



LHR Airspace & Noise Performance

Q1 Report 2018

Heathrow
Making every journey better

Contents



Executive Summary	3
KPI	4
1000ft requirements/infringements	5
Departure Noise Limits	7
Day Noise/Night Noise Infringements	8
Track Keeping	9
CDA	14
Joining Point	16
Go Arouds	20
Night noise/QC Usage	21
Arrival and Departure information	26
Engine Ground Running	27
Glossary of Terms	29

Executive summary

This report covers January to March 2018.

January to March 2018 saw the airport operating at 40.5% easterly and 59.5% westerly operations.

The first quarter shows the number of 1000ft infringements are approximately 60% lower than the corresponding period last year, and is a reflection upon the work we are doing with airlines.

Overall noise infringements for the Night Period are significantly down. Of the infringements recorded one has been in the Night Period and one has been recorded during the day.

Track keeping on all runways has seen a reduction of just under 1%, primarily driven by a higher proportion of easterly operations which include the 09RCPT departure which has poor compliance due to airspace constraints with arriving aircraft.

The 24hr CDA figures is broadly flat when compared to Quarter 1 2017.

As part of our airline engagement on CDA and Track Keeping our new tool, PerformTrak, has been launched so we can work more efficiently with airlines to improve performance.

For this quarter the minimum climb gradient performance is 99.88% of all departing aircraft met the minimum climb gradient. We will continue to work with airlines on this metric.

The Winter 2017 Night Quota season finished within the allocated allowances even after the snow events in February and March 2018. The Summer 2018 Night Quota season is on track.

All charts and graphs shown on the pages that follow are for reference purposes only.



KPI chart to end of March 2018

KPI	Comparable 2017 data January to March 2017	2018 Comparison January to March 2018	RAG
1000ft	61	25	GREEN
Noise Infringements Night	4	1	GREEN
Noise Infringements Day	1	1	GREEN
Track Keeping Average 27R	98.07%	98.73%	GREEN
Track Keeping Average 27L	97.41%	96.19%	GREEN
Track Keeping Average 09R	89.74%	90.36%	GREEN
Track Keeping Average 09L ***	70.00%	54.05%	
Track Keeping All Runways	95.26%	94.60%	GREEN
Minimum Climb Gradient Reporting		99.88%	GREEN
CCO Compliance All Runways	56.4%	53.9%	GREEN
CDA Day Average	87.21%	87.17%	GREEN
CDA Night Average	91.49%	92.02%	GREEN
CDA Core Night Average	96.18%	95.82%	GREEN
CDA 06:00 Hour Average	89.50%	90.74%	GREEN
24 Hour CDA Average*	87.64%	87.64%	GREEN
Monthly Night Runway Alternation	94.7%	99.6%	GREEN
Joining Point Day LATES Average	0.43%	0.40%	GREEN
Joining Point Day LOWS Average	1.19%	0.48%	GREEN
Joining Point Night LATES Average*	1.38%	1.51%	GREEN
Joining Point Night LOWS Average*	3.64%	4.06%	GREEN
Night Quota Pro Rata for Quota Count**	96.9%	95.6%	
Night Quota Pro Rata for Movements**	52.5%	56.1%	

* Service levels in NATS contract

** Excess usage pro-rata indicates increased risk of aircraft being refused permission to arrive or depart during 23:30-06:00hrs local

*** Low numbers of departures off 09L due to the Cranford agreement can result in a wide fluctuation in performance when compared to the other three runways.

RAG Green: Better than previous score or within 4.99%. Amber: Worse than previous score, but within 5 - 9.99%. Red; Worse than the previous score, by 10% or greater

Each element of this report is preceded where applicable by the relevant Aeronautical Information Publication (AIP) reference and summary text detailing the purpose of the requirement. Data is then presented on current performance.

It should be noted that Heathrow is 83ft above sea level and the ANOMS NTK system measures height relative to Heathrow elevation and not sea level. References in the AIP are usually above sea level (quoted as Heathrow QNH) and therefore need to be reduced by 83ft to be comparable with heights as measured by ANOMS. No account is taken of the variability of heights as measured by the radar which, depending on the distance from the radar head can be +/- 200ft from that indicated. This is obviously allowed for by NATS when managing operations.

FOR THE PURPOSES OF THIS REPORT ANY REFERENCE TO HEIGHT SHOULD BE READ AS ABOVE AIRFIELD ELEVATION UNLESS OTHERWISE STATED.

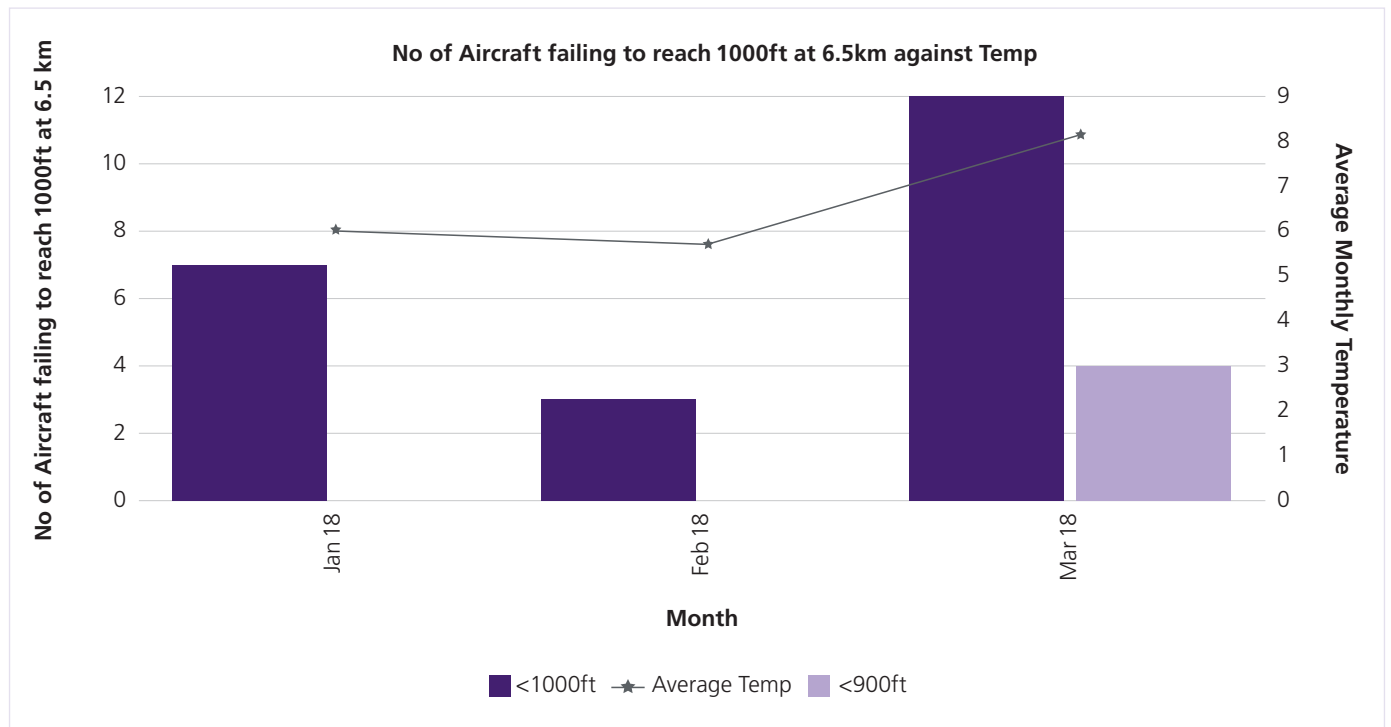
ALL DATA CONTAINED WITHIN THIS REPORT SHOULD BE CONSIDERED IN LIGHT OF THE PRECEDING TEXT AND COMMENT BOX THAT FOLLOWS.

1000ft requirement

AD 2-EGLL-1 2.21 (Page 24)

After take-off the aircraft shall be operated in such a way that it is at a height of not less than 1000 ft aal at 6.5km from start of roll as measured along the departure track of that aircraft.

Period From 01/01/2018 to 31/03/2018 Height Infringement Reports – 1000ft Infringements by Month with Temperature



1000ft infringements by airline

London Heathrow

Period From 01/01/2018 to 31/03/2018

Airline		< 1000 ft	< 900 ft
BAW	BRITISH AIRWAYS	15	3
MAS	MALAYSIA AIRLINES	4	0
THA	THAI AIRWAYS INTERNATIONAL	3	0
VIR	VIRGIN ATLANTIC	0	1
Total of all Infringements:		26	

Departure Noise Limits

AD 2-EGLL-1 2.21 (Page 25)

Subject to sub-paragraphs (5) and (6) below, any aircraft shall, after take-off, be operated in such a way that it will not cause more than 94 dBA Lmax by day (from 0700 hours to 2300 hours local time) as measured by any noise monitoring terminal at any of the sites referred to in sub-paragraph (2*) above.

Subject to sub-paragraphs (5) and (6) below, any aircraft shall, after take-off, be operated in such a way that it will not cause more than 89 dBA Lmax by night (from 2300 hours to 0700 hours local time) and, that it will not cause more than 87 dBA Lmax during the night quota period (from 2330 to 0600 house local time) as measured by any noise monitoring terminal at any of the sites referred to in subparagraph (2*) above.

(5) The limits specified in sub-paragraphs (3*) and (4*) above shall be adjusted in accordance with the following table in respect of any noise monitoring terminal at any of the sites referred to in the table in sub-paragraph (2*) to take into account of the location of that terminal and it's ground elevation relative to the aerodrome elevation.

(6) For the purposes of determining an infringement of the limits specified in sub paragraphs (3*) and (4*) above, if the aircraft was requested to take-off with a tailwind, an amount of up to 2dB of the noise recorded at the noise monitor should be disregarded.

The amount to be disregarded shall be:

0.4 db for a tailwind of up to 1 knot.

0.8 dB for a tailwind exceeding 1 knot but not exceeding 2 knots

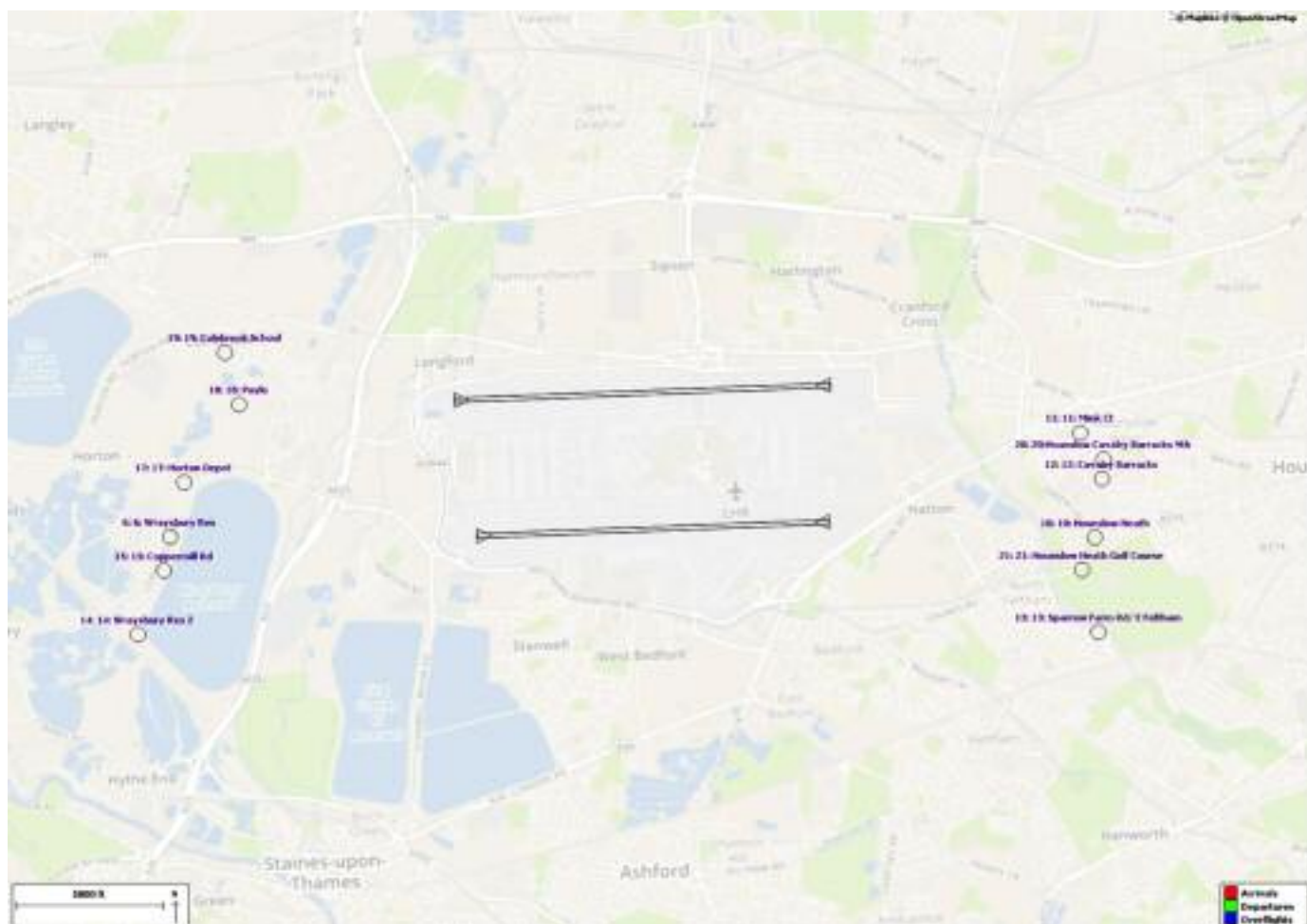
1.2 dB for a tailwind exceeding 2 knots but not exceeding 3 knots

1.6 dB for a tailwind exceeding 3 knots but not exceeding 4 knots

2.0 dB for a tailwind exceeding 4 knots

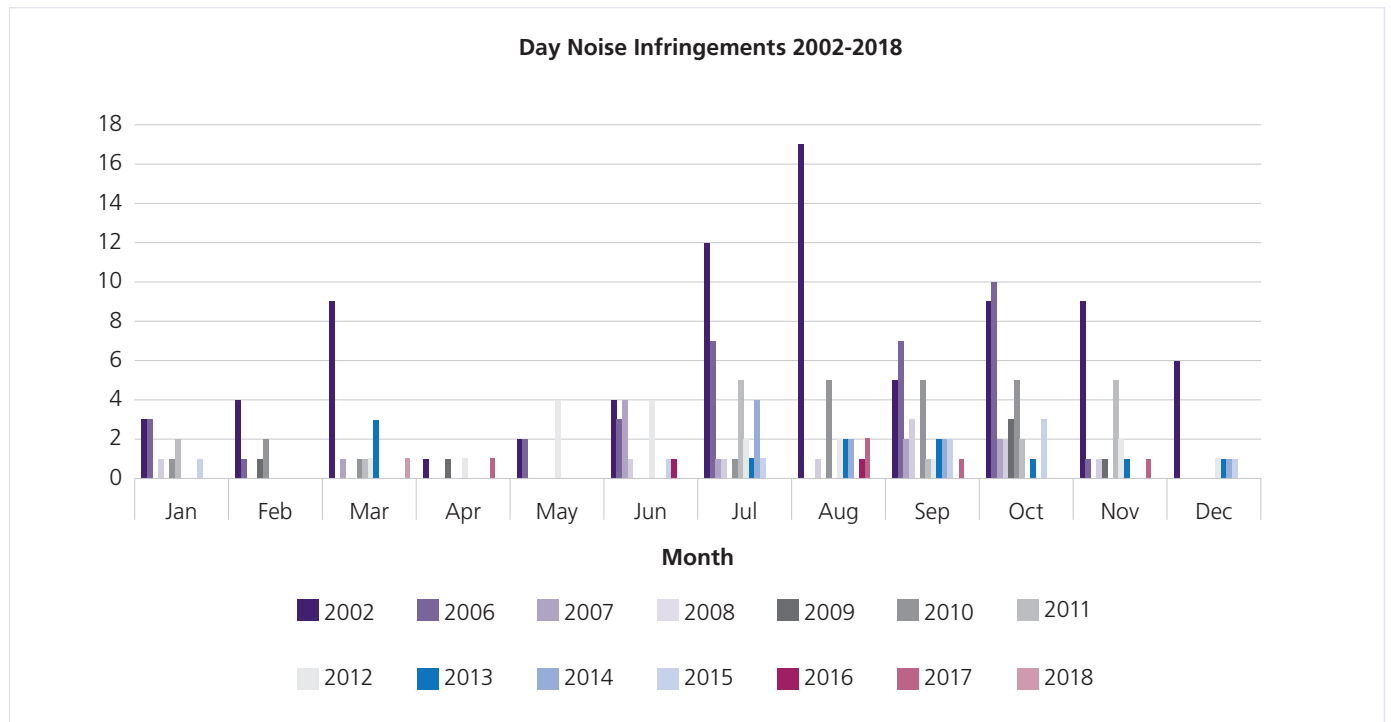
For this purpose, tailwind is to be calculated from the wind data measured in the on-air field anemometers and wind vanes according to the formula:

$(\text{windspeed} \times \cosine(\text{runway heading} - \text{wind direction})) \times -1$

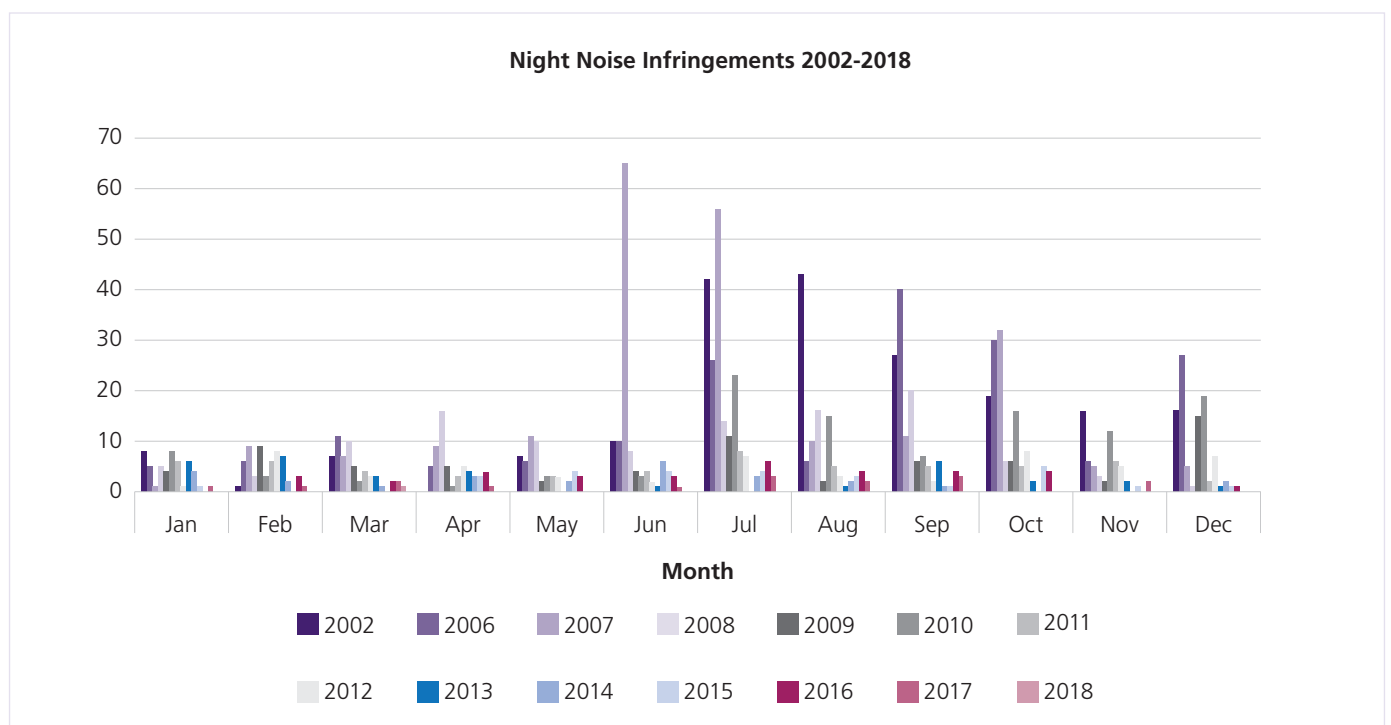


* AIP – see glossary on page 29

Day Noise Infringements 2002-2018



Night Noise Infringements 2002-2018



Departure Track Keeping

AD 2-EGLL-1 2.21 (Page 28)

For monitoring purposes, a departure will be deemed to have complied with the Noise Preferential Routeing (NPR) if, in the portion of flight below the appropriate vectoring altitude (see note 9 right), it is properly recorded by the airport's noise and trackkeeping (NTK) system as having flown wholly within the Lateral Swathe (LS). The LS is defined from the centre-line of the relevant route coded in the NTK system, based upon a map accredited for this purpose by the Department for Transport, by the closer to the centre-line depicted on the map of (a) a pair of lines either side, each diverging at an angle of 10° from a point on the runway centre-line 2000m from start-of-roll; and (b) a pair of parallel lines representing a distance of 1.5 km either side of the route centreline. For avoidance of doubt, the depicted route and LS may include curved sections representing turns.

Note 9.

Aircraft which have attained an altitude of 4000 ft (Heathrow QNH) may be directed by air traffic controllers onto a different heading and commanders complying with any such direction will not by reason of so complying be deemed to have departed from the NPR.

Track deviations by runway

Period From 01/01/2018 to 31/03/2018

Runway	Total Departures 2018	Total Deviations 2018	% Compliance 2018
27R	16,503	209	98.73
27L	17,597	670	96.19
09R	22,266	2,147	90.36
09L	37	17	54.05
Totals	56,403	3,043	94.60

% of On Track Departures by Flow and Route

Current and Previous Year for 01/01/2018 to 31/03/2018

Easterly						
Month	09LBPK	09LBUZ	09LCPT	09LDET	09LGAS	09LMID
Jan-17	100.0	0.0	0.0	100.0	0.0	0.0
Feb-17	0.0	0.0	0.0	100.0	0.0	0.0
Mar-17	0.0	100.0	0.0	100.0	0.0	0.0
Jan-18	100.0	0.0	0.0	0.0	0.0	0.0
Feb-18	0.0	0.0	0.0	0.0	0.0	0.0
Mar-18	100.0	100.0	0.0	87.5	0.0	16.7

Easterly						
Month	09RBPK	09RBUZ	09RCPT	09RDET	09RGAS	09RMID
Jan-17	99.2	99.7	37.7	99.8	99.7	99.7
Feb-17	99.8	99.3	37.5	100.0	99.4	99.8
Mar-17	96.5	91.8	41.7	99.8	100.0	100.0
Jan-18	99.6	99.1	42.9	99.8	99.3	100.0
Feb-18	99.6	99.2	47.8	99.9	99.8	99.6
Mar-18	99.5	99.0	37.5	99.7	98.6	99.4

% of On Track Departures by Flow and Route

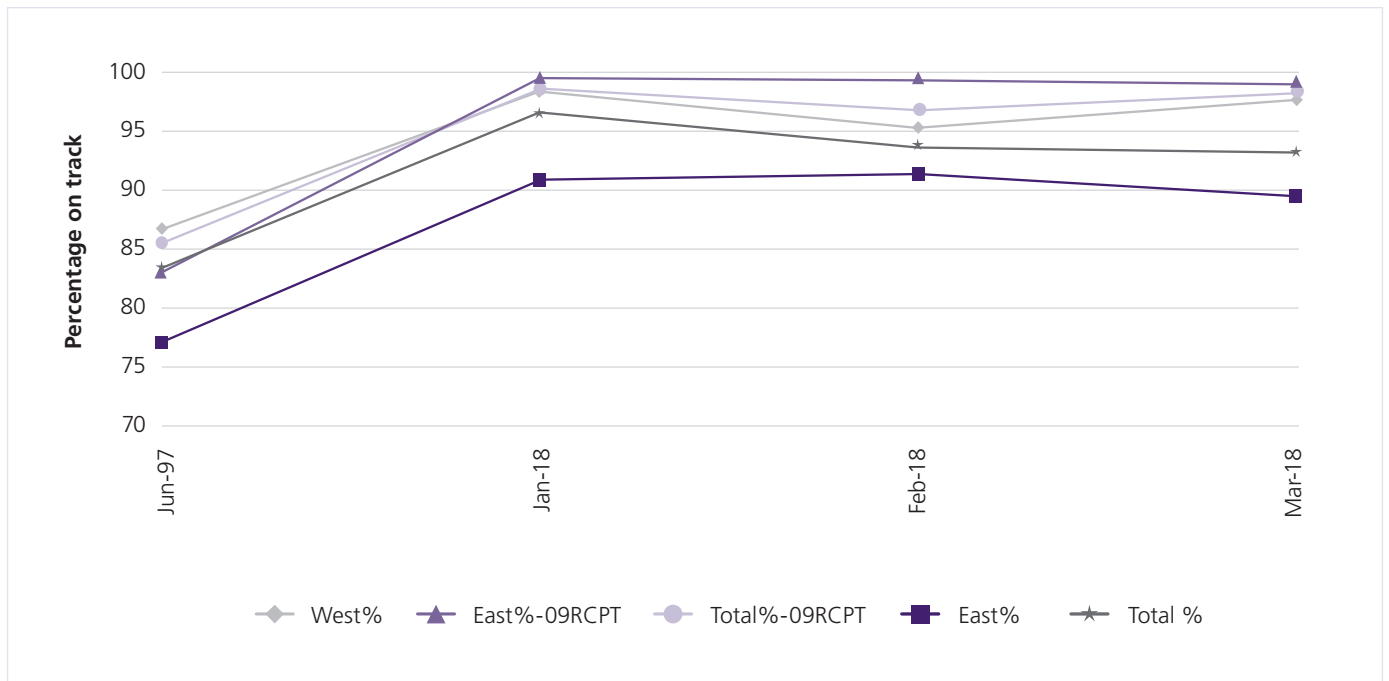
Current and Previous Year for 01/01/2018 to 31/03/2018

Westerly						
Month	27LBPK	27LCPT	27LDET	27LGOG	27LMID	27LWOB
Jan-17	99.1	99.7	89.1	99.5	97.7	99.8
Feb-17	98.6	99.9	94.0	100.0	98.5	99.7
Mar-17	98.6	99.8	95.1	100.0	98.6	98.9
Jan-18	99.9	100.0	93.8	100.0	98.9	99.7
Feb-18	99.0	99.7	76.9	99.7	98.5	99.4
Mar-18	99.2	99.7	89.4	100.0	99.1	99.1

Westerly						
Month	27RBPk	27RCPT	27RDET	27RGOG	27RMID	27RWOB
Jan-17	99.3	99.8	90.8	100.0	95.8	99.4
Feb-17	99.4	100.0	97.8	99.7	98.4	99.9
Mar-17	98.4	99.6	97.5	100.0	98.2	99.1
Jan-18	99.7	100.0	97.6	99.8	98.8	99.6
Feb-18	99.4	100.0	94.0	99.7	98.3	99.9
Mar-18	99.4	99.7	98.6	100.0	98.7	99.9

Track Keeping Key Performance Indicator

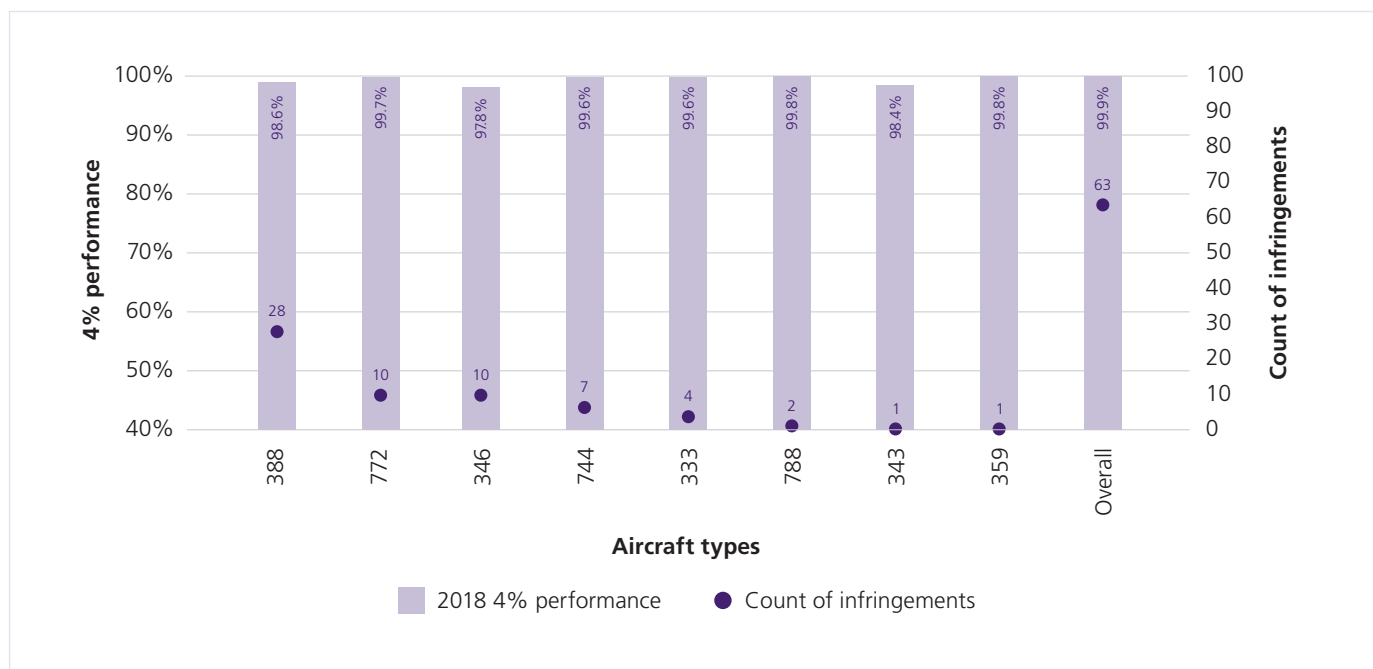
Period from 01/01/2018 to 31/03/2018



Minimum Climb Gradient Reporting

Period from 01/01/2018 to 31/03/2018

Where the aircraft is a jet aircraft, after passing the point referred to in sub-paragraph (1) above, it shall maintain a gradient of climb of not less than 4% to an altitude of not less than 4000 ft. The aircraft shall be operated in such a way that progressively reducing noise levels at points on the ground under the flight path beyond that point are achieved.



Continuous Descent Approach (CDA)

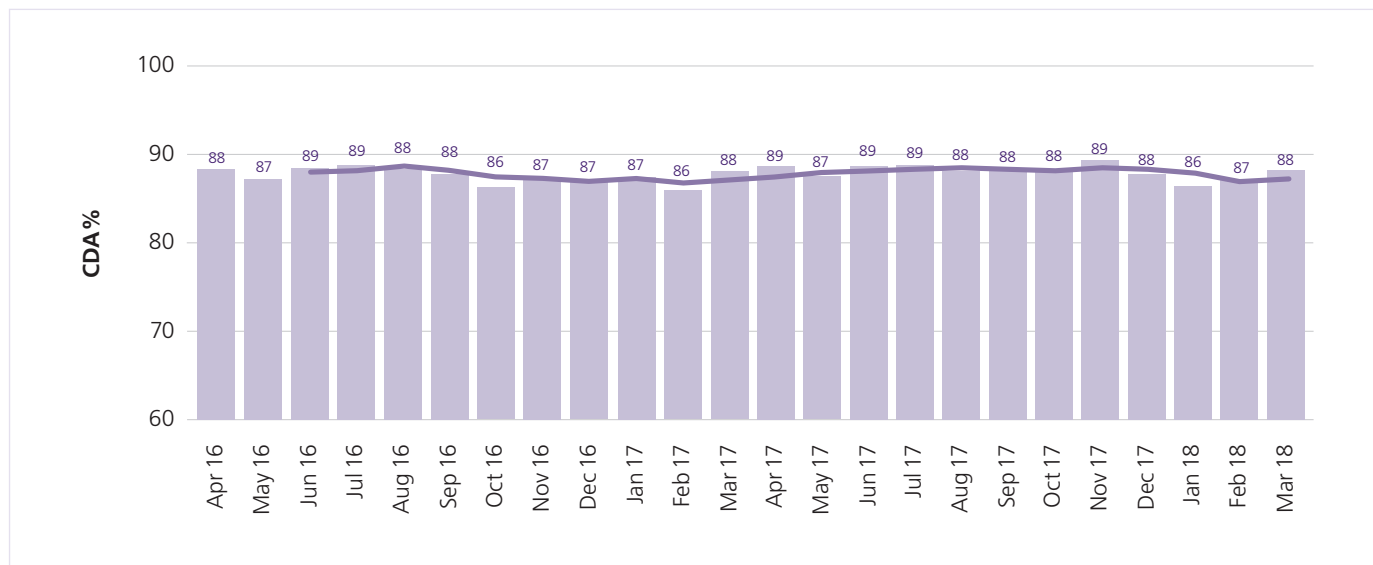
AD 2-EGLL-1 2.21 (Page 28)

For monitoring purposes, a descent will be deemed to have been continuous provided that no segment of level flight longer than 2.5 nautical miles (nm) occurs below 6000ft QNH and 'level flight' is interpreted as any segment of flight having a height change of not more than 50ft over a track distance of 2 nm or more, as recorded in the airport Noise and Track-keeping system.

* The CDA data is broken down into four time periods, Day (0700hrs – 2300hrs), Night (2300hrs – 0700hrs), Core night (2330hrs – 0600hrs) and the 06:00hr (0600hrs – 0700hrs)

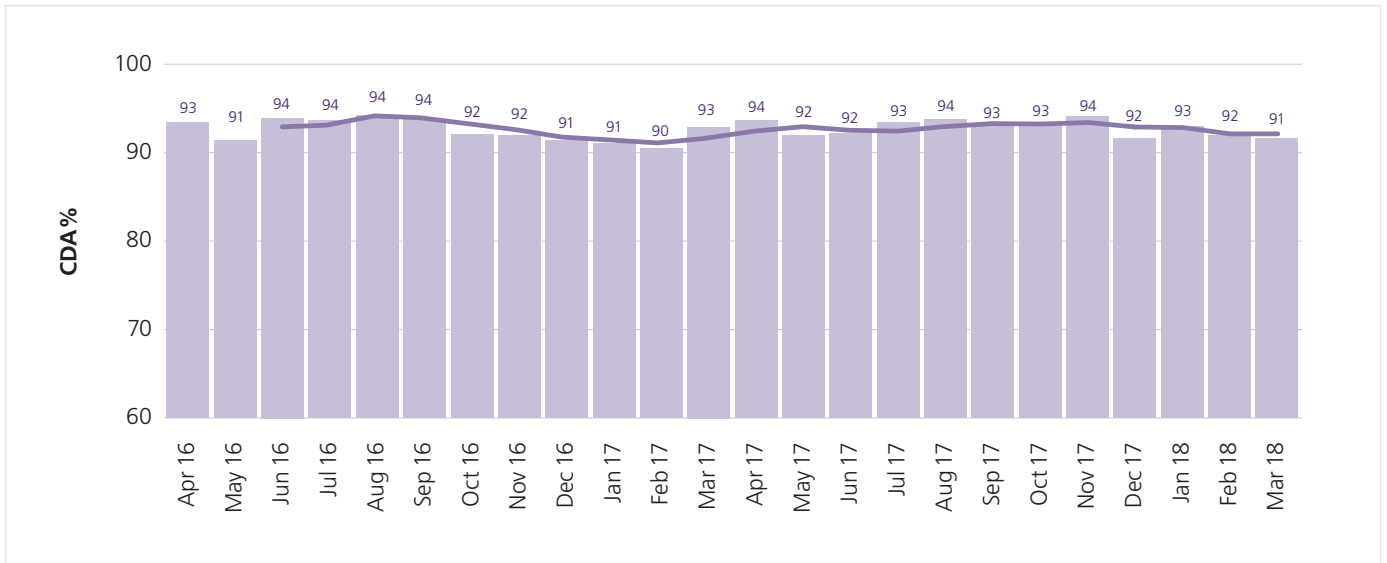
CDA Use during the day 0700-2300

CDA over 24 months. Three month Rolling Average line.



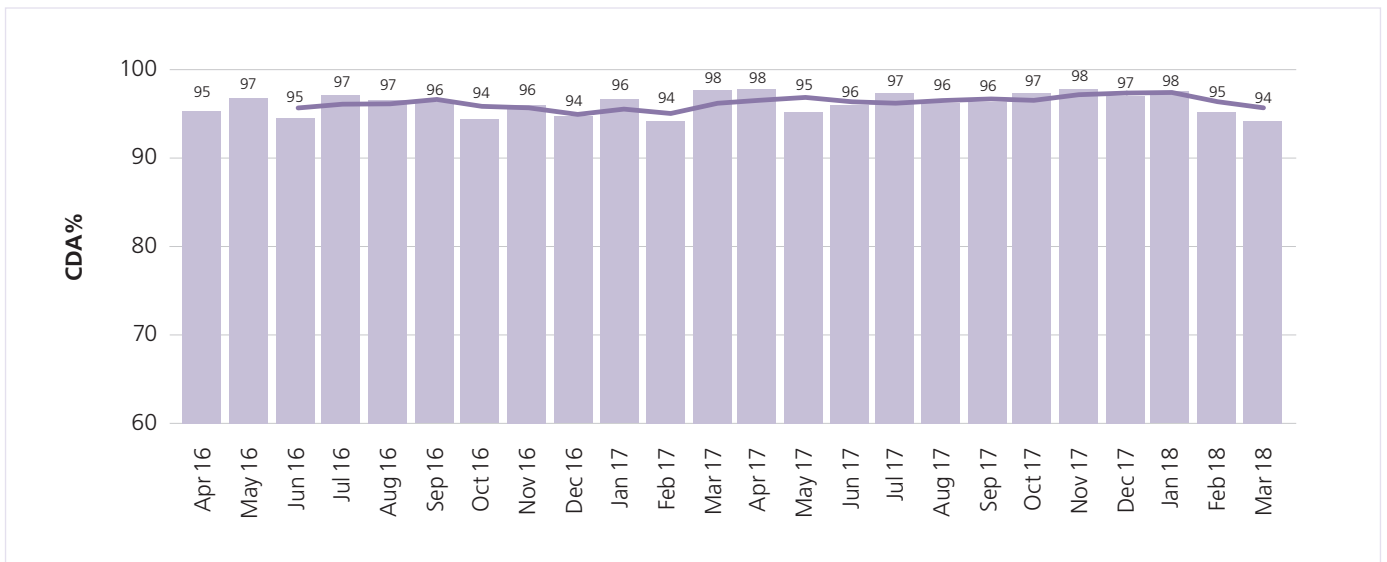
CDA Use in Night 2300-0700

CDA 24 Months Rolling Average



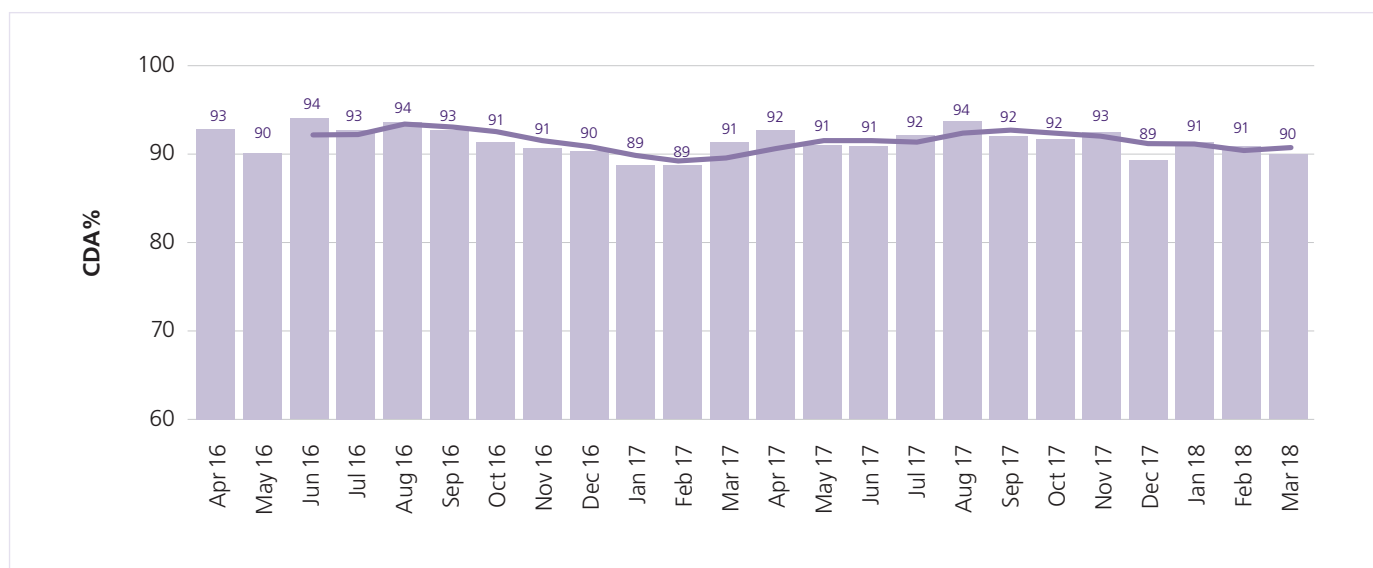
CDA Use in Core Night 2330-0600

CDA 24 Months Rolling Average



CDA Use during 0600-0700

CDA 24 Months Rolling Average



Joining Point

AD 2-EGLL-1 2.21 (Page 27-28)

Between 0600 and 2330 hours (local time) where the aircraft is approaching runway 27 (L or R) and is using the ILS in IMC or VMC it shall not descend on the glidepath below an altitude of 2500 ft (Heathrow QNH) before being established on the localizer, nor thereafter fly below the glidepath. An aircraft approaching without assistance from the ILS shall follow a descent path which will not result in its being at any time lower than the approach path that would be followed by an aircraft using the ILS glidepath, and shall follow a track to intercept the extended runway centre-line at or above 2500 ft (Heathrow QNH).

Between 2330 and 0600 hours (local time) where the aircraft is approaching runway 27 (L or R) and is using the ILS in IMC or VMC it shall not descend on the glidepath below an altitude of 3000 ft (Heathrow QNH) before being established on the localizer at not less than 10nm from touchdown, nor thereafter fly below the glidepath. An aircraft approaching without assistance from the ILS shall follow a descent path which will not result in its being at any time lower than the approach path that would be followed by an aircraft using the ILS glidepath, and shall follow a track to intercept the extended runway centre-line at or above 3000 ft (Heathrow QNH).

Between 0700 and 2300 hours (local time) where the aircraft is approaching runway 09 (L or R) and is using the ILS in IMC or VMC it shall not descend on the glidepath below an altitude of 2500 ft (Heathrow QNH) before being established on the localizer, nor thereafter fly below the glidepath. An aircraft approaching without assistance from the ILS shall follow a descent path which will not result in its being at any time lower than the approach path that would be followed by an aircraft using the ILS glidepath, and shall follow a track to intercept the extended runway centre-line at or above 2500 ft (Heathrow QNH).

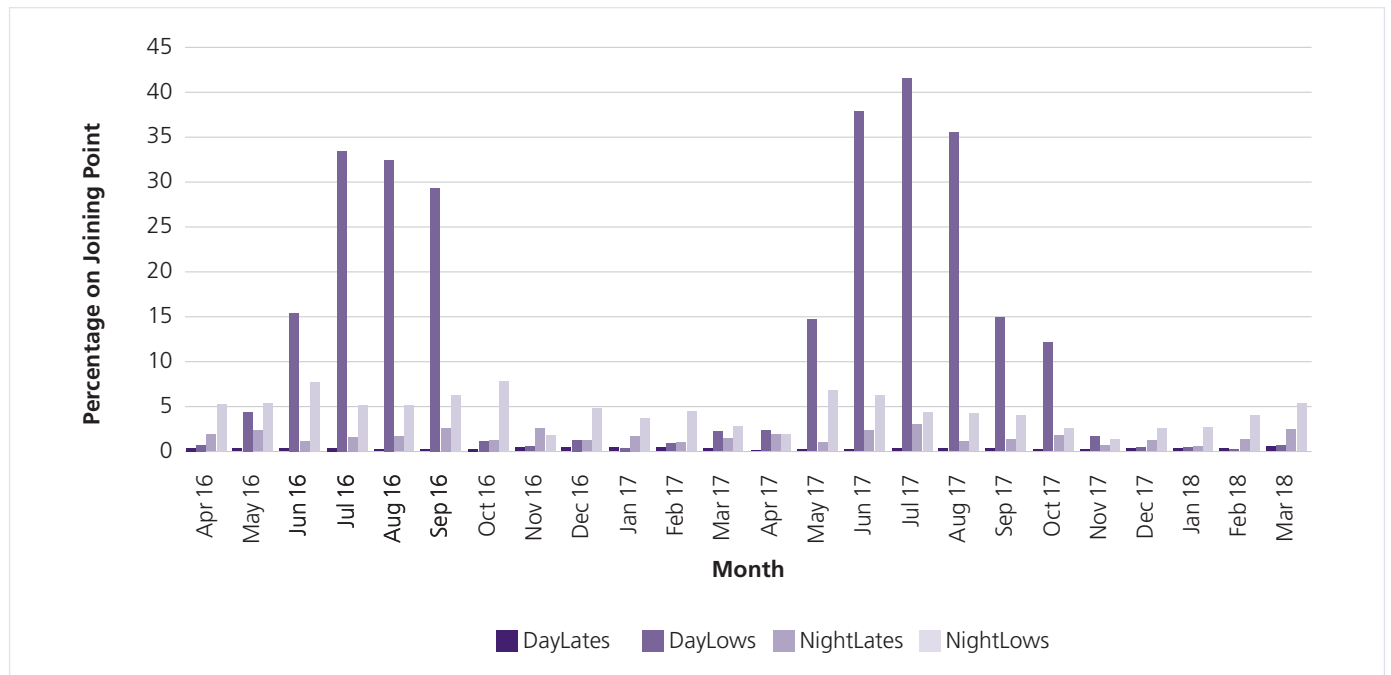
Between 2300 and 0700 hours (local time) where the aircraft is approaching runway 27 (L or R) and is using the ILS in IMC or VMC it shall not descend on the glidepath below an altitude of 3000 ft (Heathrow QNH) before being established

on the localizer, at not less than 10nm from touchdown, nor thereafter fly below the glidepath. An aircraft approaching without assistance from the ILS shall follow a descent path which will not result in its being at any time lower than the approach path that would be followed by an aircraft using the ILS glidepath, and shall follow a track to intercept the extended runway centre-line at or above 3000 ft (Heathrow QNH).

- The NTK system is unable to take into account multiple fluctuations in pressure within an hour. This can lead to an increase in the reported number of LOWS in the summer months.

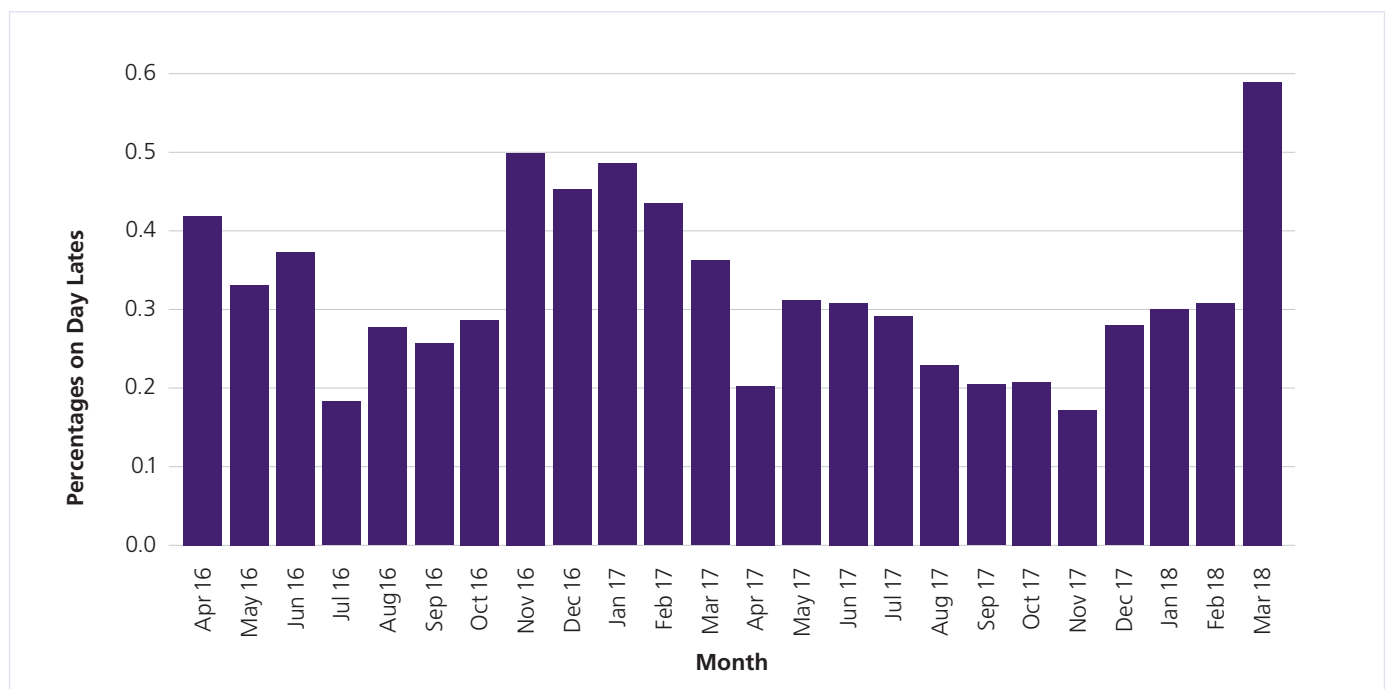
Rolling 2 years Joining Point

Period from Apr 16 to Mar 18



Day Joining Point Lates*

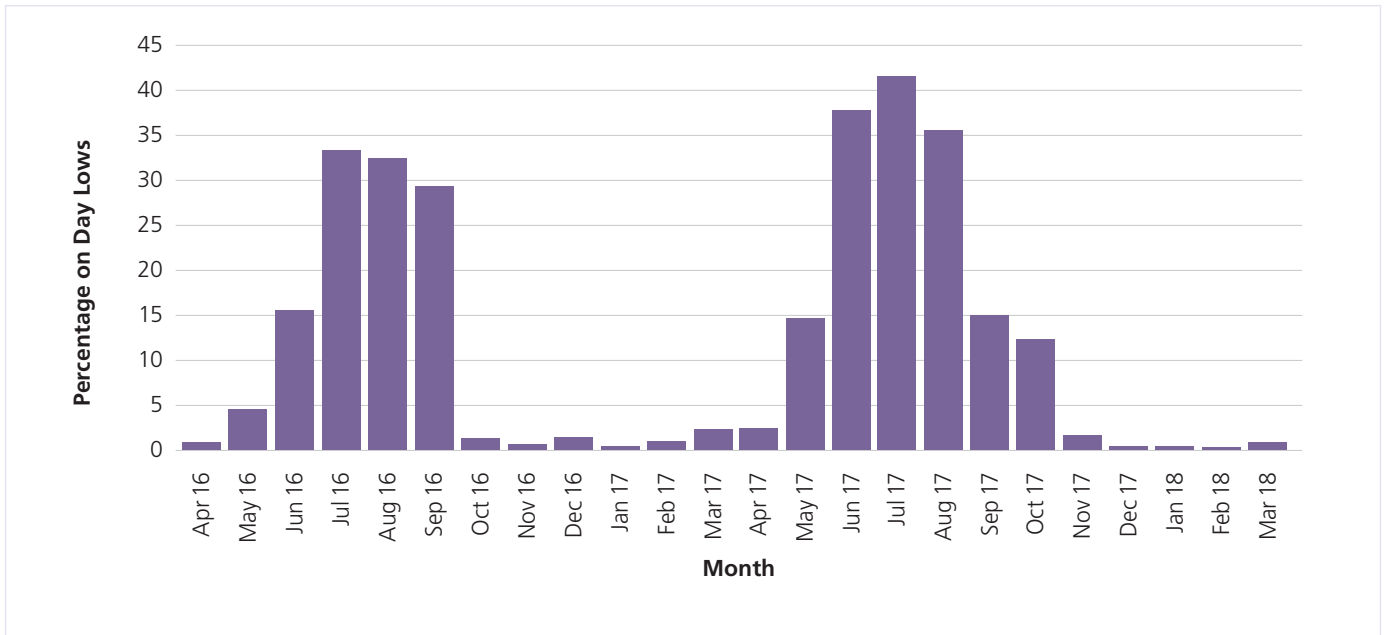
Period from Apr 16 to Mar 18



* Lates and Lows – see glossary on page 29

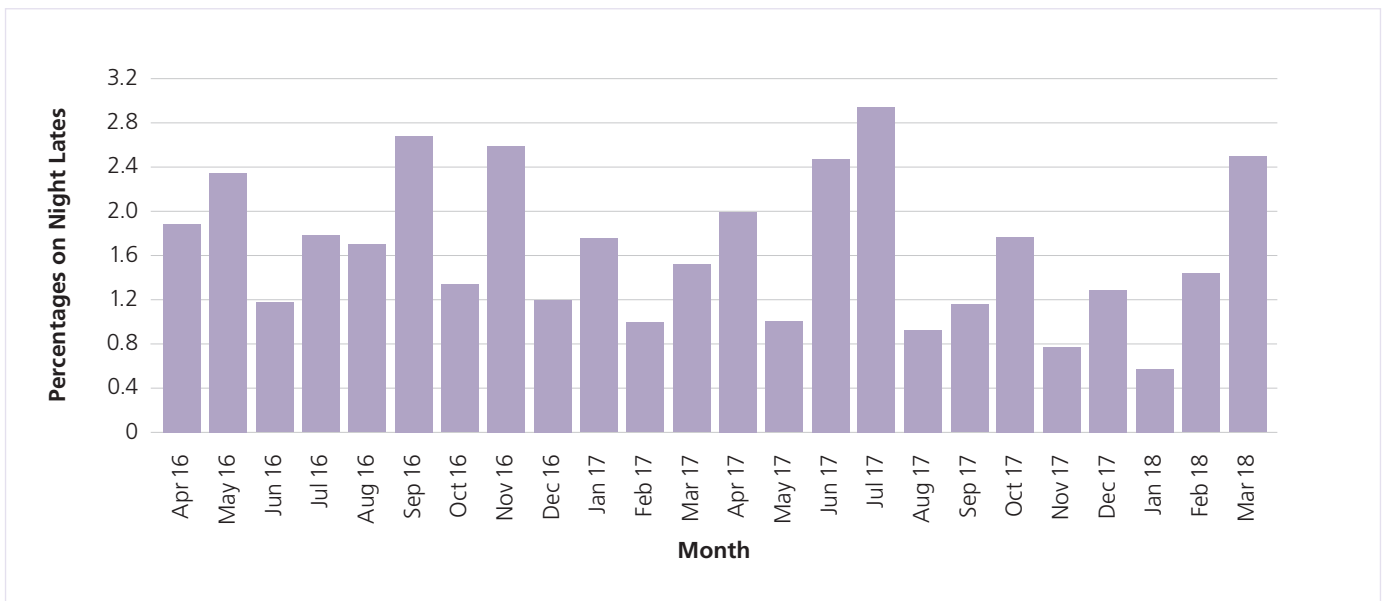
Day Joining Point Lows*

Period from Apr 16 to Mar 18



Night Joining Point Lates*

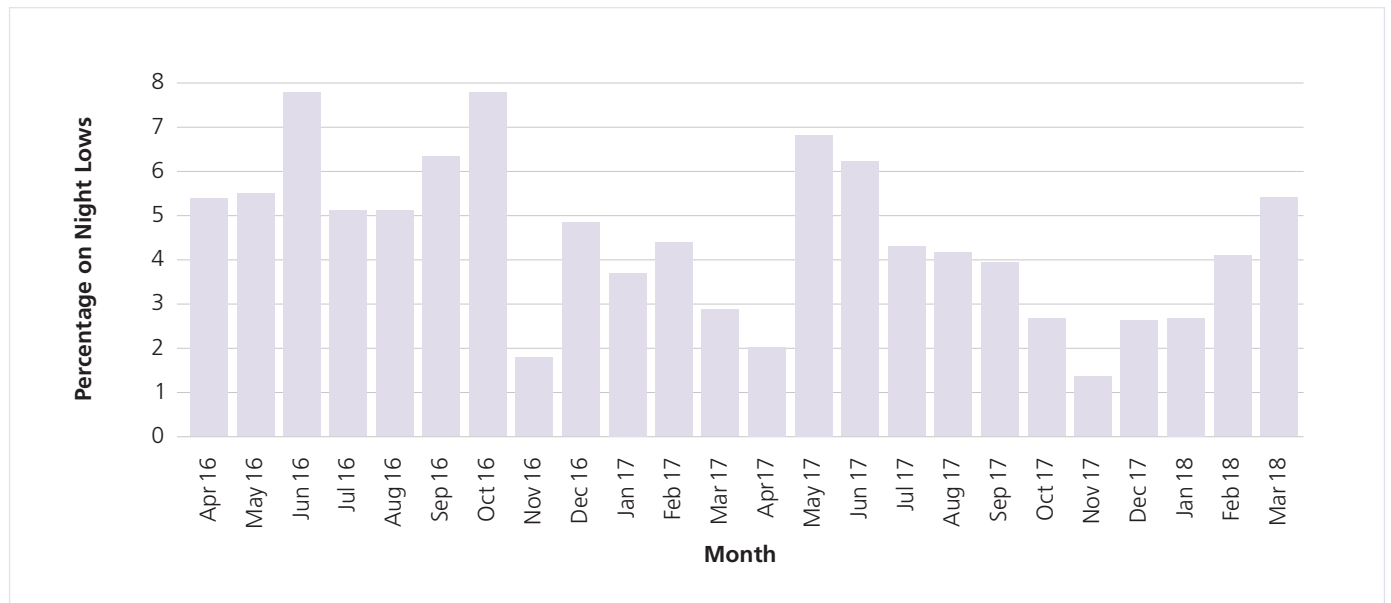
Period from Apr 16 to Mar 18



* Lates and Lows – see glossary on page 29

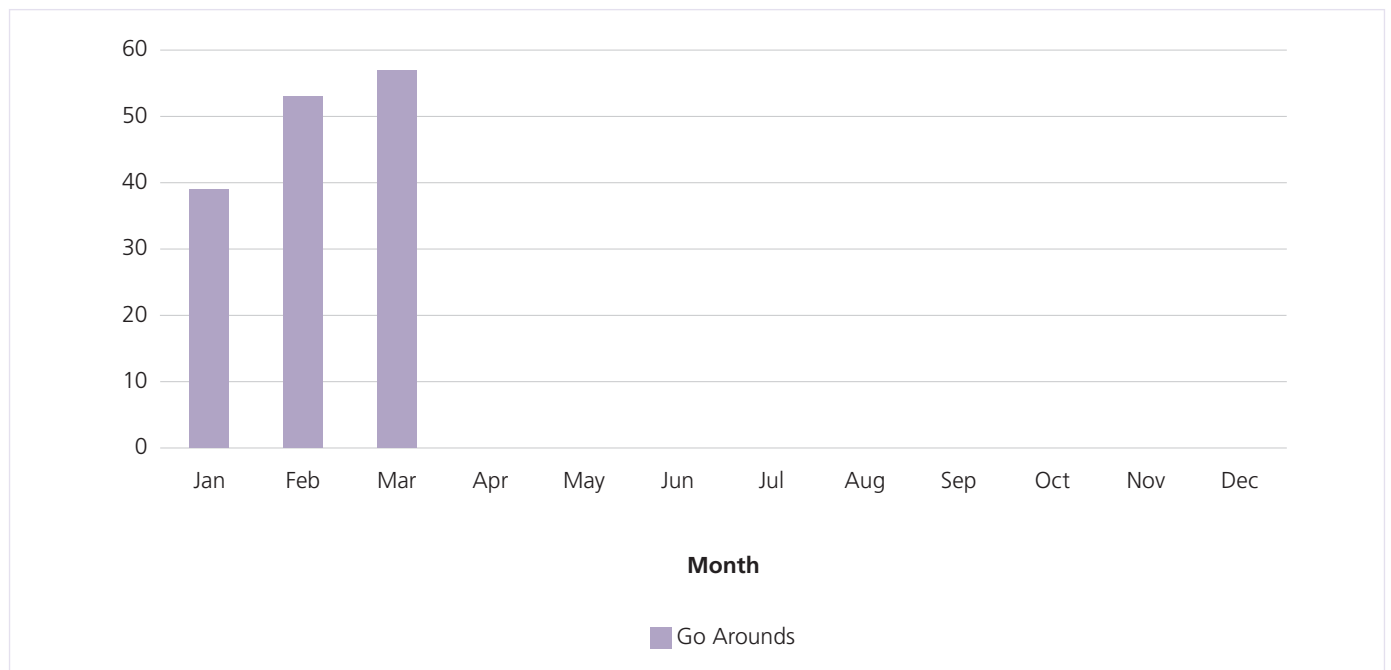
Night Joining Point Lows*

Period from Apr 16 to Mar 18



Go Around* Data

Period from Jan 18 to Mar 18



* Lates and Lows – see glossary on page 29

* Go Around – see glossary on page 29

Night Noise Winter 2008 – Summer 2018

Season	Movement Limit	Quota Points
Winter 2008	2878	4936 (including carry over* from previous season)
Summer 2009	3250	5460
Winter 2009	2875	4547 (including carry over* from previous season)
Summer 2010	3250	5340
Winter 2010	2767	4682 (including carry over* from previous season)
Summer 2011	3250	5220
Winter 2011	2842	4839 (including carry over* from previous season)
Summer 2012	3250	5100
Winter 2012	2875	4620 (including carry over* from previous season)
Summer 2013	3250	5100
Winter 2013	2810	4488 (including carry over* from previous season)
Summer 2014	3250	5100
Winter 2014	2810	4488 (including carry over* from previous season)
Summer 2015	3250	5100
Winter 2015	2810	4518 (including carry over* from previous season)
Summer 2016	3250	5100
Winter 2016	2713	4335 (including carry over* from previous season)
Summer 2017	3250	5100
Winter 2017	2713	4335 (including carry over* from previous season)
Summer 2018	3250	5100

Limits are set by the DfT

The regime applies to a night period (2300 – 0700 hours) during which the noisiest types of aircraft (QC8 and QC16) may not be scheduled to land or take off. In addition QC4 types may not be scheduled to land or takeoff in the night quota period (2330 – 0600). In addition, between 2330 – 0600 hours (the night quota period) there are further restrictions – the number of aircraft movements are restricted

by a movements limit and additionally there is a limit of noise quota points. These limits are set for each summer and winter season. Neither of these limits may be exceeded, ie if the movements limit were to be reached, no further movements would be able to take place even if quota points were still available, and vice versa

* Carry over – see glossary on page 29

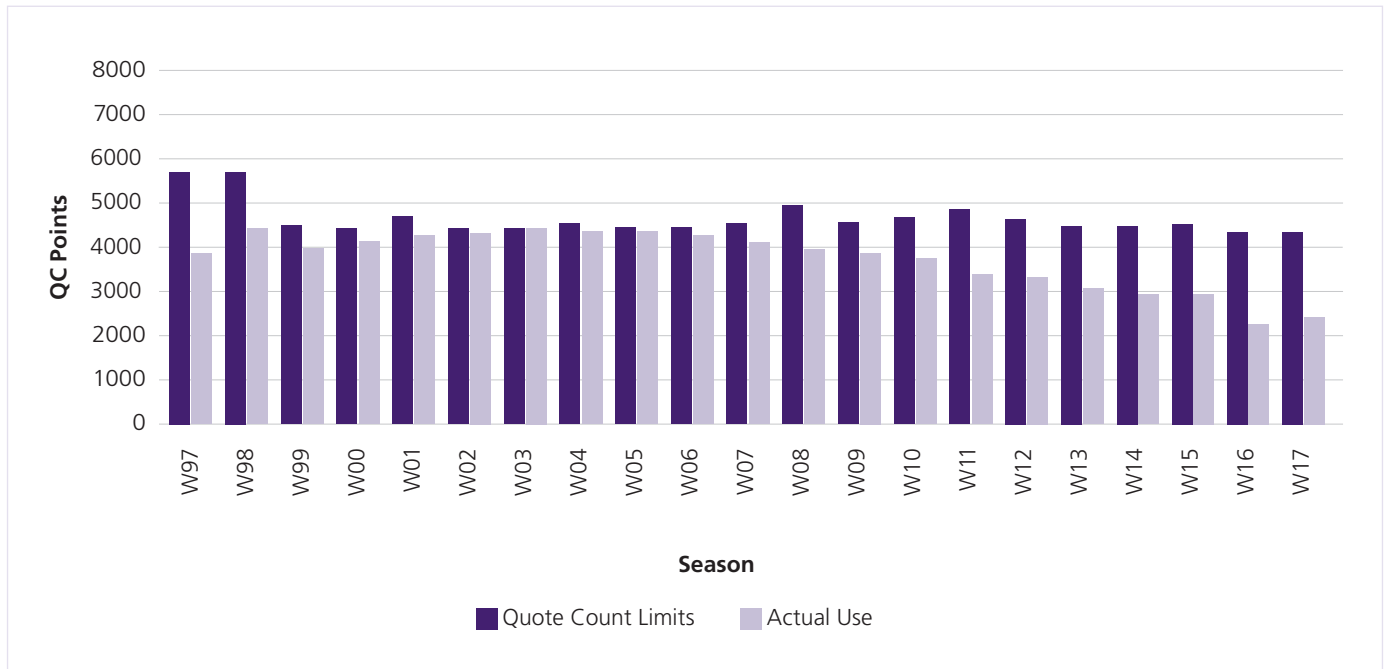
Summary of allocation usage

Winter 2006 – Summer 2018

Season	Seasons Quota Points Limit	Seasons movements limit	QC points carried over	Movements carried over	Total QC points allowed	Total movements allowed	Total QC value	Movements against limit	Exempt	Not counted – Delays	Not counted – DFT	Not counted – Emergency
Winter 2006	4140.0	2550	280.0	162	4420.0	2712	4266.0	2659	95	311	0	20
Summer 2007	5610.0	3250	0.0	0	5610.0	3250	5235.0	3053	150	171	15	9
Winter 2007	4140.0	2550	374.0	197	4514.0	2747	4100.25	2710	87	178	6	44
Summer 2008	5460.0	3250	0.0	0	5460.0	3250	4634	2922	109	116	3	12
Winter 2008	4110.0	2550	826.0	328	4936.0	2878	3947.5	2715	80	26	4	32
Summer 2009	5460.0	3250	0.0	0	5460.0	3250	4429.25	2848	108	45	3	7
Winter 2009	4110.0	2550	437.0	325	4547.0	2875	3863.25	2686	110	302	3	21
Summer 2010	5340.0	3250	0.0	0	5340.0	3250	4504.75	3033	120	56	134	9
Winter 2010	4110.0	2550	572.0	217	4682.0	2767	3735.25	2577	67	185	160	37
Summer 2011	5220.0	3250	0	0	5220	3250	4491	2958	116	75	1	25
Winter 2011	4080	2550	759	292	4839	2842	3374.5	2581	75	71	0	73
Summer 2012	5100	3250	0	0	5100	3250	3946.25	2853	72	118	11	26
Winter 2012	4110	2550	510	325	4620	2875	3310.75	2670	26	109	2	51
Summer 2013	5100	3250	0	0	5100	3250	3917.00	2837	43	143	2	18
Winter 2013	4080	2550	408	260	4488	2810	3070.50	2715	26	89	11	71
Summer 2014	5100	3250	0	0	5100	3250	3242.50	2714	24	221	1	75
Winter 2014	4080	2250	408	260	4488	2810	2939.50	2676	13	25	2	81
Summer 2015	5100	3250	0	0	5100	3250	2847.00	2802	14	158	11	14
Winter 2015	4110	2550	408	260	4518	2810	2475.25	2696	3	94	0	14
Summer 2016	5100	3250	0	0	5100	3250	2304.50	2949	15	304	8	24
Winter 2016	4080	2550	255	163	4335	2713	2259.25	2612	7	157	0	19
Summer 2017	5100	3250	0	0	5100	3250	2407.75	2938	11	230	0	19
Winter 2017	4080	2550	255	163	4335	2713	2414.50	2575	8	177	0	20
Summer 2018	5100	3250	0	0	5100	3250						

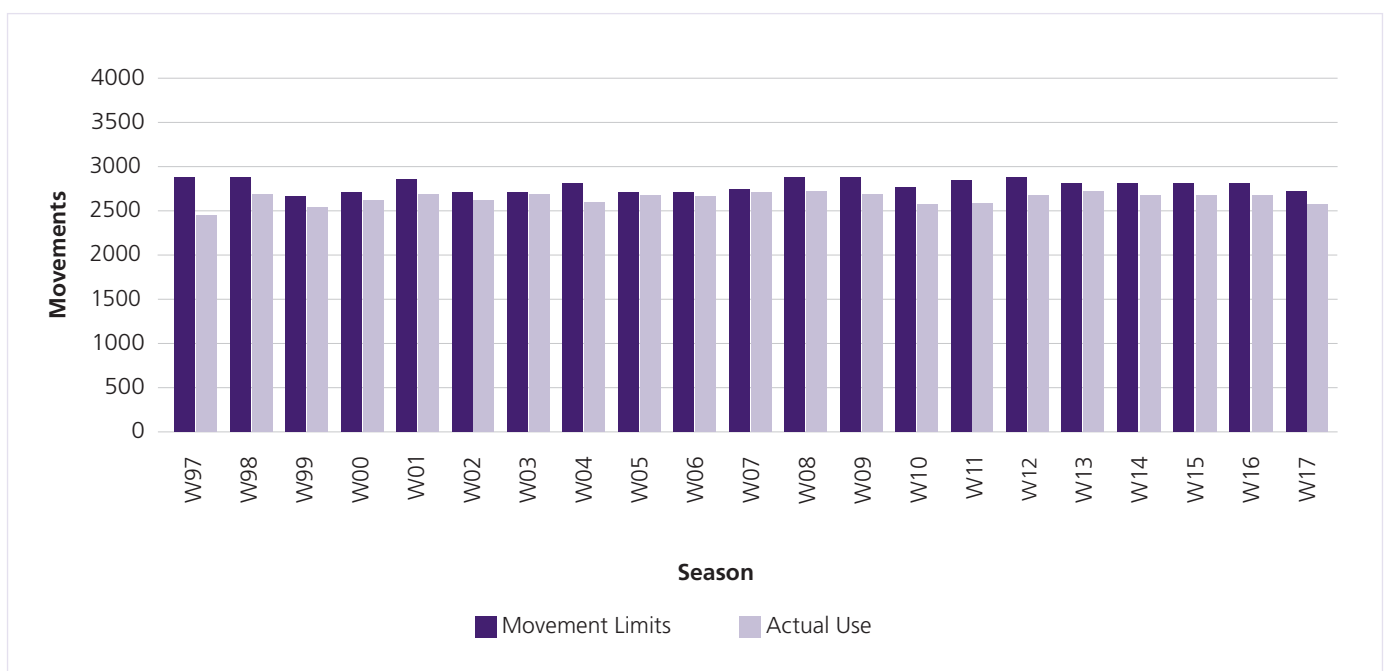
Winter Usage of QC Points (including carry over)

Period from Winter 97 to Winter 17



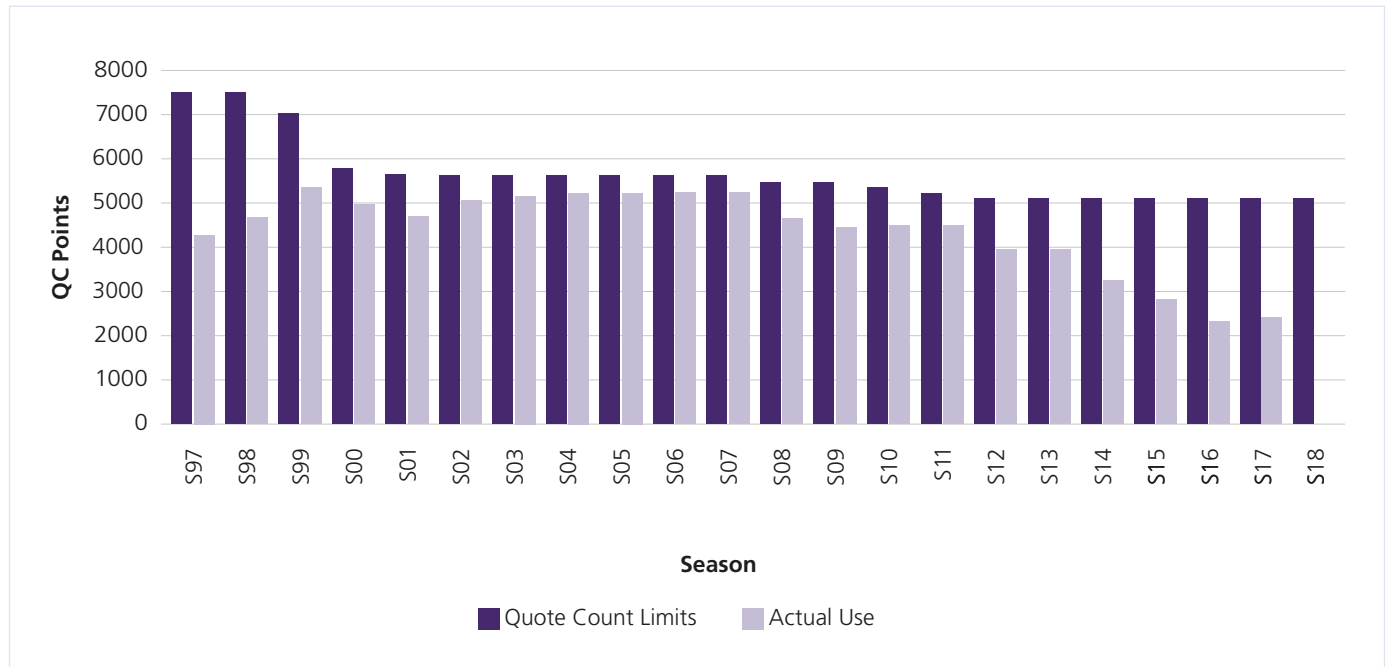
Winter Usage of Movements (including carry over)

Period from Winter 97 to Winter 17



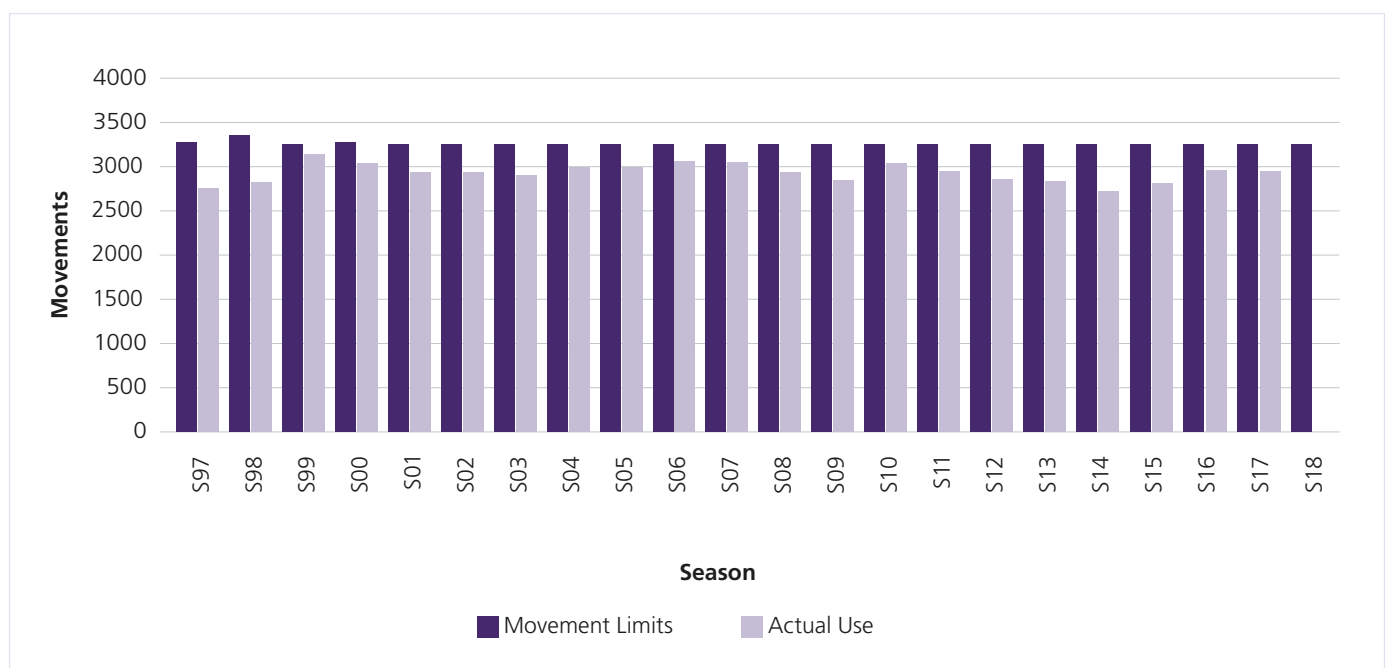
Summer Usage of QC Points (including carry over)

Period from Summer 97 to Summer 18

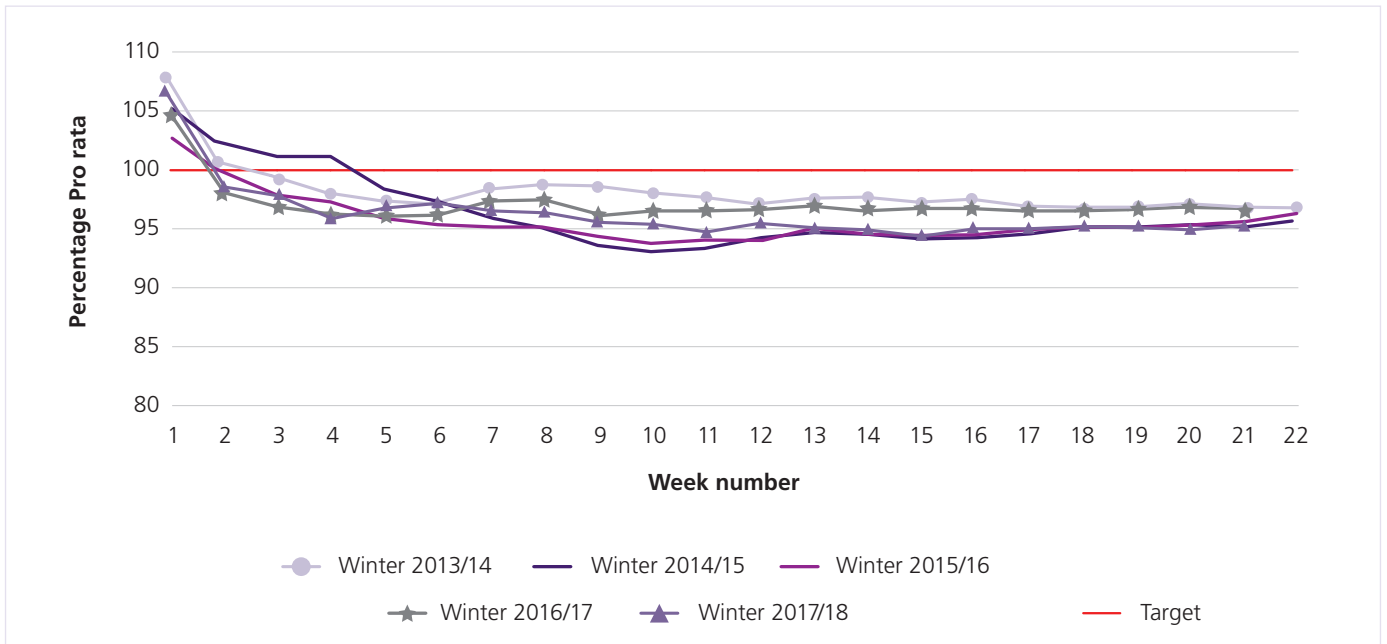


Summer Usage of Movements (including carry over)

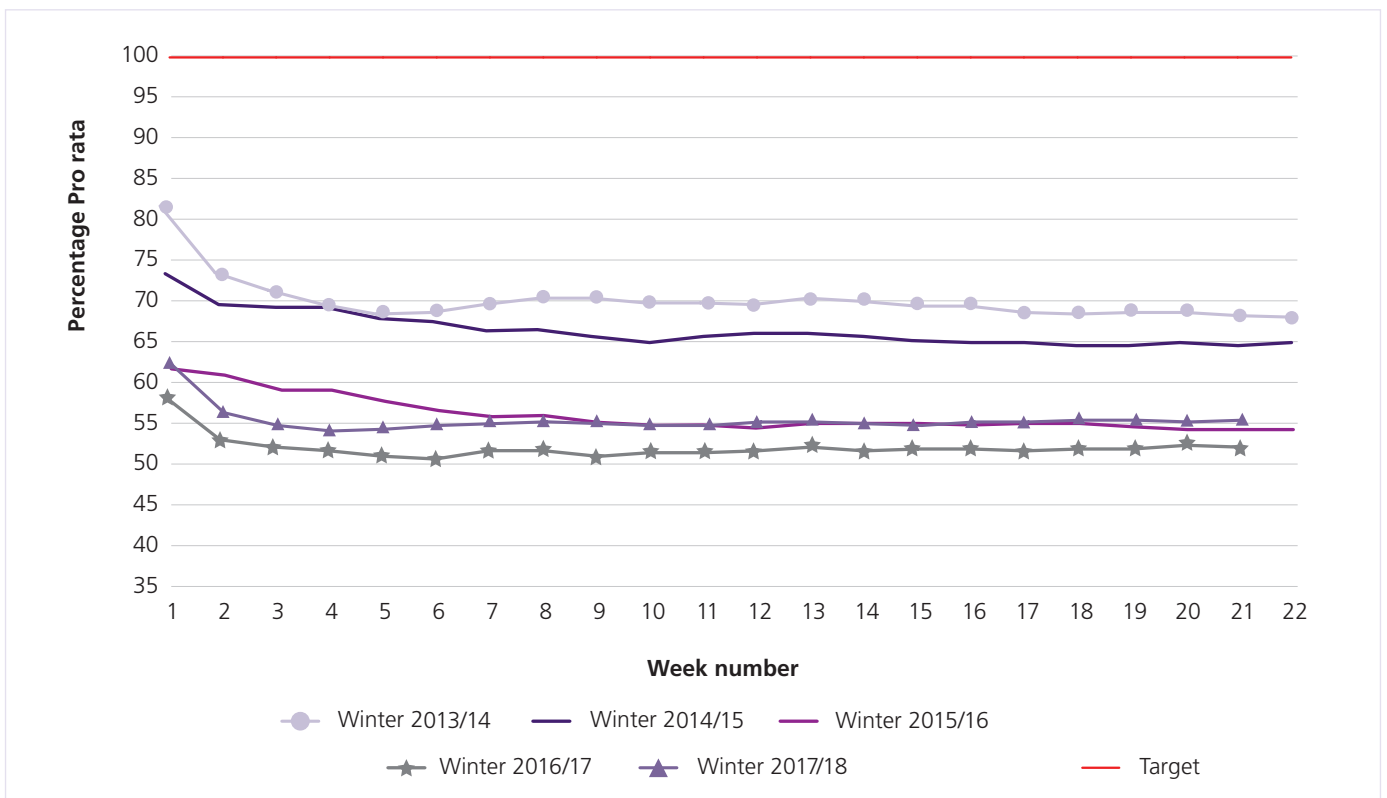
Period from Summer 97 to Summer 18



Winter Season Weekly Pro Rata Usage Comparison (MV)

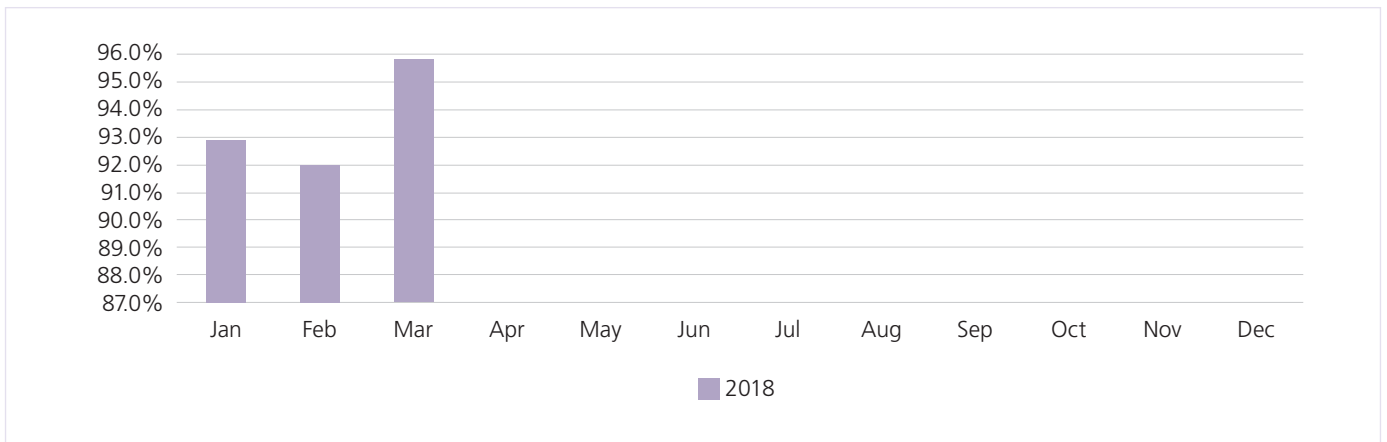


Winter Season Weekly Pro Rata Usage Comparison (QC)

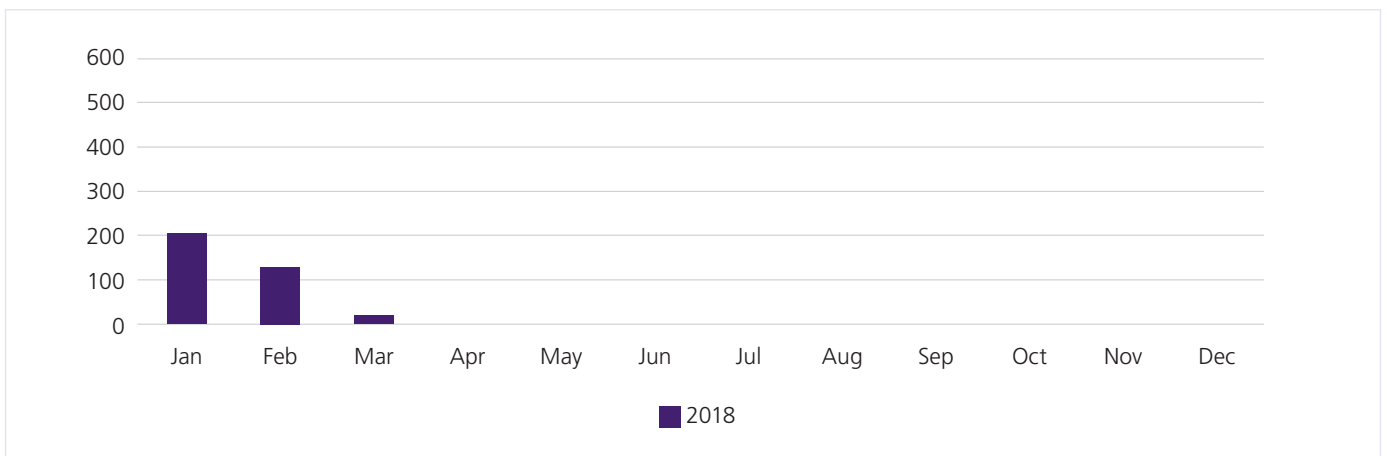


Arrival and Departure information

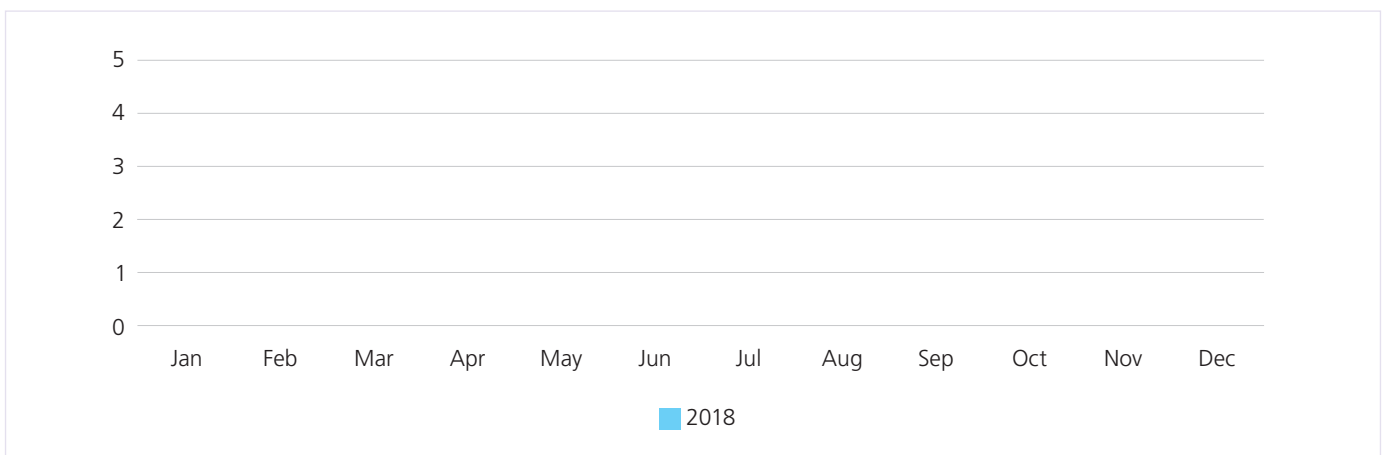
Runway Alteration Adherence – Arrivals



TEAM after 0700L Pure West Days only – 2018



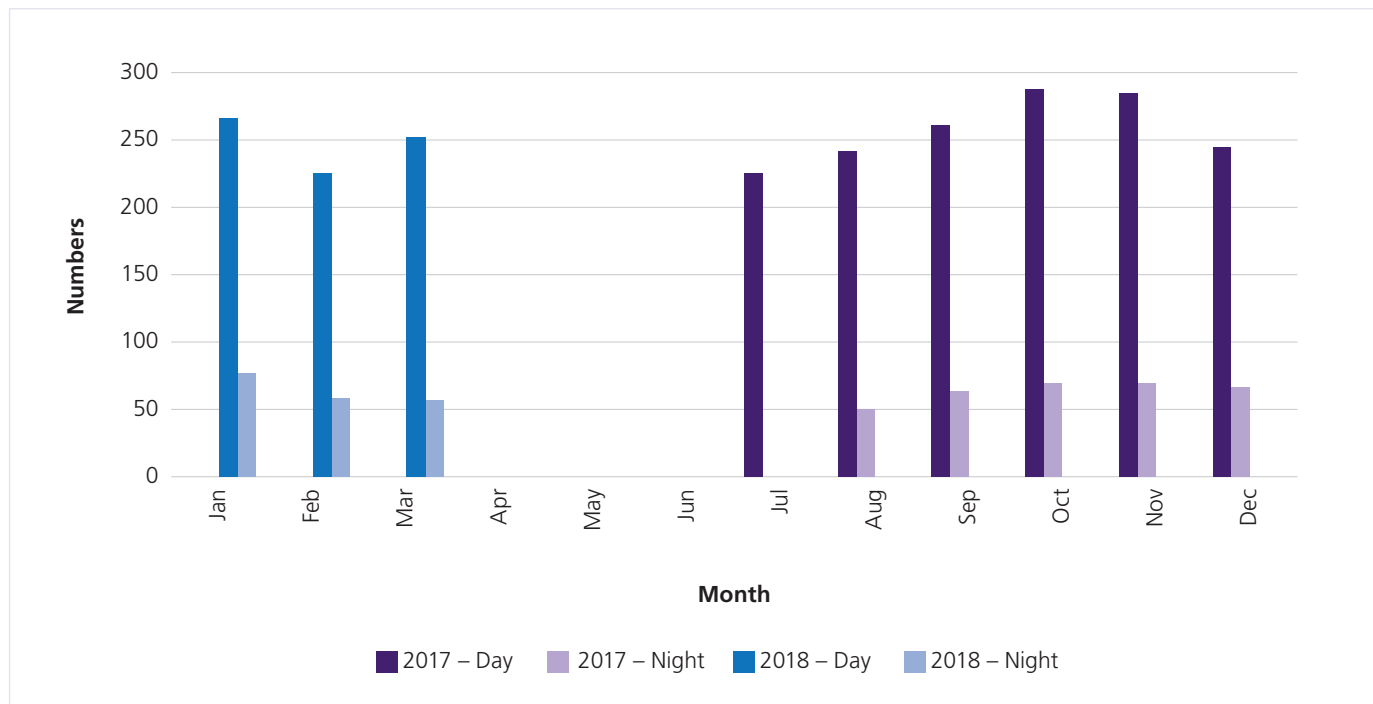
Departures off landing Runway Jan-Mar 2018



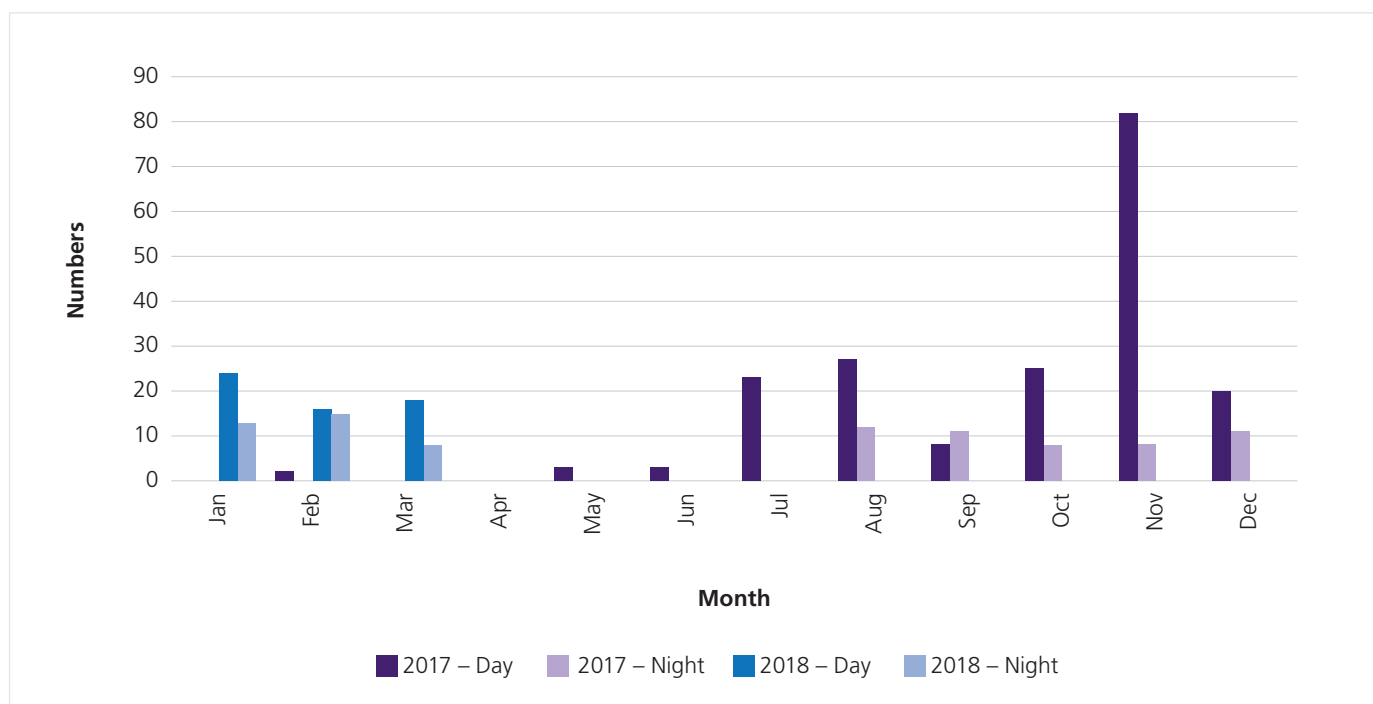
Engine Ground Running

The maximum total ground running exposure time over the night period from 2300 to 0700 hours must not exceed 150 minutes. Within the total 150 minutes, the maximum amount of ground running at high power must not exceed 60 minutes in any one night or exceed a rolling 30 day average of 20 minutes.

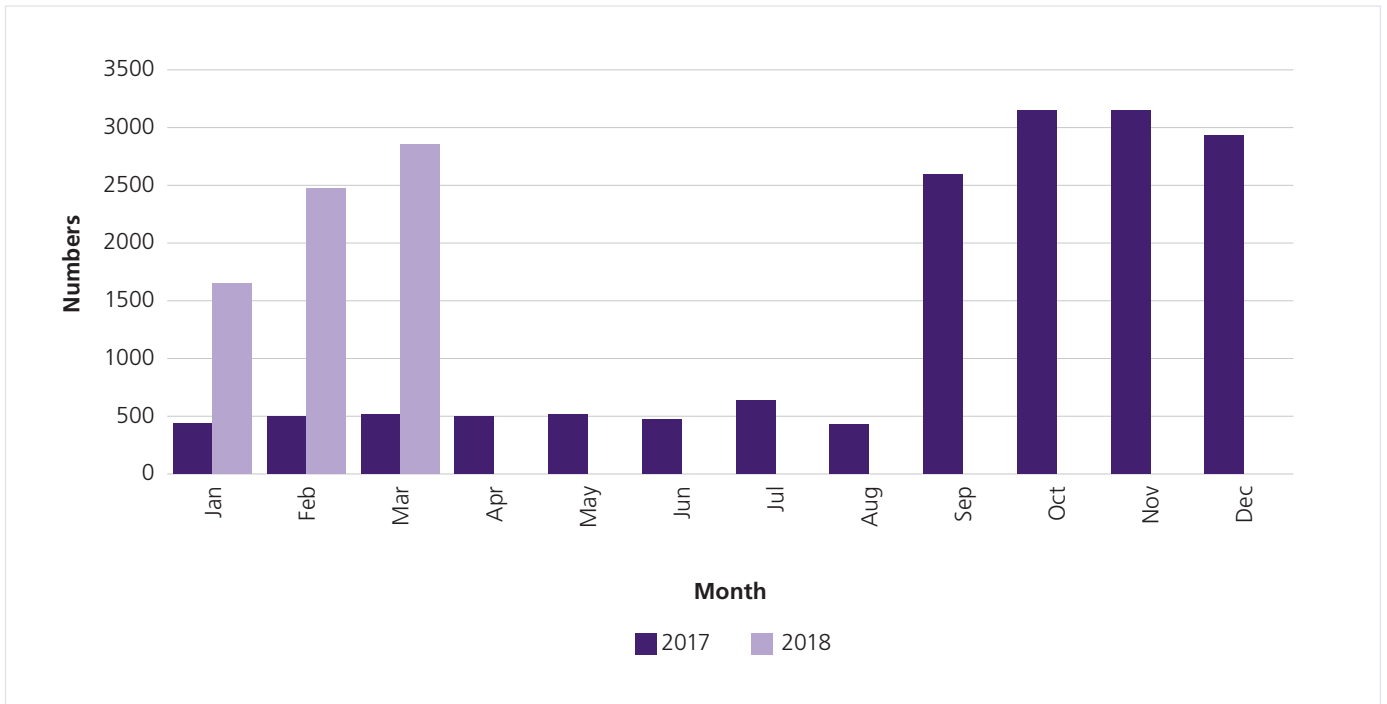
Ground Idle Engine Runs



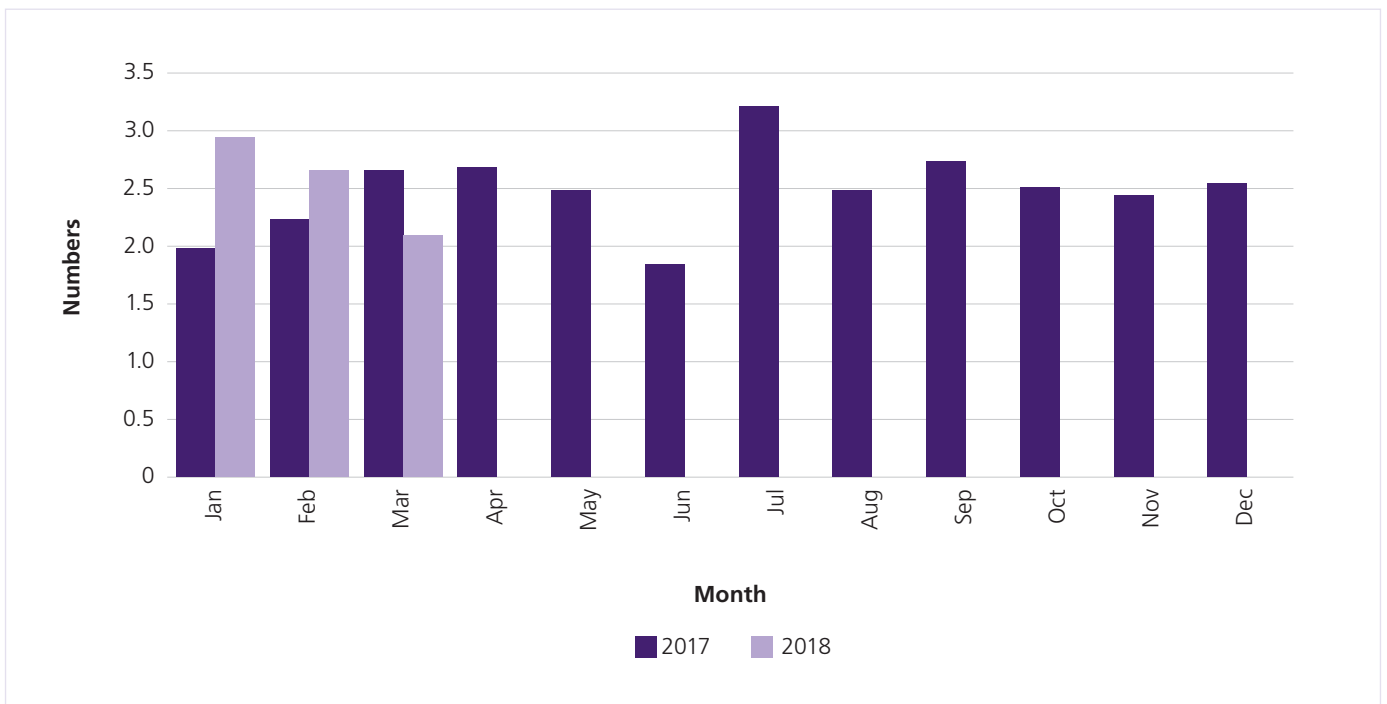
High Power Runs (night all)



Total run time per night



Average number of run per night



Glossary of Terms

AIP	Aeronautical Information Publication www.nats-uk.ead-it.com
ANOMS	Noise, track keeping and complaints system
Carry over	Night restrictions are set on a seasonal basis. Up to 10% of a season's unused quota can be carried forward (known as "carry over") to the next season and up to 10% of a following season's quota can be anticipated
CDA	Continuous Descent Approach
dba	A-weighted decibels
FLOPC	Flight Operations Performance Committee
Go Around	A go around is an aborted landing of an aircraft which is on approach to the runway
IMC	Instrument Meteorological Conditions
ILS	Instrument Landing System
KPI	Key performance indicators
Lates and Lows	During the daytime the aircraft are required to be "established" on the ILS at 7.5nm from touchdown. This equates to approximately 2500ft aal. At night the distance is extended to 10nm which equates to approximately 3000ft aal.
LHR	London Heathrow
LS	Lateral swathes
nm	Nautical Miles
NATS	National Air Traffic Services
NPR	Noise Preferential Routes
NTK	Noise and Track Keeping monitoring system
QC	Quota Count
QNH	The barometric pressure at sea level (QFE is the barometric pressure at the aerodrome)
TEAM	Tactically Enhanced Arrivals Mode. In order to help alleviate delay in the stacks, ATC may change from the published alternation schedule. In order to maintain minimum separation distances between inbound aircraft, maintain usual high safety standards and keep air traffic flowing, ATC may use both runways for arrivals for a short period.
VMC	Visual Meteorological Conditions

Produced by Heathrow Airport's Airspace & Noise Performance team,
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London Heathrow Airport, Hounslow TW6 2GW.

Further information

If you would like further information, please contact Airspace & Noise Performance team:

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Make an enquiry on our website:

www.heathrow.com/noise

Please note that the freephone telephone number is an answerphone.
Please leave your name, contact details and brief details of your enquiry.
A member of the Airspace & Noise Performance team will contact you
as soon as possible.