1
Feb	3	3
Mar	6	7
Apr	5	8
May	9	15
Jun	32	9
Jul	20	11
Aug	13	17
Sep	6	7
Oct	7	5
Nov	4	2
Dec	9	3
Total	116	88



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Certificate of Calibration

CALIBRATION

Certificate number: **29947**

Test object:	**Sound Level Meter**
Manufacturer:	**Norsonic**
Type:	**118**
Serial no:	**32112**
Customer:	**Belfast City Airport**
Address:	**Administration Building, Sydenham Bypass, Belfast. BT3 9JH.**
Contact Person:	[redacted]
Order No:	**POR009079**

Method :
Calibration has been performed as set out in CA Technical Procedures TP01 & 02 as appropriate. The following items have been calibrated as set out in BS 7580 Part 1:1997

	Producer:	Type:	Serial No:	Certificate number
Microphone	GRAS	41AS	73645	29946
Calibrator*	Norsonic	1253_250Hz	21816	U28976
Preamplifier	GRAS	41AM	97213	Included

Additional items that also have been submitted for verification

Wind shield	None
Attenuator	None
Extension cable	None

These items have been taken into account wherever appropriate.

Environmental conditions:	Pressure:	Temperature:	Relative humidity:
Reference conditions:	101.325 kPa	23.0 °C	50 %RH
Measurement conditions:	100.23 kPa	21.5 °C	35.7 %RH

Date received :	24/10/2018
Date of calibration:	31/10/2018
Date of issue:	31/10/2018

Engineer [redacted]

Supervisor

This certificate provides traceability of measurement to recognized national standards, and to the units of measurement realized at the National Physical Laboratory or other recognized national standards laboratories. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

* The calibrator was complete with any required coupler for the microphone specified

Calibration Certificate

Certificate No.: 29947

Method

From markings on the sound level meter or by reference to the manufacturer's published literature it has been determined that the instrument submitted for verification was originally manufactured to BS EN 60651 and or BS EN 60804. The reference range, reference sound pressure level, primary indicator range, secondary indicator range, pulse range, linearity range and display range as specified by the manufacturer were used for the verification. The sound level meter was set to A weighting and adjusted to read correctly in response to the associated sound calibrator the reading was derived from the calibrator calibration certificate and manufacturer's instruction manuals. A measurement of the self noise of the sound level meter was then made using a dummy microphone having a capacitance of ±20% of the associated microphones self capacitance. The sound level meter was then tested, and its overall sensitivity adjusted, in accordance with Section 5 of BS 7580:Part 1:1997. The acoustic calibration at 1 kHz specified in sub-clause 5.6.1 of the standard was performed by application of a reference sound calibrator, whilst the tests at 125 Hz and 8k Hz (sub-clause 5.6.2) were performed by the electrostatic actuator method. At the end of the test, the associated sound calibrator was reapplied to the sound level meter and the meter reading was recorded and is noted below in the statements section.

Traceability :

The following measured values are traceable National Physical Laboratory, United Kingdom
Sound Pressure Level, Voltage, Frequency, Barometric Pressure, Temperature & Relative Humidity

Measurement Results:

Indication at the calibration check frequency - BS7580 #5.4	Passed
Noise test - BS 7580 #5.5.2	Passed
Level Linearity Test - BS 7580, #5.5.3	Passed
Frequency weightings: A Network - BS 7580 #5.5.4	Passed
Frequency weightings: C Network - BS 7580 #5.5.4	Passed
Frequency weightings: Z Network - BS 7580 #5.5.4	Passed
Time weightings F and S - BS 7580 #5.5.5	Passed
Peak response - BS 7580 #5.5.6	Passed
RMS accuracy - BS 7580 #5.5.7	Passed
Time weighting I - BS 7580 #5.5.8	Passed
Integrating Test : Time averaging - BS 7580 #5.5.9	Passed
Integrating Test : Pulse range - BS 7580 #5.5.10	Passed
Integrating Test : Sound exposure level - BS 7580 #5.5.11	Passed
Overload SPL Test - BS 7580 #5.5.12	Passed
Overload Leq Test - BS 7580 #5.5.12	Passed
Acoustic tests - BS 7580 #5.4 and 5.6	Passed
Summation of acoustic tests - BS 7580 #5.5.4	Passed

Statements

The sound level meter in the configuration tested conforms to the requirements of BS 7580 Part 1.
The self-generated noise recorded in the test specified in § 5.5.2 was: (Below MSD) 12.0dB(A), (Below MSD) 13.5dB(C) and (Below MSD) 19.2dB(Z).
The final response obtained using the associated calibrator.(§5.6.3): 124.2dB(C).
This reading should be used henceforth to set up the sound level meter for field use.
A stricter test than that specified in paragraphs 5.5.6 of BS7580:1997 has been used by verifying that the 10 ms reference pulse is also correct. The level uncertainty of the Laboratory's 1 kHz sound calibrator used during this verification is ± 0.1 dB.
The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

The sound level meter in the configuration tested was found to comply with BS 7580:1997 part 1 for a type 1 device. The associated calibrator has been corrected for barometric pressure at the time of calibration in accordance with the relevant manufacturer's instructions

[redacted]

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Phone 01371 871030 Facsimile 01371879106

Certificate of Calibration

CALIBRATION

Certificate number:	**30155**
Test object:	**Sound Level Meter**
Manufacturer:	**Norsonic**
Type:	**118**
Serial no:	**32115**
Customer:	**Belfast City Airport**
Address:	**Administration Building, Sydenham Bypass, Belfast, BT3 9JH.**
Contact Person:	[redacted]
Order No:	**POR009079**

Method :
Calibration has been performed as set out in CA Technical Procedures TP01 & 02 as appropriate. The following items have been calibrated as set out in BS 7580 Part 1:1997

	Producer:	Type:	Serial No:	Certificate number
Microphone	GRAS	41AS	69414	30154
Calibrator*	Norsonic	1253_250Hz	21816	U28976
Preamplifier	GRAS	41AM	56262	Included

Additional items that also have been submitted for verification

Wind shield	None
Attenuator	None
Extension cable	None

These items have been taken into account wherever appropriate.

Environmental conditions:	Pressure:	Temperature:	Relative humidity:
Reference conditions:	101.325 kPa	23.0 °C	50 %RH
Measurement conditions:	101.04 kPa	22.9 °C	33.6 %RH

Date received :	19/11/2018
Date of calibration:	22/11/2018
Date of issue:	22/11/2018

Engineer [redacted]

Supervisor

This certificate provides traceability of measurement to recognized national standards, and to the units of measurement realized at the National Physical Laboratory or other recognized national standards laboratories. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

* The calibrator was complete with any required coupler for the microphone specified

Calibration Certificate

Certificate No.: 30155

Method

From markings on the sound level meter or by reference to the manufacturer's published literature it has been determined that the instrument submitted for verification was originally manufactured to BS EN 60651 and or BS EN 60804. The reference range, reference sound pressure level, primary indicator range, secondary indicator range, pulse range, linearity range and display range as specified by the manufacturer were used for the verification. The sound level meter was set to A weighting and adjusted to read correctly in response to the associated sound calibrator the reading was derived from the calibrator calibration certificate and manufacturer's instruction manuals. A measurement of the self noise of the sound level meter was then made using a dummy microphone having a capacitance of ±20% of the associated microphones self capacitance. The sound level meter was then tested, and its overall sensitivity adjusted, in accordance with Section 5 of BS 7580:Part 1:1997. The acoustic calibration at 1 kHz specified in sub-clause 5.6.1 of the standard was performed by application of a reference sound calibrator, whilst the tests at 125 Hz and 8k Hz (sub-clause 5.6.2) were performed by the electrostatic actuator method. At the end of the test, the associated sound calibrator was reapplied to the sound level meter and the meter reading was recorded and is noted below in the statements section.

Traceability :

The following measured values are traceable National Physical Laboratory, United Kingdom
Sound Pressure Level, Voltage, Frequency, Barometric Pressure, Temperature & Relative Humidity

Measurement Results:

Indication at the calibration check frequency - BS7580 #5.4	Passed
Noise test - BS 7580 #5.5.2	Passed
Level Linearity Test - BS 7580, #5.5.3	Passed
Frequency weightings: A Network - BS 7580 #5.5.4	Passed
Frequency weightings: C Network - BS 7580 #5.5.4	Passed
Frequency weightings: Z Network - BS 7580 #5.5.4	Passed
Time weightings F and S - BS 7580 #5.5.5	Passed
Peak response - BS 7580 #5.5.6	Passed
RMS accuracy - BS 7580 #5.5.7	Passed
Time weighting I - BS 7580 #5.5.8	Passed
Integrating Test : Time averaging - BS 7580 #5.5.9	Passed
Integrating Test : Pulse range - BS 7580 #5.5.10	Passed
Integrating Test : Sound exposure level - BS 7580 #5.5.11	Passed
Overload SPL Test - BS 7580 #5.5.12	Passed
Overload Leq Test - BS 7580 #5.5.12	Passed
Acoustic tests - BS 7580 #5.4 and 5.6	Passed
Summation of acoustic tests - BS 7580 #5.5.4	Passed

Statements

The sound level meter in the configuration tested conforms to the requirements of BS 7580 Part 1.
The self-generated noise recorded in the test specified in § 5.5.2 was: (Below MSD) 11.5 dB(A), (Below MSD) 13.6 dB(C) and (Below MSD) 20.6 dB(Z).
The final response obtained using the associated calibrator.(§5.6.3): 124.2dB(C).
This reading should be used henceforth to set up the sound level meter for field use.
A stricter test than that specified in paragraphs 5.5.6 of BS7580:1997 has been used by verifying that the 10 ms reference pulse is also correct. The level uncertainty of the Laboratory's 1 kHz sound calibrator used during this verification is ± 0.1 dB.
The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

The sound level meter in the configuration tested was found to comply with BS 7580:1997 part 1 for a type 1 device. The associated calibrator has been corrected for barometric pressure at the time of calibration in accordance with the relevant manufacturer's instructions