

ENVIRONMENTAL NOISE ASSESSMENT

PROPOSED ADDITIONAL FLATS POPLAR COURT, MOSS LANE EAST

REPORT REFERENCE NO. J006121-9419-SH-01

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This document has been prepared for the client only and solely for the purposes expressly defined herein. We owe no duty of care to any third parties in respect of its content. Therefore, unless expressly agreed by us in signed writing, we hereby exclude all liability to third parties, including liability for negligence, save only for liabilities that cannot be so excluded by operation of applicable law.

This report has been prepared based upon a scope of works and associated resources agreed between the client and Philip Dunbavin Acoustics Ltd (PDA). This report has been prepared with all reasonable skill, care and diligence and has been based upon the interpretation of data collected. This has been accepted in good faith as being accurate and valid at the time of the collection. This report has been based solely on the specific design assumptions and criteria stated herein.



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1.0 SUMMARY

PDA Ltd was commissioned by Irish Anglo Properties (Hulme) Limited to carry out an Environmental Noise Assessment and associated report for the proposed expansion of Poplar Court, Moss Lane East. The proposed development consists of addition of four new dwellings on top of the existing structure. This report has been produced to respond to Planning Conditions 4 and 5 (in part) of application 135229/FO/2022.

Noise level surveys were undertaken on site at a position representative noise exposure at the new proposed dwellings. Based upon the measured and predicted noise levels, calculations have been undertaken for the Bedrooms and Living Spaces to evaluate the internal noise levels. Recommendations are given for glazing, ventilation and building façade elements to meet the internal noise level requirements of good practice guidance given in BS8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings.

Calculations suggest that the noise level criteria of BS8233:2014 can be achieved within the proposed accommodation based on the use of low performance double glazing and trickle ventilation systems. We have set out criteria for such systems and have provided reference systems with may be suitable in this instance. We would consider that the requirements of Planning Condition 4 would be met if glazing and trickle ventilation systems with R_w and $D_{n,e,w}$ ratings equal or greater than those specified in this report are installed.

We have been informed that no new plant is to be installed in association with the proposed expansion, as such Planning Condition 5a does not appear to be applicable to this scheme on that basis. Notwithstanding this point, we have provided the background noise levels measured at our measurement position. These in our opinion could form conservative background noise levels for the nearest noise sensitive receivers.

Overall, we would consider that this report presents reasonable evidence for the discharge of Condition 4 and 5a, with condition 5b dischargeable by testing in due course.

2.0 SITE DESCRIPTION

Poplar Court is an existing apartment which is currently inhabited. The proposed extension is to add four new apartments to the third floor on spaces currently consisting of vacant rooftop areas.

The proposed site is bordered by the B5219 to the North, and Quinney Crescent to the South, and is in a generally residential area. A site plan showing the location of the site and surrounding local area is shown in Figure 1 below.



Figure 1 - Location with proposed site outlined (source: Google Maps)

The areas proposed to be added to the third floor are highlighted in Figure 2 below.

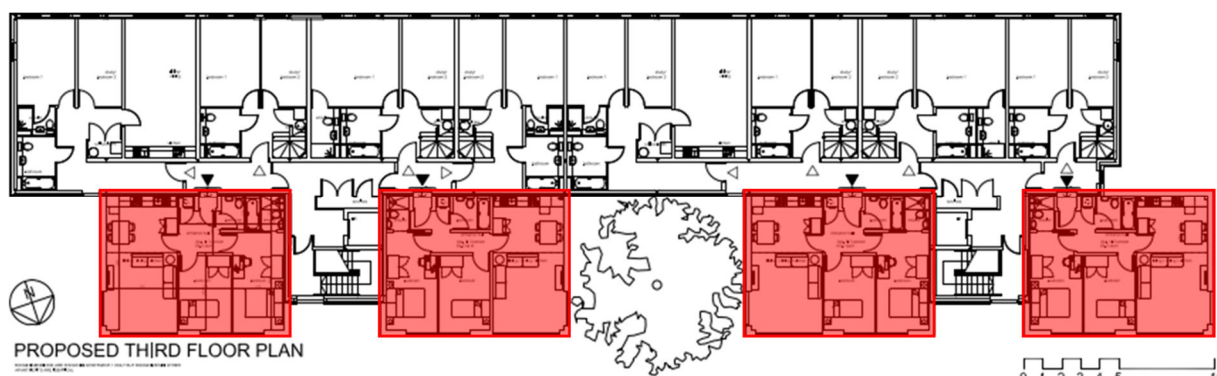


Figure 2 - Proposed third floor plan, with proposed new apartments highlighted (source: Space Architecture and Design Ltd drawings 21.004(2)-003)

3.0 NOISE ASSESSMENT CRITERIA

3.1 Planning Conditions

It is our understanding that the proposed development has been granted planning permission, subject to conditions. Conditions 4 and 5 have relevance to our report, and are as follows:

Condition 4:

“Before the development commences a scheme for acoustically insulating the proposed residential accommodation against noise from Moss Lane East shall be submitted to and approved in writing by the City Council as local planning authority. There may be other actual or potential sources of noise which require consideration on or near the site, including any local commercial/industrial premises.”

We would consider that this condition can be met by installation of acoustic insulation adequate to achieve internal levels at or below the recommended internal noise levels within dwellings, flats and rooms in residential use specified by BS 8233:2014 “Guidance on Sound Insulation and noise reduction for buildings”.

Condition 5a:

“Any externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (LAeq) below the typical background (LA90) level at the nearest noise sensitive location. Prior to commencement of the use hereby approved the scheme shall be submitted to and approved in writing by the City Council as local planning authority in order to secure a reduction in the level of noise emanating from the site. The scheme shall be implemented in full before the use commences or as otherwise agreed in writing by the City Council as local planning authority.”

It is our understanding that no new plant is to be installed as a part of this development. We have however provided the background levels measured at our measurement position. These can be taken as reasonably conservative background levels at the nearest noise sensitive receivers for subsequent assessment if required.

Condition 5b:

“Prior to the operation of the scheme a verification report shall be submitted to and approved in writing by the City Council as local planning authority to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic report. The report shall also undertake post completion testing to confirm that the noise criteria have been met. Any instances of non-conformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the agreed noise criteria.”

This condition is not specifically relevant to our report at this time.

3.2 BS8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings

Dwelling houses, flats and rooms in residential use

British Standard 8233:2014, *Guidance on Sound Insulation and noise reduction for buildings*, gives guidance on internal noise levels within dwellings, flats and rooms in residential use when unoccupied. The following criteria are for Living and Dining Rooms for daytime use and Bedrooms for night time.

Table 1 - BS8233 recommended indoor ambient noise levels

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB $L_{Aeq,16hour}$	—
Dining	Dining room/area	40 dB $L_{Aeq,16hour}$	—
Sleeping (daytime resting)	Bedrooms	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$

It should however be stressed that the above criterion relates to steady noise, in this case from road traffic etc., excluding unusual noise events departing from the typical noise character of the area.

In addition BS 8233 suggests, '*regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$, depending on the character and number of events per night. Sporadic noise events could require separate values*'.

Given that the predominant noise source at the site is road traffic noise from Moss Lane East, we would not consider a sporadic noise source limit of this type necessary for this proposed development.

4.0 SURVEY DETAILS AND RESULTS

4.1 Environmental Noise Survey

A noise level survey was undertaken at the site between 17:29 on the 4th of March and 11:31 on the 6th of March 2026. The noise levels were chosen to be representative of daytime and night-time hours covering an entire 24-hour monitoring period.

The noise measurements were taken at the position shown in Figure 3.



Figure 3 - Noise Survey Locations

Measurements were taken on a pole mounted microphone approximately 0.25m from the window due to safety constraints, as the measurement position was a fire escape stairwell, which limited the angle at which the tripod supporting the microphone could be placed, and therefore the distance out of the window. In order to account for this, we have subtracted -3dB from the measured levels to account for a façade reflection.

All measurements were made and partially attended by Sky Hawkins of PDA Ltd. Measurements were taken in 15 minute and 1 second samples. The noise surveys were conducted using a NtI XL2 sound level meters for which calibration certificates are held.

The sound level meter has a Class 1 frequency response as per BS EN 61672-1:2003. The sound level meter was field calibrated both before and after the measurement period, during which time no significant deviation from the calibrated level was observed. The sound level meter was fitted with an all weather windshield at all times.

All measurements were undertaken with a fast time-weighting and broadband statistics were measured throughout. In addition, octave band frequency spectra and audio were recorded.

4.2 Weather Conditions

Due to the location of the measurement position, it was not practical to install a weather station in situ. As such we have referred to data from Weather Underground to supplement our observations made while attending the measurement position.

During attended periods of measurements, the weather conditions ranged from fair to cloudy, with low overall wind speeds. Throughout the measurement period the Weather Underground Trafford station reports a mixture of fair to cloudy conditions, with periods of light rain. Wind speeds reached at most 4.5m/s. As these do not exceed the recommended operating conditions for our outdoor measurement equipment, we would consider the weather conditions to be conducive to measurements being carried out.

4.3 Subjective Noise Climate Description

The noise climate at the measurement position during attended measurements was predominantly driven by local traffic noise from Moss Lane East, with contributions from other more distant road sources. Review of recorded audio indicates that road traffic noise remained significant overnight during the measurement period.

4.4 Measurement Results

Following the 3dB façade correction, the following is a summary of measurements made at both positions:

Table 2 – Summary of Environmental Noise Measurements.

Date	Time	Average Noise Level (dB L _{Aeq,T})	Range of Background Noise Levels (dB L _{A90,15mins})	Night Time dB L _{AFmax} ¹
04/03/2026	17:45 - 23:00	57	49 – 53	-
-	23:00 - 07:00	53	41 – 50	70
05/03/2026	07:00 - 23:00	59	46 – 55	-
-	23:00 - 07:00	55	38 – 51	73
06/03/2026	07:00 - 11:30	62	49 – 55	-

1. The WHO Guidelines for Community Noise state that sleep disturbance may occur where the specified 45dB L_{Amax} is exceeded internally 10 to 15 times over the 8-hour night-time period. The L_{Amax} recorded is the L_{Amax} exceeded no more than 10 times over the full night-time-period or equivalent.

Considering the daytime measurements taken on the 4th and 6th of March as part of a single disaggregated day, the following levels would be produced:

Table 3 - Summary of 4th and 6th March daytime measurements as single daytime average

Date	Time	Average Noise Level (dB L _{Aeq,T})	Range of Background Noise Levels (dB L _{A90,15mins})
06/03/2026	07:00 - 11:30	60	49 – 55
04/03/2026	17:45 - 23:00		

Considering the above levels, we would consider the worst case daytime and night-time levels to be 60 dB L_{Aeq,16hrs}, and 55 dB L_{Aeq,8hrs} respectively.

The representative background levels have been determined in accordance with guidance given within BS 4142:2014+A1 2019, which states in Section 8.1.4:

“To obtain a representative background sound level a series of either sequential or disaggregated measurements should be carried out for the period(s) of interest, possibly on more than one occasion. A representative level should account for the range of background sound levels and should not automatically be assumed to be either the minimum or modal value.”

With regards to the Background Sound Levels given in Table 2, we would consider the following representative background levels to apply:

Table 4 – Representative Background Noise Levels

Date	Time	Representative Background Noise Levels (dB L _{A90,15mins})	Comment
04/03/2026	17:45 - 23:00	49	Modal Value
-	23:00 - 07:00	43	Lower of two adjacent modal values
05/03/2026	07:00 - 23:00	50	Modal Value
-	23:00 - 07:00	44	Median between two modal and near modal values (48 and 46)
06/03/2026	07:00 - 11:30	51	Modal Value

The values given in Table 2 and Table 3 will form the basis of analysis subsequently within this report.

5.0 NOISE BREAK-IN ASSESSMENT

In order to achieve suitable internal levels within the proposed new apartments, the composite performance of the building envelope must be such so as to achieve suitable internal levels. In most cases, this performance is determined by the specification of glazed elements and ventilation.

5.1 Calculations

Based upon the measured and predicted noise levels, calculations have been undertaken to determine acoustic specification requirements for the proposed residential dwelling. Calculations have been undertaken in octave bands from 63 Hz to 8kHz.

The sound insulation provided by the building envelope is a combination of the sound reduction indices of the individual façade elements and the area of the façade they cover. The result is a composite sound insulation value for the whole façade.

The calculation of noise break-in to the residential rooms has been undertaken in accordance with the calculation methods of BS EN 12354-3:2000 *Building Acoustics – Estimation of acoustic performance of buildings from the performance of elements. Part 3: Airborne sound insulation against outdoor sound*, in octave bands. Reverberation time is 0.5 seconds as per the BS EN 12354-3 reference time for dwellings.

5.2 Design Assumptions

The calculated internal noise levels are dependent on the size of room, location and relative glazing area. Our assessment is based on typical dimensions and room volumes based on drawings provided to us by the client.

5.3 External Walls

It is assumed that the external wall construction will be a cavity masonry construction. We have assumed the following Sound Insulation performance for the external wall:

Table 5 – Assumed external wall system performance

Element	Applicability	63	125	250	500	1k	2k	4k	8k	R _w
Twin Leaf Brickwork 50mm Cavity Wall	All residences	35	41	45	48	56	58	60	60	54

As shown in Table 4, we have assumed that the sound insulation performance of the façade is no less than 54 dB R_w, however we would expect any typical façade buildup to achieve an acceptable result for this building providing that suitable quality control is adhered to.

Please note that the external façade should have no unsealed penetrations, and any openings for ventilation should meet the specifications for ventilators above.

5.4 Ventilation

Our calculations suggest that suitable internal noise levels can be achieved using acoustically attenuated trickle vents or a mechanical system. It is noted however, that during periods when windows are open, internal noise levels will likely exceed the criteria established in BS 8233:2014.

With regards to ventilation BS 8223:2014 states:

“The Building Regulations’ supporting documents on ventilation recommend that habitable rooms in dwellings have background ventilation. Where openable windows cannot be relied upon for this ventilation, trickle ventilators can be used and sound attenuating types are

available. However, windows may remain openable for rapid or purge ventilation, or at the occupant's choice."

Note that whilst BS 8233:2014 references trickle ventilators the same principles apply where mechanical ventilation is utilised. Where this is the case it will need to be ensured that self-generated noise from the mechanical ventilation system itself does not exceed the noise levels given in Section 3.2.

5.5 Glazing Specification and Installation

For the glazing specification in Table 8 (above), all sound insulation values quoted above must be achieved by the overall combination of frame and glazing, and not just by the glazing alone. The frame should not reduce the performance of the system overall.

Glazing framing systems must be fully sealed with any gaps around the perimeter to be stuffed with dense mineral wool to full frame depth and sealed both sides with acoustic non-setting mastic. No gaps should be left unsealed.

The minimum performance requirements for the combination of glazing and framing recommended previously are as follows:

Table 6 - Reference Glazed Elements

Glazed Element	Applicability	63	125	250	500	1k	2k	4k	8k	R _w
Standard 4/12/4 Glazing	Living / Dining Rooms / Kitchens	16	22	19	25	36	42	36	36	31
4/16/6 Glazing	Bedrooms	16	21	22	29	39	40	42	42	34

Figures stated in the table above unless otherwise stated are based on manufacturer quoted data. Acoustic ratings should be checked with the manufacturer and supported by laboratory test reports where necessary.

5.6 Ventilator Requirements

The ventilator inlets described in the following table are calculated to provide adequate sound insulation to maintain internal noise levels compliant with the guidance criteria when used in conjunction with the selected glazing.

Selected ventilation inlets should provide equal or greater sound insulation performance across the frequency range to the values recommended previously; example products are noted below.

Table 7 – Reference Ventilators

Glazed Element	Applicability	63	125	250	500	1k	2k	4k	8k	D _{n,e,w}
2no. Simon Acoustic EMM	Living / Dining Rooms / Kitchens	40	40	36	35	31	33	36	43	33
2no. Simon Acoustic EHAS	Bedrooms	40	40	36	34	35	44	40	45	38

It should be noted that inclusion of ventilators alone does not ensure compliance with Building Regulations or other regulatory requirements for ventilation. The ventilation strategy should be checked by others.

The acoustic specification relates to the combined performance of all ventilation elements.

We have allowed for 2 ventilators per room. Where more ventilators are required to meet the ventilation requirement, the acoustic performance for a single ventilator must be selected so that the combined performance is as stated in Table 7. Examples are as follows:

- For Living / Dining Rooms / Kitchens, where 3 no. ventilators are required, the acoustic performance of each ventilator needs to be $D_{n,e,w} 33 \text{ dB} + 10 \cdot \log(3/2) = D_{n,e,w} 35 \text{ dB}$.
- For Bedrooms, where 3 no. ventilators are required, the acoustic performance of each ventilator needs to be $D_{n,e,w} 38 \text{ dB} + 10 \cdot \log(3/2) = D_{n,e,w} 40 \text{ dB}$.
- For Living / Dining Rooms / Kitchens, where 4 no. ventilators are required, the acoustic performance of each ventilator needs to be $D_{n,e,w} 33 \text{ dB} + 10 \cdot \log(4/2) = D_{n,e,w} 36 \text{ dB}$.
- For Bedrooms, where 4 no. ventilators are required, the acoustic performance of each ventilator needs to be $D_{n,e,w} 38 \text{ dB} + 10 \cdot \log(4/2) = D_{n,e,w} 41 \text{ dB}$.

Requirements should be checked with the manufacturer.

6.0 PLANT NOISE ASSESSMENT

We have been informed by our client that no new plant is to be installed as a part of the proposed additional plants. As such, planning condition 5a does not appear to be applicable to the scheme on that basis.

Notwithstanding this fact, we have provided the background levels at our measurement position within this section, which we would consider to be reasonably representative of those at the nearest noise sensitive receivers.

Considering the residences surrounding Poplar Court, we would note that those on Quinney Crescent would be likely to be partially shielded from noise from the B5219 and therefore likely to experience a lower background noise level. However, as these are on the opposite side of the building to the proposed new apartments, Poplar Court itself would screen any new plant (notwithstanding the lack of plans to install any) from these residences.

As such, the residences most appropriate to consider would appear to be those opposite from the new proposed apartments, across the B5219. We would consider that our measurement position would be reasonably representative of the levels at those dwellings opposite, and as such if a background noise level should subsequently become necessary, this position should be sufficient.

As stated in Table 4, the lowest daytime and night-time Representative Background Noise Levels (dB $L_{A90,15mins}$) were determined to be 49dB and 43dB respectively. Recalling the requirement of Condition 5a) that *“Any externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location”*, any future plant selections (if any) should not exceed (or be so mitigated as to not exceed) a rating level of 44dB L_{Aeq} and 38 dB L_{Aeq} at the nearest noise sensitive location.

APPENDIX A – NOTES FOR QUALITY CONTROL

1. Blockwork

All blockwork is to be mortared to an almost fair faced standard both horizontally and vertically. Only perfect blocks may be used with no pitting or cracks. The blockwork must seal effectively to the underside of the soffit.

Where blockwork walls form a cavity wall, care should be taken to avoid rubble and snots from bridging the cavity. This is especially important where one or more of the leaves is floating.

2. Plasterboard

All plasterboard joints are to be butted tight. The rule of thumb is that the joint should be tight enough over its entire length to prevent a normal business card from being inserted. Multiple layers should be fitted with staggered joints.

Base details and deflection heads are to be as per the British Gypsum White Book unless otherwise stated, and copious amounts of mastic to be used when fitting to the walls, floor and ceiling respectively.

3. Mineral Fibre

Mineral fibre slabs are to be butted tightly together and to boundary structures, to form a homogeneous layer.

4. Windows

All window frames are to be a good tight fit into the building structure with any gaps to be filled both internally and externally with a non-setting mastic in addition to the usual weather proofing seal to the exterior. Any gaps between the frame and building that are greater than 5 mm are to be packed with a dense mineral fibre prior to mastic sealing.

5. Electrical Sockets

Electrical sockets must not be fitted back to back and removed areas of blockwork and plasterboard should be kept to an absolute minimum.

6. Water Pipes

All water pipes (and any other pipework) are to be resiliently mounted to avoid “water hammer”. This is particularly important for plasterboard walls.

7. Penetrations

Penetrations are to be dealt with as described in this report. Details for specific services penetrations may be supplied upon request.

8. Approved Samples and Inspections

Samples of each individual acoustic element should be provided for inspection at the beginning of its installation. Once approved, the Clerk of Works must ensure that the same level of quality continues throughout construction.

APPENDIX B – DEFINITION OF ACOUSTIC TERMS

The decibel

This is the basic unit of noise, denoted dB.

A Weighting

This is a weighting process which simulates the human ear's different sensitivity at different frequencies. A weighting can be shown two typical ways, 50 dB(A) L_{eq} or 50 dB L_{Aeq} . Both mean the same thing. (See below for a definition of L_{eq}). The dB(A) level can be regarded as the overall level perceived by human beings.

L_{eq} and $L_{eq(s)}$

This is the equivalent continuous noise level which contains the same acoustic energy as the actual time-varying sound. In other words it is a kind of average noise level. It is denoted dB L_{eq} or, for A-weighted figures dB(A) L_{eq} or dB L_{Aeq} . It can also be expressed in terms of frequency analysis (see later). $L_{eq(s)}$ is the sample L_{eq} level.

L_n

This is the level exceeded for n% of the time. It is denoted dB L_n or, for A-weighted figures dB(A) L_n or dB L_{An} . It can be expressed in terms of frequency analysis (see later). L_{90} is the level exceeded for 90% of the time and is a measure of the lowest level typically reached. L_{10} is the level exceeded for 10% of the time and is the highest level typically reached. L_{50} is the level exceeded for 50% of the time and, mathematically, it is the median.

L_{max}

This is the maximum level reached during a measurement period. The "time constant", or the ability of the equipment to respond to impulses is usually expressed along with it, e.g. "Fast", "Slow", etc. It is denoted dB L_{max} or, for A-weighted figures dB(A) L_{max} , dB L_{Amax} , etc. It can also be expressed in terms of frequency analysis.

Frequency Analysis

Whereas dB(A) gives a very useful overall figure, it has its limitations in that it cannot be used to model or predict the effect of noise control and mitigation as this nearly always has radically different performance at different frequencies.

Frequency analysis expresses an overall noise level at each frequency or band of frequencies in the audible range. Octave band analysis divides the audible range into 10 bands from 31.5 Hz to 16 kHz and the noise level in each band can be expressed in any form e.g. L_{eq} , L_{90} , L_{max} etc. One third octave band analysis uses 30 bands.

Narrow band analysis takes the process to resolutions of less than 1 Hz. This is useful for identifying the existence of tones (whines, hums, etc.) and in pin-pointing the sources.

APPENDIX C –SURVEY DATA

Please note that this data has not been corrected to account for reflections from the façade. We have subtracted 3dB in our report to account for the proximity of the façade, which was approximately 0.25m from the microphone due to the limitations associated with the measurement position.

Date	Start Time	End Time	L _{Aeq}	L _{A90}	L _{AFmax}	Octave Band L _{Zeq} :							
						63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
04/03/2026	17:29:00	17:30:00	59.6	53.9	67.4	68.5	60.8	55.3	55.6	56.3	51.9	43.5	41.3
04/03/2026	17:30:00	17:45:00	60.7	55.6	75.5	69.2	60.8	56.8	56.5	57.2	53.6	45.7	40.9
04/03/2026	17:45:00	18:00:00	62	55	84.5	67.9	61.6	57.8	57.2	58.5	55.5	47.6	38.5
04/03/2026	18:00:00	18:15:00	61.8	55.7	75	68.7	62.5	57	57.4	58.6	54.4	47.2	37.8
04/03/2026	18:15:00	18:30:00	60.8	54.6	73.7	67.1	60.2	56.1	55.9	57.7	53.7	43.3	36.4
04/03/2026	18:30:00	18:45:00	60.4	53.5	69.7	68.5	60.2	55.9	55.9	57.4	53.1	43.5	34.7
04/03/2026	18:45:00	19:00:00	61	54.4	70	67.8	58.9	56.6	56.6	58	53.9	44.4	34.9
04/03/2026	19:00:00	19:15:00	60.8	54.4	72.8	68	58.7	55.7	56.3	58	53.6	43.3	37.6
04/03/2026	19:15:00	19:30:00	60.6	54.1	71.3	68.4	59.4	55.9	56	57.7	53.4	43.3	34.9
04/03/2026	19:30:00	19:45:00	60	53.4	69.3	68	58.7	55	55.3	57	52.8	42.6	33.5
04/03/2026	19:45:00	20:00:00	61	54.3	71.2	67.5	60.1	56.6	56.5	57.9	53.8	43.5	34.1
04/03/2026	20:00:00	20:15:00	60.3	53.9	72.6	67.3	59.4	55.4	55.8	57.4	53.1	42.5	32.6
04/03/2026	20:15:00	20:30:00	60.5	54.1	72.3	66.9	62.7	55.4	55.7	57.4	53.6	45	37.3
04/03/2026	20:30:00	20:45:00	62.9	52.8	92.4	66.6	61.1	59.3	58.2	59.2	55.9	50.7	43.6
04/03/2026	20:45:00	21:00:00	58.4	51.9	69	66.5	57.3	53.7	53.7	55.5	51.3	40.9	31.9
04/03/2026	21:00:00	21:15:00	59	52	70.1	66.7	57.2	53.9	54.4	56.3	51.8	41	31.3
04/03/2026	21:15:00	21:30:00	58.9	52	69.9	66.3	56.3	53.7	54.2	56.1	51.7	40.7	33.9
04/03/2026	21:30:00	21:45:00	58.7	51.5	75.3	68.1	56.4	53.3	54	55.6	51.7	43.2	36.6
04/03/2026	21:45:00	22:00:00	59.9	52.3	73.6	67.2	58	54.7	54.9	57.1	52.9	42.2	31.8
04/03/2026	22:00:00	22:15:00	59.9	52.4	71.7	68.4	57.7	53.9	54.8	57.1	53	42.3	32.6
04/03/2026	22:15:00	22:30:00	60.9	52.4	83.7	65.6	56.9	53.7	54.3	57.7	55.4	41.4	30.4
04/03/2026	22:30:00	22:45:00	59.6	51.5	71.2	66.4	56.3	53.4	54.4	56.9	52.7	42.2	35.4
04/03/2026	22:45:00	23:00:00	58.9	51.6	70.1	65.9	56.5	53.8	54	56.1	51.9	41.2	31.7
04/03/2026	23:00:00	23:15:00	58.1	51	70.4	65.5	55.1	52.6	53.2	55.3	51.1	40.5	31.4
04/03/2026	23:15:00	23:30:00	57.8	50.6	73.9	66.4	55.7	52.4	53	55	50.8	40.6	30.3
04/03/2026	23:30:00	23:45:00	56.2	50.6	67.8	65.7	55	51.5	51.4	53.5	48.9	37.9	27.4
04/03/2026	23:45:00	00:00:00	57	49.8	70.3	66.4	55	51.6	52.1	54.1	49.9	39.6	34.1
05/03/2026	00:00:00	00:15:00	56.9	49.5	71.7	66.1	54.9	51.2	51.9	54.1	49.9	39.4	28.1
05/03/2026	00:15:00	00:30:00	56.8	48.9	79	65.7	58.1	51.3	51.8	53.7	49.8	40.4	33.3
05/03/2026	00:30:00	00:45:00	56.9	47.4	72.7	64.1	53.6	51	51.7	54	50.2	39.4	28.5
05/03/2026	00:45:00	01:00:00	60.2	47.9	79.6	61.8	65.2	57.7	54	56	54.1	41.4	33.3
05/03/2026	01:00:00	01:15:00	54.7	48	71.1	58	51.4	48.9	49.7	51.9	47.7	36.7	25.4
05/03/2026	01:15:00	01:30:00	54	46.9	71.3	54.6	50.7	48.4	49.6	50.9	47.1	34.9	37.7
05/03/2026	01:30:00	01:45:00	54.5	47.2	72.4	55.8	50.7	48.3	48.4	51.5	48.5	34.7	22.4
05/03/2026	01:45:00	02:00:00	55.2	46.8	72.4	58.9	51.9	49	50	52.4	48.4	37.2	26.5
05/03/2026	02:00:00	02:15:00	53.8	45.2	70.8	57.2	51.4	48	49.6	50.9	46.7	35.5	24.5
05/03/2026	02:15:00	02:30:00	52.3	45.5	69	55.3	49.9	48.1	47.9	49.3	45.1	34	22.6
05/03/2026	02:30:00	02:45:00	53.5	45.7	74.4	56	51.8	47.8	48.5	50.5	46.7	36	26.1
05/03/2026	02:45:00	03:00:00	51.1	45.4	69.6	55.1	49.8	46.9	47.1	48.2	43.5	33.3	21.9
05/03/2026	03:00:00	03:15:00	52.6	45.5	71.3	54.6	50.4	48.1	48.2	49.6	45.7	34.9	22.9
05/03/2026	03:15:00	03:30:00	52.3	45.5	71.9	52.9	49.7	47	47.6	49.2	45	38.8	26.3
05/03/2026	03:30:00	03:45:00	50.5	45.2	68.9	54.5	50.6	45.6	45.5	47.1	43.3	39.3	27.5
05/03/2026	03:45:00	04:00:00	52	45.4	73.1	54.4	50.4	48.5	47.6	48.6	44.5	40	29.9
05/03/2026	04:00:00	04:15:00	49.5	44.4	66.1	54.7	49.2	45.5	44.9	46	41.7	38.6	27.1
05/03/2026	04:15:00	04:30:00	52.7	46.6	67.8	56.6	50.7	47	47.7	49.9	45.2	39.4	28.6
05/03/2026	04:30:00	04:45:00	54.3	46.7	76.2	55.6	51	48.3	48.2	51.1	47.8	41.5	31
05/03/2026	04:45:00	05:00:00	52.3	46.4	69.3	56.1	50.8	47.6	48	49.1	44.7	39.5	28.9
05/03/2026	05:00:00	05:15:00	53.8	46.4	70.9	57	50.8	47.9	48.9	50.6	47.2	38.6	27.6
05/03/2026	05:15:00	05:30:00	54.5	47.9	70.8	58.2	51.7	49.3	49.2	51.5	47.6	40.5	30.3



05/03/2026	05:30:00	05:45:00	53.8	48.1	72.3	57.9	51.1	49	48.8	51	46.4	38.7	26.7
05/03/2026	05:45:00	06:00:00	55.3	48.6	70.6	58.6	52.5	50.1	49.8	52.3	48.7	40	28.2
05/03/2026	06:00:00	06:15:00	55.4	49.6	70.7	59.6	55.3	52.5	50.5	52.2	48.2	40.5	30.6
05/03/2026	06:15:00	06:30:00	56.7	51.3	70.2	60.3	55.5	52.5	51.5	53.7	49.6	42.4	29.3
05/03/2026	06:30:00	06:45:00	59.1	52.4	78.7	64	57.5	54.7	54.6	55.8	52.1	43.9	34.4
05/03/2026	06:45:00	07:00:00	59.6	53	72	63.6	58.9	55.5	55.5	56.4	52.3	44.6	38.7
05/03/2026	07:00:00	07:15:00	59.5	53.9	70.1	62.2	55.6	54.1	54.5	56.9	52.5	41	29.4
05/03/2026	07:15:00	07:30:00	60.4	53.7	72.3	65.1	56.9	54.4	55.3	57.4	53.6	45.4	35.2
05/03/2026	07:30:00	07:45:00	61.1	53.4	76.2	65.1	58	56.5	56.4	58	54.3	44.6	36.2
05/03/2026	07:45:00	08:00:00	61	54.5	74.1	70.4	60.8	57	56.1	58	54	44.1	35.5
05/03/2026	08:00:00	08:15:00	61.4	54.8	76.4	71.9	61.4	57.3	56.7	58.3	54.4	44.3	35.1
05/03/2026	08:15:00	08:30:00	61.1	55.3	71.4	72.4	62.9	57.6	56.3	57.8	53.8	44.9	39.2
05/03/2026	08:30:00	08:45:00	61.1	55.5	76.4	72.1	61	57.8	57.2	57.8	53.7	45.2	38.5
05/03/2026	08:45:00	09:00:00	61.9	56.1	82.8	72.1	64.9	58.6	56.6	58.3	55.2	45.8	37.4
05/03/2026	09:00:00	09:15:00	62.7	54.4	84.5	71.8	61.1	57.9	57	59.1	56.8	45.7	38.3
05/03/2026	09:15:00	09:30:00	60.4	53	77.1	71.2	60.1	57	56.3	57.1	53.2	44.7	35.9
05/03/2026	09:30:00	09:45:00	59.7	52.4	77.6	70.8	59.8	57.1	55.4	56.3	52.5	43.8	34.7
05/03/2026	09:45:00	10:00:00	59.3	53.4	70	71	60	56.4	54.8	55.9	52	42.5	34.7
05/03/2026	10:00:00	10:15:00	59.9	52.9	74.8	71.1	60.2	56.8	55.6	56.6	52.7	44.1	34.9
05/03/2026	10:15:00	10:30:00	60.5	52	73.2	71.3	60.8	57.3	56.4	57.3	53	43.6	34
05/03/2026	10:30:00	10:45:00	59.9	52.5	73.2	70.9	60.2	56.5	55.5	56.8	52.5	42.8	33.1
05/03/2026	10:45:00	11:00:00	60.9	52.1	74	71.2	60.7	58	57.2	57.7	53.2	44.1	35.2
05/03/2026	11:00:00	11:15:00	60.1	52.1	76.6	70.7	61.4	56.4	55.6	56.9	52.8	43.2	32.7
05/03/2026	11:15:00	11:30:00	59.4	52	72.8	69.3	59.6	56	55.2	56.2	52	42.9	34.3
05/03/2026	11:30:00	11:45:00	59.8	52.8	75.1	65.7	58.4	55.7	55.9	56.6	52.5	44	38.5
05/03/2026	11:45:00	12:00:00	60	51.8	74.3	68	60.5	55.8	55.4	56.6	53	44.7	36.8
05/03/2026	12:00:00	12:15:00	60.7	50.5	85.2	66.5	58	55.5	55.8	57.6	54	44	34.4
05/03/2026	12:15:00	12:30:00	60.3	51.4	76.8	68.8	59.4	57.2	56.3	57.1	52.8	44.2	36.6
05/03/2026	12:30:00	12:45:00	60.3	52.8	76.5	66.3	58.8	56.4	55.9	57.2	53.1	44.3	36.2
05/03/2026	12:45:00	13:00:00	60.1	53.6	70.2	66.9	59.1	56.3	56	57.1	52.6	42.7	34.9
05/03/2026	13:00:00	13:15:00	61.6	52.5	83.2	67.5	65	58.3	57.5	58.5	53.4	45	35.8
05/03/2026	13:15:00	13:30:00	67.5	53	96.7	69.9	68.3	66.9	66.2	63.1	57	50.1	39.7
05/03/2026	13:30:00	13:45:00	60.5	53.6	75.4	68.2	59.9	56.3	56.6	57.4	53.1	43.9	36.1
05/03/2026	13:45:00	14:00:00	60.1	52.9	79.3	67.3	59.9	55.8	55.9	57.1	52.8	43.5	34.2
05/03/2026	14:00:00	14:15:00	59.6	52	77.1	66.9	59.7	57.7	55.1	56.3	52.3	42.9	36.8
05/03/2026	14:15:00	14:30:00	59.9	52	71.8	66.6	62.3	55.8	55.7	56.7	52.4	42.7	33.8
05/03/2026	14:30:00	14:45:00	60.2	51.8	74.5	67.2	57.7	55.4	55.7	57.3	53.1	43.3	34.4
05/03/2026	14:45:00	15:00:00	59.6	51.7	70.7	65.7	57.7	55	55.1	56.6	52.5	42.8	33.7
05/03/2026	15:00:00	15:15:00	60.2	52.2	73	66.4	58.7	56.1	55.7	57.2	52.9	43.2	35.2
05/03/2026	15:15:00	15:30:00	59.7	53.1	71.1	67.5	59.5	55.9	55.4	56.5	52.5	43.8	36
05/03/2026	15:30:00	15:45:00	60.3	53.6	74.9	67.8	59.5	56.9	55.9	57.1	53.1	44.6	36.7
05/03/2026	15:45:00	16:00:00	60.7	53.1	76.9	70.1	61.9	56.9	56.2	57.3	53.2	44.9	38.6
05/03/2026	16:00:00	16:15:00	60.8	54.7	76.8	68.9	62.2	58.1	56.7	56.9	53.4	48.3	41.8
05/03/2026	16:15:00	16:30:00	60.5	52.9	78.3	67.4	58.8	55.7	56.3	57.3	53.5	44.6	37.4
05/03/2026	16:30:00	16:45:00	60.6	53.6	79.5	67	58.5	56.4	56.1	57.5	53.4	44.3	37.1
05/03/2026	16:45:00	17:00:00	72	53.5	98.5	68.5	60.1	60.3	60.7	67.4	68.7	52.5	41.7
05/03/2026	17:00:00	17:15:00	60.5	53.1	80.7	67.2	57.8	55.8	55.7	57.4	53.6	45.1	37.7
05/03/2026	17:15:00	17:30:00	65.2	52.6	91.1	67	63.3	65.6	64.7	59.4	55	46.7	36
05/03/2026	17:30:00	17:45:00	61	52.9	74.8	66.3	58.4	56	56.2	57.9	54.2	45.8	38.8
05/03/2026	17:45:00	18:00:00	61.3	52.9	75.1	65.9	58.8	56.2	55.9	57.8	54.9	48.5	41.7
05/03/2026	18:00:00	18:15:00	63.7	54.2	81.6	67.7	63.2	59.1	57.5	58.8	57.5	54.9	47.9
05/03/2026	18:15:00	18:30:00	63.5	51.9	74.6	66.4	56.4	54.2	55.1	59.1	58	54.7	48.3
05/03/2026	18:30:00	18:45:00	64.2	53.4	75.7	65.1	56.9	54.3	55.1	58.9	59.1	56.1	50
05/03/2026	18:45:00	19:00:00	65.1	56.1	77.2	66.8	58.2	56.1	56.3	60.2	59.9	56.8	50.1
05/03/2026	19:00:00	19:15:00	64.6	53.4	77.5	64.8	56.2	54.6	55.8	60.1	59.3	55.9	49.2
05/03/2026	19:15:00	19:30:00	63.5	54.1	73.8	66.5	57.7	55.2	55.9	59.3	57.9	54.2	47.7
05/03/2026	19:30:00	19:45:00	62.6	53.1	76	65.6	57.5	54.6	55.2	58.6	56.8	52.8	47



05/03/2026	19:45:00	20:00:00	62.9	53.9	71.5	66.2	60.8	54.4	54.9	58.8	57.1	53.4	46.5
05/03/2026	20:00:00	20:15:00	62.6	56.8	72.7	64.1	55.6	52.7	53.9	58	57.1	54.6	44.8
05/03/2026	20:15:00	20:30:00	62.7	57.7	73.7	66.2	58.1	54	54.9	58	57.1	54.6	44.5
05/03/2026	20:30:00	20:45:00	63	57.9	74.2	65.7	56.8	53.9	54.8	58.4	57.5	54.8	44.5
05/03/2026	20:45:00	21:00:00	62.7	57.2	79.3	64.9	58.7	55.8	54.9	58.1	57.1	54.2	45
05/03/2026	21:00:00	21:15:00	62.8	57	77.9	65.6	58.1	54.8	54.9	58.2	57.3	54.4	42.2
05/03/2026	21:15:00	21:30:00	62.3	57	73.8	64.1	56.7	53.1	54	57.8	56.8	54	40.6
05/03/2026	21:30:00	21:45:00	61.9	56.9	74.6	64.9	56.6	52.8	53.7	57.1	56.5	53.9	40.3
05/03/2026	21:45:00	22:00:00	61.5	52.4	71.3	63.5	56.5	53.4	54.1	57.7	55.9	50.8	38.9
05/03/2026	22:00:00	22:15:00	61.1	50.7	79.7	64.9	57.2	54.9	55.3	57.9	55.2	46.4	38.8
05/03/2026	22:15:00	22:30:00	59.7	49.9	73	64	56.8	52.3	53.4	56.5	53.9	45.4	36.3
05/03/2026	22:30:00	22:45:00	59.3	49	74.8	63.7	55.9	52.1	52.7	56	53.5	45.5	36.4
05/03/2026	22:45:00	23:00:00	59.3	49.1	76.4	64	55.5	51.4	52.3	56.2	53.6	44.6	34
05/03/2026	23:00:00	23:15:00	59.4	48.4	74.4	63.3	55.7	53.4	53.1	56.3	53.6	44	32.9
05/03/2026	23:15:00	23:30:00	57.7	47.5	70.3	61	52	49.9	51.1	54.6	51.9	42.5	31.1
05/03/2026	23:30:00	23:45:00	59	46.6	79	61.2	57.4	54	52.1	55.8	53.2	44.2	32.5
05/03/2026	23:45:00	00:00:00	58.2	47.7	71.1	63.2	53.7	50.3	51.7	55	52.5	43.1	31
06/03/2026	00:00:00	00:15:00	59.2	46.6	76.7	60.9	56.6	52.8	54.7	55.8	53	43.5	32.9
06/03/2026	00:15:00	00:30:00	56	45.6	72.1	56.9	49.7	47.3	49.1	52.8	50.5	41.8	27.2
06/03/2026	00:30:00	00:45:00	55.3	46.3	73.5	58.9	51.7	47.9	48.5	52.1	49.6	40.4	27.8
06/03/2026	00:45:00	01:00:00	56.1	45.6	72.2	61.1	53	49.1	49.3	52.9	50.5	41.3	27.8
06/03/2026	01:00:00	01:15:00	55.3	46.1	73.1	60.9	54.3	49.1	49.2	52.1	49.4	40.2	26.6
06/03/2026	01:15:00	01:30:00	56.2	46.1	71.5	58.2	50.4	48.3	49.8	53	50.4	41.3	30.4
06/03/2026	01:30:00	01:45:00	54.4	45.3	69.7	58.9	52.5	48.9	48.3	50.9	48.8	40.2	27.2
06/03/2026	01:45:00	02:00:00	53.9	45.1	71.9	58	50.9	46.4	47.3	50.3	48.6	39.9	25.8
06/03/2026	02:00:00	02:15:00	56.5	44.8	79.3	62.9	59.6	50.9	49.9	53.1	50.6	41.8	28.9
06/03/2026	02:15:00	02:30:00	51.6	44.4	66.6	54.7	48.2	44.8	45	47.6	46.6	38.9	24.8
06/03/2026	02:30:00	02:45:00	52.9	40.9	70.7	56.1	49.9	47	47.1	49	47.4	39.3	34.6
06/03/2026	02:45:00	03:00:00	51.3	40.8	69.5	54.8	47.8	45.4	45.9	48.1	45.1	35.7	24.8
06/03/2026	03:00:00	03:15:00	53.8	43.2	70.9	69.1	57.1	51.7	48.6	50.4	46.7	35.8	24.4
06/03/2026	03:15:00	03:30:00	51.9	48.7	67.8	70.1	57.3	52.3	47.6	47.2	43.7	37	25.6
06/03/2026	03:30:00	03:45:00	51.6	48.4	67.5	69.9	56.9	52.1	47.4	46.3	43	39.7	28.1
06/03/2026	03:45:00	04:00:00	53.1	48.5	70.5	70	57.1	52.2	48.5	48.8	45.2	40.2	28.9
06/03/2026	04:00:00	04:15:00	53	48.3	70.4	70	57.2	52	47.6	48.9	45.7	38.8	27.6
06/03/2026	04:15:00	04:30:00	54.9	48.4	77.1	70.2	57.5	52.9	50.3	50.7	47.8	40.7	32.3
06/03/2026	04:30:00	04:45:00	55.5	48.6	74.6	70.3	58.3	55	50.6	51.8	48.3	39.2	29.7
06/03/2026	04:45:00	05:00:00	55.3	48.9	74.9	70.5	59.1	54.7	51	51.2	47.7	39.5	30.4
06/03/2026	05:00:00	05:15:00	56.1	49.5	72.9	70.2	57.9	52.8	49.9	51.9	50.1	43.1	36.3
06/03/2026	05:15:00	05:30:00	60.8	52	78.8	70.2	58.3	53.8	52.4	55	55.9	52.2	46.1
06/03/2026	05:30:00	05:45:00	61.1	54	75.3	70.3	58	53.3	52.6	55.6	56.2	52.3	46.2
06/03/2026	05:45:00	06:00:00	61.2	54.2	76.3	70.2	58.9	54.2	53.1	55.5	56.5	52.1	46.2
06/03/2026	06:00:00	06:15:00	61.6	52.7	78.2	71	59.9	54.3	52.9	56	56.8	52.6	46.1
06/03/2026	06:15:00	06:30:00	61.2	53.6	74.2	68.6	59.1	55	53.1	56	56.1	52.1	45.7
06/03/2026	06:30:00	06:45:00	63.6	53.1	79.6	63.1	56.7	56.5	57.7	59	57.6	54.2	48.5
06/03/2026	06:45:00	07:00:00	64.6	54.3	77	63.4	58.7	56.2	57.4	59.5	59.3	55.7	49.7
06/03/2026	07:00:00	07:15:00	64.6	54.1	77	61.6	54.4	52.7	55.2	59	59.9	56.4	50.1
06/03/2026	07:15:00	07:30:00	65.5	53.7	77.7	64.8	56.2	54.9	56.4	60.7	60.5	56.9	49.8
06/03/2026	07:30:00	07:45:00	65.8	54.9	78.6	66.6	57.9	55.6	57.1	61	60.7	57.2	50.3
06/03/2026	07:45:00	08:00:00	66.8	56.1	79.4	65.7	58.4	55.5	57.2	61.5	61.9	58.5	52.1
06/03/2026	08:00:00	08:15:00	66.5	57.5	74.9	67.7	59.1	56.5	57.5	61.3	61.6	58.1	50.9
06/03/2026	08:15:00	08:30:00	66.2	58.3	75.9	67.6	60.2	56.4	57.4	61.4	61	57.6	50.2
06/03/2026	08:30:00	08:45:00	66.1	57.9	78.5	70.7	62.7	56.9	58	61.5	60.7	57	50
06/03/2026	08:45:00	09:00:00	65.4	58.2	81.9	68.4	60.2	56.9	57.7	61.3	59.9	55	48
06/03/2026	09:00:00	09:15:00	63.7	55	75.3	66.8	59.7	56.7	56.6	59.7	57.9	53.3	46.5
06/03/2026	09:15:00	09:30:00	63.2	55	74.4	72.1	61.2	56.7	56.2	59.3	57.4	52.3	45.9
06/03/2026	09:30:00	09:45:00	62.2	53.8	72.9	70.1	59.7	56.1	55.7	58.5	56.2	50.6	44.1



06/03/2026	09:45:00	10:00:00	62.8	54.4	74.3	69	59.4	56	56.1	59.1	56.8	51.9	44.5
06/03/2026	10:00:00	10:15:00	62.4	54.1	75	72.1	61.1	58.1	56.4	58.7	56.2	49.6	43.4
06/03/2026	10:15:00	10:30:00	64.2	53.5	85.2	69.3	60.9	56	55.9	60.6	59.4	49.7	42.7
06/03/2026	10:30:00	10:45:00	62.7	52.1	82.5	66.3	57	54.3	55.7	59.2	57.3	49.3	42
06/03/2026	10:45:00	11:00:00	62.8	53.6	77.2	67.9	61.3	58.8	58.3	59.2	56.2	48.9	43.1
06/03/2026	11:00:00	11:15:00	63.3	54.9	75.5	66.7	65.4	58.2	58.2	59.9	56.8	48.6	40.8
06/03/2026	11:15:00	11:30:00	61.9	53.8	76.5	68.7	58.8	56.2	56.2	58.7	55.7	47.5	41.2
06/03/2026	11:30:00	11:31:28	62.4	55.9	70	74.1	61.4	57.1	56.7	58.9	56.1	47.2	48.9