FARNBOROUGH AIRPORT

Town and Country Planning Act Section 106/299A

Environment Report 2

July to December 2019

Farnborough Airport Ltd
Farnborough
Hampshire
GU14 6XA

1. INTRODUCTION

1.1 In compliance with the requirements of the agreement in place under Sections 106 and 299A of the Town and Country Planning Act 1990 between Farnborough Airport (FAL) and Rushmoor Borough Council (RBC), FAL hereby submits a report for July to December 2019 detailing results of environmental monitoring as required by clauses 1.3, 2.8a, 2.8b and 3.4.

2. NOISE MONITORING

2.1 Two permanent noise monitoring terminals (NMTs) continuously operate at the sites of Tweseldown Racecourse and Farnborough College of Technology; approximately one mile from the airfield and beneath the typical arrival and departure flight path.

2.2 A portable noise monitoring terminal is stored at the Airport and remains available on request to any member of the community that has a requirement for noise monitoring within their residential area.

2.3 Correlated Noise data (dB(A) L_{eq16}) recorded by the fixed NMTs for "Aircraft", "Community" and "Total" noise is tabulated in Appendix A.

2.4 Activities at Tweseldown racecourse did not significantly impact aircraft noise monitoring during the second half of 2019.

2.5 All three operational NMTs were subject to calibration by an independent specialist on the 28th March 2019.

2.6 Noise contours produced using the FAA's Integrated Noise Model (INM 7.0d) for operations covering 2018 together with predicted contours for 2019 were submitted to RBC in mid February last year in accordance with the requirements of the Planning Agreement. The results of the modelling exercise undertaken are displayed in Table 1, along with those included within the Planning Agreement (Control Contours). The predicted noise contours were generated using movement data (flight tracks) from the study year, taking in to account the forecast growth for the year ahead (including predicted helicopter movements).

2.7 Contours relating to actual movements for January to June last year and predicted contours for July to December last year were supplied to RBC in mid August. Contours relating to actual movements for January to December last year together with predicted contours for the year ahead will be submitted to RBC in mid February this year.

Table 1: Most recent results of annual INM Noise Assessment

dB(A) $L_{Aeq,16h}$	**Control Contours** Predicted 20,000 (km^2) movements (1997 mix)	**Amended Control Contour Areas** (km^2) as per clause 12.1a of the S106 (29/10/2010)	**Actual Contours Areas** Jan-Dec 2018 (km^2) (based on 29,958 actual movements)	**Predicted Contour Areas** Jan-Dec 2019 (km^2) (31,000 predicted movements using 2018 fleet mix)
55	9.07	6.58	2.18	2.24
60	4.03	2.42	0.94	0.96
65	1.70	N/A	0.45	0.46

2.8 Use of the dB(A) L_{eq16} contour is internationally recognised as a means of noise measurement. A 66 dB(A) L_{eq16} indicates that the average level of noise during a 16-hour day is 66 dB(A).

2.9 The 55 dB(A) L_{eq16} contour, used in agreement with RBC, is below the level in the Aviation Policy Framework (March 2013) which the Government advises that it will continue to treat as the average level of daytime aircraft noise marking the approximate onset of significant community annoyance.

2.10 In accordance with the requirements of the Section 106 Agreement, INM 7.0d has been used to produce the noise contours. This version of the software allows helicopter movements to be integrated within the modelling process together with consideration of surrounding terrain.

2.11 Daily dB(A) L_{eq16} figures are provided in Appendix A.

3. AIRCRAFT MOVEMENTS

3.1 Table 2 displays a summary of aircraft movements for the reporting period by movement category.

Table 2: Movements summary by type

Category	Jul	Aug	Sep	Oct	Nov	Dec	Report 2 Total
Business	3112	2416	3011	2731	2309	2214	**15793**
Helicopter	144	94	182	162	104	106	**792**
Subtotal (Declared under planning obligations)	**3256**	**2510**	**3193**	**2893**	**2413**	**2320**	**16585**
Military	23	3	4	4	4	4	**42**
Flying Club	66	48	36	29	19	18	**216**
Other	220	178	126	95	81	72	**772**
ADS	0	0	0	0	34	0	**34**
Total	**3565**	**2739**	**3359**	**3021**	**2551**	**2414**	**17649**

3.2 Tables 3 and 4 display a summary of movement percentages against the total for each month, by category for weekdays and weekends.

Table 3: Percentage movement summary by category for weekdays

	Jul	Aug	Sep	Oct	Nov	Dec
Business	67.4	60.8	67.1	69.4	67.2	65.8
Helicopter	3.5	2.4	4.7	4.1	3.6	3.2
Military	0.6	0.1	0.1	0.1	0.2	0.2
Flying Club	1.6	1.2	0.5	0.7	0.6	0.6
Other	5.1	5.0	2.6	2.5	2.9	2.4
ADS	0.0	0.0	0.0	0.0	1.3	0.0
TOTAL	**78**	**70**	**75**	**77**	**76**	**72**

Table 4: Percentage movement summary by category for weekends

	Jul	Aug	Sep	Oct	Nov	Dec
Business	19.9	27.4	22.6	21.0	23.4	25.9
Helicopter	0.5	1.0	0.7	1.3	0.5	1.2
Military	0.1	0.0	0.0	0.0	0.0	0.0
Flying Club	0.2	0.5	0.5	0.2	0.2	0.2
Other	1.0	1.5	1.1	0.6	0.2	0.6
ADS	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	**22**	**30**	**25**	**23**	**24**	**28**

3.3 Table 5 displays runway use data. Operations are divided into Arrivals and Departures on each runway and helicopter movements without use of the runway (Aerodrome).

Table 5: Runway in use (as percentages) by mode of operation

	Jul	Aug	Sep	Oct	Nov	Dec
06 Arrival	12	3	9	12	15	3
06 Departure	12	3	8	12	15	3
24 Arrival	37	46	40	36	34	46
24 Departure	37	46	40	37	33	46
Aerodrome (Heli)	2	2	3	3	3	2

3.4 Maximum Take-Off Weight (MTOW) is recorded for all operating aircraft. Table 6 displays MTOW data for aircraft operated during this reporting period reflected as a percentage of the overall movements in each month.

Table 6: Percentage of movements by MTOW against the monthly declared total

	Jul	Aug	Sep	Oct	Nov	Dec
Over 50t	2	2	1	1	1	1
50t or less	98	98	99	99	99	99

3.5 All civil aircraft using Farnborough during the reporting period were compliant with the International Civil Aviation Organisation (ICAO) Chapter 4. All aircraft must provide certification of Noise Chapter prior to permission to operate being granted.

3.6 Helicopters, light aircraft and turbo-prop aircraft are not subject to the requirements of the ICAO noise certification scheme.

4. AIR QUALITY MONITORING

4.1 Thirteen nitrogen dioxide tubes and two Streetbox monitors remain as previously reported, details of the locations can be found on reports prior to Q1 2005.

4.2 Table 7 displays the standards accepted by the Government and recommended by the expert panel on air quality standards.

Table 7: Objectives included in regulations for purposes of local Air Quality Management

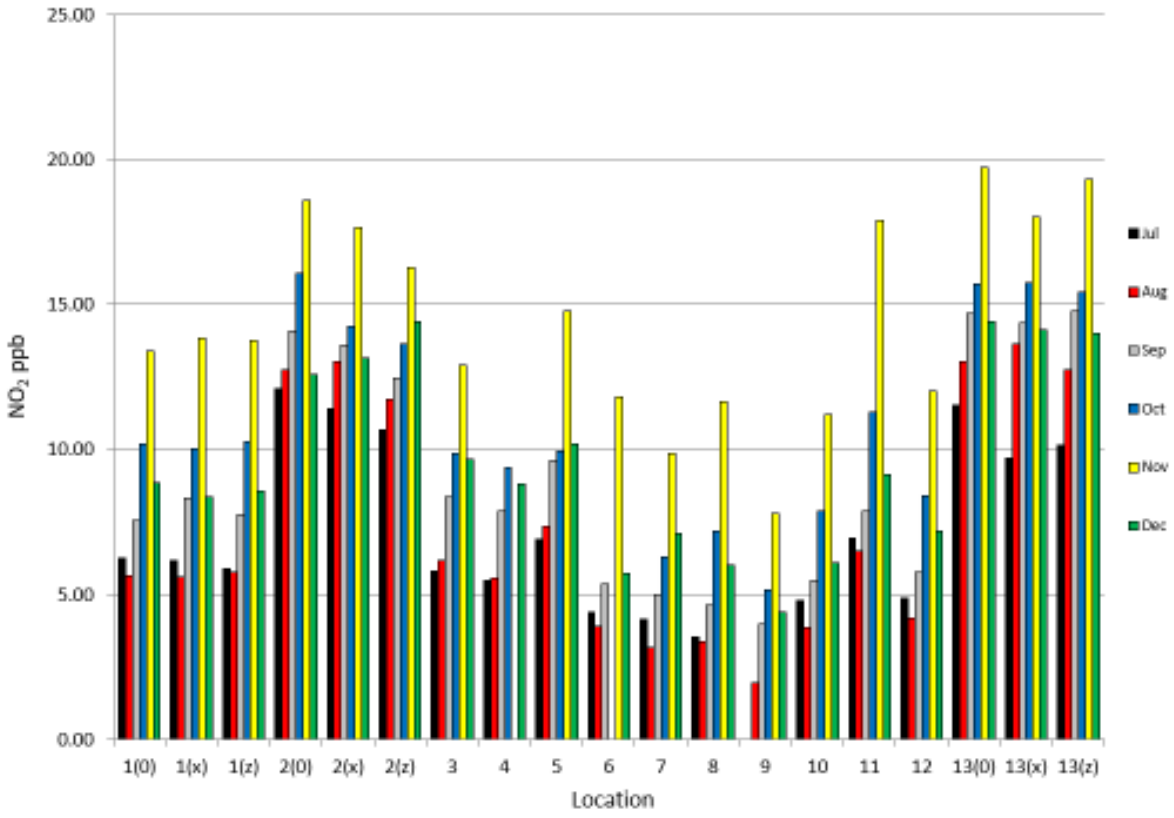
Pollutant	Air Quality Objective		Date to be achieved by and maintained thereafter
	Concentration	Measured as	
NO_2	200µg/m^3 (105ppb) not to be exceeded more than 18 times a year	1 hour mean	1st Jan 2010
NO_2	40µg/m^3 (21ppb)	annual mean	1st Jan 2010

[a] Conversions of ppb and ppm to µg/m^3 and mg/m^3 at 20ºC and 1013mb.
ppb = parts per billion µg/m^3 = micrograms per cubic metre.
Source: https://uk-air.defra.gov.uk/assets/documents/Air_Quality_Objectives_Update.pdf

4.3 Air quality results consist of raw and manipulated data from diffusion tube laboratory analysis. Raw data from the Learian Streetbox Monitors consists of hourly mean NO_2 concentrations. This data is extensive over a six-month period and so is displayed as a monthly mean.

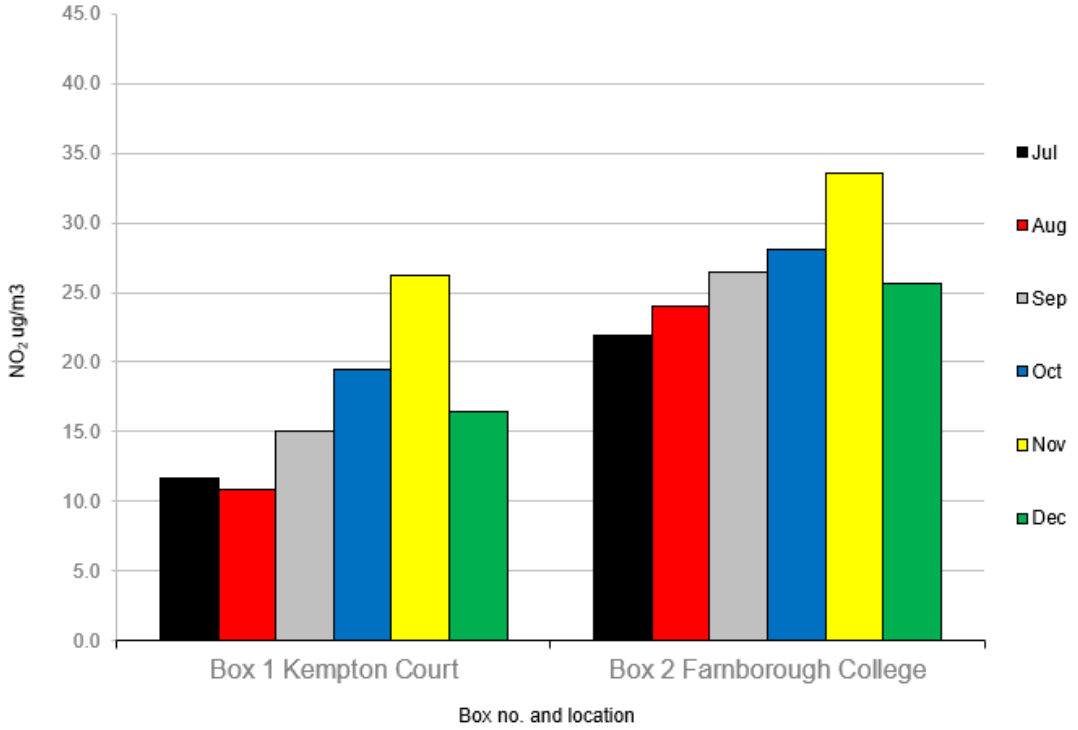
4.4 Passive and active NO_2 monitoring results are detailed in Figures 1 and 2.

Figure 1: Passive NO_2 monitoring results, *(ppb expressed as a monthly mean).*



N.B. This data has not had a bias adjustment applied

Figure 2: Active NO_2 monitoring results, *(µg/m3 expressed as a monthly mean).*



4.5 The results taken from the diffusion tubes indicate that NO_2 levels around the airfield during the reporting period have achieved the stated objectives for UK Air Quality Management.

4.6 Continuing trends in the results indicate terrestrial sources of NO_2 as the predominant source. The elevated levels consistently recorded for location 13 adjacent to the M3 motorway illustrate this.

5. CONCLUSION

5.1 Routine monitoring of noise, noise abatement compliance, air quality and aircraft movement numbers continues at the Airport. To date, all monitoring practices have been implemented in accordance with the requirements and the Town and Country Planning Act Section 106 Agreement.

5.2 All movements operated at the airport remain restricted to those permitted by the terms of the planning consent and the accompanying agreement.

5.3 Air quality data continues to indicate terrestrial sources of NO_2 as predominate. Nitrogen dioxide levels remain consistent with long term trends; typically elevated over the colder winter months, due to nitrate release from decomposition.

5.4 Activities at the airport remain within the specifications of the Section 106/299A agreement.

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25/01/2020

Appendix A

FARNBOROUGH AIRPORT

Noise Report

Farnborough Airport

Aircraft Noise By Day of Month and NMT

Start Date:01-Jul-2019

End Date: 31-Dec-2019

July 2019

NMT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	54.3	52.6	53.4	53.8	55.2	62.6	56.4	55.3	51.7	52.1	53.5	54.3	53.8	53.5	54.4	52.6	53.4	52.1	52.4	51.7	52.9	51.4	51.8	50.3	53.0	53.5	52.4	51.0	51.2	49.5	51.5
3	58.1	56.9	56.8	56.5	66.8	58.7	58.5	57.0	55.9	57.1	57.4	56.9	55.9	58.8	59.4	56.1	55.7	57.2	57.2	55.2	56.3	58.3	59.7	56.0	56.5	58.0	54.4	54.4	56.9	57.1	55.7

August 2019

NMT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	53.4	51.9	51.9	51.7	52.3	52.3	50.6	54.0	50.5	53.2	51.4	49.6	47.9	50.2	51.4	50.5	48.5	49.7	51.1	47.9	51.1	52.0	53.4	51.3	52.0	52.1	52.8	51.9	49.9	52.3	49.5
3	55.8	57.2	54.6	54.9	57.3	56.0	56.3	55.6	55.5	57.2	55.4	54.7	54.2	55.2	55.9	55.3	56.4	55.5	57.5	54.5	56.0	56.0	55.6	57.0	54.5	53.4	55.8	56.6	56.9	57.0	57.8

September 2019

NMT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
2	51.4	51.7	50.9	51.0	53.2	51.5	53.0	53.3	52.0	52.0	50.1	51.3	52.7	49.5	50.8	51.6	54.3	53.9	51.6	52.1	47.4	51.1	51.3	51.7	51.9	52.1	52.2	50.6	52.3	50.7
3	56.4	56.7	56.8	56.7	54.7	56.1	51.9	54.6	57.1	57.1	57.3	57.3	56.3	51.6	56.0	56.3	53.9	56.3	57.7	57.3	56.9	59.2	57.4	58.7	58.1	58.5	59.3	55.9	57.5	58.4

October 2019

NMT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	51.1	54.7	53.6	53.4	49.7	53.9	49.7	48.9	50.3	50.1	53.1	51.5	52.1	51.5	50.6	50.3	52.7	51.8	52.5	53.3	52.5	51.2	51.4	54.2	51.7	56.1	50.0	54.0	53.1	51.5	52.9
3	57.4	56.5	57.1	56.3	57.5	57.2	56.2	56.0	55.8	57.3	57.9	53.1	57.6	57.0	56.4	56.2	56.9	58.8	56.2	53.0	55.8	56.7	57.5	57.5	57.3	55.6	54.0	55.3	54.6	55.6	57.5

November 2019

NMT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
2	49.0	52.6	49.3	52.0	53.6	49.2	52.8	52.4	51.1	52.2	49.8	48.6	52.6	54.6	54.2	49.4	52.5	53.9	48.2	52.8	52.0	51.9	50.9	51.6	48.6	49.7	50.8	53.4	48.9	51.9
3	55.8	57.0	56.0	54.1	55.2	55.3	57.3	55.8	52.1	56.5	57.2	55.9	54.5	56.9	56.4	53.5	54.1	56.4	55.7	56.1	55.9	59.1	51.6	56.2	58.0	56.5	57.1	56.7	54.6	53.2

December 2019

NMT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	52.1	50.7	50.5	52.5	50.9	53.1	50.0	49.6	53.7	56.1	50.4	51.2	53.4	56.1	49.0	49.0	54.7	49.2	51.7	53.6	51.5	51.0	49.3	46.8	0.0	0.0	52.0	49.5	44.2	45.4	45.3
3	55.8	55.1	58.3	57.6	57.0	58.3	56.6	57.0	55.6	58.5	55.9	55.9	57.7	55.3	55.1	54.4	54.0	56.5	57.5	56.1	56.0	54.8	53.5	49.3	0.0	31.9	53.9	55.0	53.8	51.6	48.5

FARNBOROUGH AIRPORT

Noise Report

Farnborough Airport

Community Noise By Day of Month and NMT

Start Date:01-Jul-2019

End Date: 31-Dec-2019

July 2019

NMT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	52.2	55.4	54.4	53.6	51.4	62.2	63.4	64.2	49.3	49.1	49.1	50.6	48.7	47.4	48.1	49.9	50.6	51.9	51.5	60.0	62.8	50.0	50.6	55.4	49.2	48.7	50.0	50.9	48.9	56.1	53.6
3	55.4	50.0	50.6	52.5	52.3	48.2	48.5	56.2	51.4	52.7	53.3	53.5	52.1	52.2	54.6	54.0	53.0	53.1	54.4	51.6	49.7	55.5	50.0	52.3	50.3	50.9	49.6	49.6	55.2	53.6	52.8

August 2019

NMT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	48.3	47.3	46.8	47.5	49.6	58.7	51.6	47.9	62.8	66.6	55.7	49.4	50.8	52.2	54.7	57.0	51.7	52.1	52.1	50.3	49.7	49.7	47.9	47.3	46.3	47.1	48.8	50.4	51.8	51.2	51.7
3	53.4	53.6	48.9	49.1	57.0	52.7	51.3	51.2	54.4	57.3	50.9	58.6	51.3	56.9	57.8	53.5	51.2	51.3	56.8	51.1	50.7	53.8	50.9	51.9	48.4	48.0	49.9	51.4	54.9	52.0	51.2

September 2019

NMT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
2	49.2	50.2	50.2	56.8	50.9	53.1	49.5	47.1	49.7	50.7	53.0	52.1	48.0	48.2	48.2	48.2	51.2	49.5	49.4	49.8	48.6	48.8	51.4	53.6	53.4	55.7	59.4	59.2	60.9	51.1
3	49.8	52.7	51.7	54.7	53.4	54.8	50.5	48.3	52.7	51.4	53.6	53.4	50.2	48.9	48.9	55.9	51.1	52.5	51.6	52.6	50.8	51.3	58.8	54.5	53.7	54.3	55.8	53.1	54.0	57.5

October 2019

NMT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	53.1	52.8	51.8	51.5	49.3	56.0	51.7	55.2	56.0	58.4	61.5	59.7	56.8	50.1	49.8	52.9	51.5	57.0	51.0	49.7	50.1	51.0	49.8	53.2	64.6	66.5	49.5	49.9	49.6	50.7	49.1
3	53.8	52.4	54.1	52.9	49.4	52.7	52.9	54.3	53.8	54.6	55.7	51.3	53.2	59.2	52.6	53.5	54.0	55.7	52.3	49.2	59.1	52.6	51.8	53.3	56.8	54.4	52.4	54.8	52.8	52.8	51.6

November 2019

NMT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
2	51.6	63.8	50.2	50.4	51.4	50.7	52.2	51.8	51.7	49.2	55.6	58.7	51.4	50.4	54.0	49.2	49.4	51.6	51.0	50.4	49.2	51.3	48.4	49.6	50.4	52.6	51.4	51.2	51.3	49.6
3	52.6	57.5	51.5	59.3	54.2	53.3	54.2	52.9	53.2	51.5	58.2	55.3	54.3	52.8	53.3	50.2	50.8	56.7	54.7	53.7	53.1	54.6	52.4	50.7	57.3	55.1	53.2	53.0	53.1	53.2

December 2019

NMT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	51.8	52.8	51.7	52.0	57.8	59.7	59.0	61.6	61.5	66.8	52.5	54.3	60.3	64.2	59.3	50.9	51.5	52.7	55.6	52.9	51.7	52.2	54.5	56.3	54.6	59.4	48.8	49.0	50.1	51.5	48.3
3	51.5	56.5	54.4	54.4	55.4	56.0	52.8	54.2	59.4	57.1	55.1	56.3	55.7	56.0	53.8	58.4	53.2	55.6	55.4	55.0	54.8	52.5	53.3	53.8	47.9	52.3	49.7	50.9	50.3	51.7	51.5

FARNBOROUGH AIRPORT

Noise Report

Farnborough Airport

Total Noise By Day of Month and NMT

Start Date:01-Jul-2019

End Date: 31-Dec-2019

July 2019

NMT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	56.3	57.1	56.8	56.7	56.7	64.9	63.3	64.2	53.7	53.9	54.9	55.9	55.0	54.5	55.3	54.5	55.2	55.0	55.0	60.0	62.6	53.8	54.3	56.1	54.5	54.7	54.4	53.9	53.2	56.9	55.7
3	60.0	57.7	57.8	58.0	66.9	59.1	58.9	59.6	57.2	58.5	58.9	58.5	57.5	59.7	60.6	58.2	57.6	58.6	59.0	56.8	57.2	60.1	60.2	57.5	57.5	58.8	55.7	55.7	59.2	58.8	57.5

August 2019

NMT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	54.6	53.2	53.1	53.1	54.1	59.3	54.1	55.0	62.8	66.5	56.9	52.6	52.6	54.3	56.2	57.7	53.4	54.0	54.6	52.3	53.5	54.0	54.5	52.7	53.0	53.3	54.3	54.2	54.0	54.8	53.7
3	57.8	58.8	55.6	56.0	60.1	57.7	57.5	56.9	58.0	60.3	56.8	60.1	56.0	59.1	59.9	57.5	57.5	56.9	60.1	56.1	57.2	58.0	56.9	58.2	55.5	54.6	56.8	57.8	59.0	58.2	58.7

September 2019

NMT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
2	53.4	54.0	53.5	57.7	55.2	55.3	54.6	54.3	54.0	54.4	54.7	54.7	54.0	52.0	52.7	53.3	56.0	55.3	53.7	54.1	51.1	53.1	54.3	55.7	55.6	57.1	59.9	59.5	61.1	53.9
3	57.3	58.2	58.0	58.8	57.1	58.5	54.3	55.5	58.5	58.2	58.9	58.8	57.3	53.5	56.8	59.1	55.8	57.8	58.6	58.6	57.9	59.8	61.1	60.1	59.5	59.9	60.9	57.8	59.1	60.9

October 2019

NMT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	55.2	56.8	55.8	55.5	52.5	57.9	53.8	56.1	56.9	58.8	61.8	59.6	57.9	53.9	53.3	54.8	55.1	58.0	54.8	54.9	54.5	54.1	53.7	56.7	64.5	66.3	52.8	55.4	54.7	54.2	54.5
3	59.0	57.9	58.9	58.0	58.2	58.5	57.9	58.2	57.9	59.2	59.9	55.4	59.0	61.2	58.0	58.1	58.7	60.6	57.7	54.6	60.7	58.2	58.6	58.9	60.1	58.0	56.3	58.1	56.8	57.4	58.5

November 2019

NMT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
2	53.5	63.7	52.8	54.3	55.6	53.0	55.5	55.1	54.4	54.0	56.5	58.9	55.0	56.0	57.1	52.3	54.3	55.9	52.8	54.8	53.9	54.6	52.9	53.7	52.6	54.3	54.1	55.5	53.2	53.8
3	57.5	60.2	57.3	60.3	57.8	57.4	59.0	57.6	55.7	57.7	60.7	58.6	57.4	58.3	58.1	55.2	55.8	59.5	58.3	58.1	57.7	60.4	55.1	57.3	60.7	58.9	58.6	58.3	56.9	56.2

December 2019

NMT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	54.9	54.9	54.1	55.3	58.4	60.3	59.3	61.6	61.9	66.7	54.5	56.0	60.8	64.5	59.5	53.1	56.4	54.3	57.0	56.3	54.6	54.6	55.6	56.6	54.4	59.0	53.7	52.3	51.0	52.5	50.1
3	57.2	58.8	59.8	59.3	59.3	60.3	58.2	58.9	60.9	60.9	58.5	59.1	59.8	58.7	57.5	59.8	56.6	59.1	59.6	58.6	58.4	56.8	56.5	55.1	47.9	52.4	55.3	56.4	55.4	54.7	53.3