Azymuth Acoustics UK

Professional Acoustic Services

Approved by: Matthew Gibson
Date: 02/11/2020

Noise Impact Assessment Report
Ref: Z42788

Proposed 4 no. Refurbished Apartments

Yorkshire Street
Rochdale
OL16 1DW

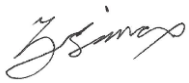
For

Tariq Parvez
10 Bittern Close
Rochdale
OL11 5QX



Azymuth Acoustics UK
Viridor House
No.3 Bolholt Terrace
Bury/Gtr Manchester
BL8 1PP
Tel: +44 (0)161-762 1055
Fax: +44 (0)161-761 1094
E-mail: dominic@acousticsuk.com
Web: www.acousticsuk.com

Document Status – Draft

Document Verification		**Project Reference**	**Z42788**
Document Revision / Status	1st Issue		
Version Date	2nd November 2020		
Filename	Z42788 Yorkshire Street, Rochdale Noise Assessment Report 27102020		
Description of Revisions			
	Prepared by	**Checked by**	**Approved by**
Name	Zachary Simcox AMIOA	Dominic McCann MIOA	Matthew Gibson
Signature			

Disclaimer

This report has been prepared by Azymuth Acoustics UK with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our Standard Terms and Conditions of Business and taking into account the resources devoted to it by agreement with the Client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own discretion and risk.

Contents

1.0	**Introduction**	**4**
2.0	**Baseline Noise Survey**	**5**
2.1	Measurement Procedures	5
2.2	Results of Noise Measurements	6
2.3	Description of Noise Climate	6
3.0	**Assessment Criteria**	**6**
3.1	ProPG: Planning and Noise - May 2017	6
3.2	National Planning Policy Framework (NPPF) 2018	7
3.3	British Standard 8233: 2014	7
3.4	W.H.O Guidelines on Community Noise	7
3.5	Rochdale Borough Council Planning Condition 4	7
3.6	Recommended Noise Assessment Criteria	8
4.0	**Assessment of Noise levels**	**9**
4.1	Noise Risk Assessment (ProPG)	9
4.2	Road Traffic Noise Assessment	9
4.3	Noise levels from Nearby Commercial Units	9
5.0	**Recommendations for Noise Mitigation**	**10**
5.1	Glazing and Ventilation Specification	10
5.2	Other Elements of Building Envelope	11
6.0	**Conclusions**	**11**
Appendix A Glossary of Acoustic Terms		**12**
Appendix B Full results of noise measurement survey		**13**

1.0 Introduction

Azymuth Acoustics UK is appointed by Tariq Parvez to provide a noise impact assessment for 4 No. apartments on Yorkshire Street, Rochdale. The proposed development is to be a refurbishment of office spaces located on the first and second floors of an existing building. The ground floor of the building consists of the Strawberry Gardens retail unit.

The development site is bounded by Yorkshire Street to the West and South. A pedestrian high street with commercial units and the Wheat Sheaf shopping centre are situated to the south west of site. The A58 is situated approximately 120 m north of the site.

The White Lion pub is situated approximately 40 m south of the site. It should be noted that the survey was undertaken during tier 3 lockdown due to the corona virus pandemic. As local pubs were closed due to this, noise from the premises has been modelled using historical data.

This report is intended to provide information relating to potential noise levels affecting the site as required by Rochdale Borough Council (RBC) to support the planning decision conditions. In particular, the report sets out the following details:

- The results of a baseline noise survey undertaken at the proposed development site.
- The appropriate assessment criteria and guidance relating to noise in the environment as associated with the planning condition and national guidance.
- An assessment of the appropriate level of protection against noise that should be provided as part of the development.

Planning Condition 4 of the decision notice states:

"The flats hereby approved shall be designed and constructed to ensure that indoor noise levels do not exceed:

- *35 dB(A) Leq (1 hour) in bedrooms with windows shut and other means of ventilation provided between the hours of 07:00 and 23:00;*
- *30 dB(A) Leq 5 (5 minutes) in bedrooms with windows shut and other means of ventilation provided between the hours of 23:00 and 07:00;*
- *35 dB(A) Leq (1 hour) in living rooms with windows shut and other means of ventilation provided between the hours of 07:00 and 23:00;*
- *40 dB(A) Leq (1 hour) in all other habitable rooms with windows shut and other means of ventilation provided at all times.*

Prior to the first occupation of each dwelling hereby approved, an acoustic verification report shall have been first submitted to and approved in writing by the Local Planning Authority, confirming that the above levels have been achieved.
Reason: In the interests of residential amenity and to ensure that future residents are adequately protected from unacceptable levels of noise in accordance with policies DM1 and G9 of the adopted Rochdale Core Strategy and the National Planning Policy Framework."

2.0 Baseline Noise Survey

2.1 Measurement Procedures

The instrumentation used for the environmental noise survey consisted of a SvanTek 977 Type 1 precision sound level meter with environmental kit and SvanTek type SV33 calibrator. The meter was calibrated before and after the noise measurements. No significant drift was observed over the period of the measurements. The sound level meter records A-weighted (fast response) noise levels as well as octave band data for all measurements recorded.

As the UK time zone changed from BST to GMT during the survey, all times are stated in GMT for the purpose of this assessment. The survey was conducted from 12:18 on 23rd October 2020 to 10:18 on 25th October 2020.

The ambient noise measurements were undertaken using the sound level meter microphone at the locations shown in Figure 1 below.

The sound level meter was positioned out of the second-floor window above Yorkshire Street on the south western façade.

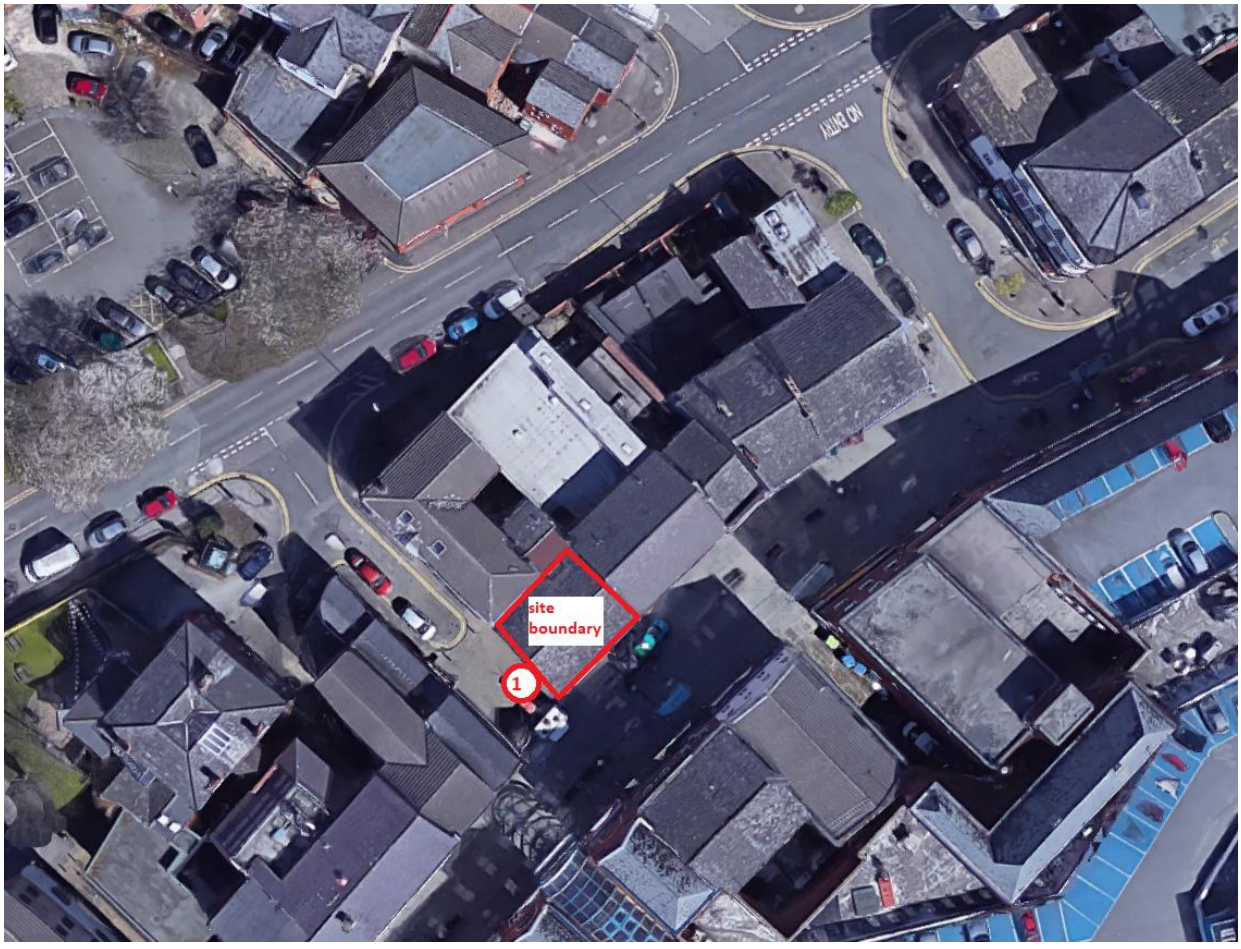


Figure 1: Site plan with noise measurement positions marked in red

2.2 Results of Noise Measurements

Full results of the noise levels recorded during the survey are included in Appendix B of this report.

The following table summarises the results of the noise measurements undertaken at the proposed site in terms of the average daytime (07:00 to 19:00 hours), evening (19:00 to 23:00 hours) and night-time (23:00 to 07:00 hours) statistical noise levels.

Date	Period	L_{Amax}	L_{Aeq}	L_{A10}	L_{A90}
Friday 23/10/2020	Day	84	63	65	57
	Evening	86	58	61	50
	Night	71	51	54	42
Saturday 24/10/2020	Day	82	60	62	54
	Evening	81	58	61	51
	Night	76	54	57	46
Sunday 25/10/2020	Day	83	63	65	55

Table 1: Results of Azymuth Acoustics UK noise measurements, 23-25 October 2020

2.3 Description of Noise Climate

During the survey period the dominant noise sources across site were observed to be road traffic on Yorkshire street, St Mary's Gate (A58) and on other local roads. General noise from pedestrians using the commercial spaces was also audible.

It should be noted that the survey was undertaken during tier 3 local lockdown for COVID-19. This means all pubs and bars in the vicinity of site were closed for the duration of the survey and so noise levels may have been significantly lower than usual.

It would be expected that a significant noise source across site would be the White Lion pub, however this was closed throughout the survey. Potential noise impacts from the pub have been assessed in section 4.4.

3.0 Assessment Criteria

In order to assess the extent of any measures required in order to comply with suitable conditions relating to potential noise sources, Azymuth Acoustics UK has reviewed various guidance documents and standards, these include:

- ProPG: Professional Practice Guidance on Planning and Noise (New residential development)
- National Planning Policy Framework (NPPF) 2018
- British Standard 8233: 2014
- World Health Organisation Guidelines on Community Noise
- British Standard 4142:2014

3.1 ProPG: Planning and Noise - May 2017

This Professional Practice Guidance on Planning and Noise (ProPG) has been produced to provide practitioners with guidance on a recommended approach to the management of noise within the planning system in England. The National Planning Policy Framework (NPPF) encourages improved standards of

design. The CIEH, IOA and the ANC have worked together to produce this guidance which encourages better acoustic design for new residential development and aims to protect people from the harmful effects of noise.

The Professional Practice Guidance on Planning and Noise States 'The recommended approach is intended to give the developer, noise practitioner, and decision maker an early indication of the likely initial suitability of the site for new residential development from a noise perceptive and the extent of acoustic issues that would be faced'. It is important that acoustic design is reviewed at an early stage of the development process.

3.2 National Planning Policy Framework (NPPF) 2018

The NPPF provides guidance to local authorities taking into account noise in making planning decisions. Paragraph 180 of the National Planning Policy Framework (NPPF) states that planning policies and decisions should aim to:

- Avoid noise giving rise to significant adverse impacts on health and quality of life as a result of new development;
- Mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions.

The National Planning Policy Framework states that the planning system should 'prevent both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability'.

3.3 British Standard 8233: 2014

BS 8233 provides a code of practice for the sound insulation of a variety of building types affected by general environmental noise. It provides recommendations for control of noise in and around buildings and suggests appropriate internal ambient noise level criteria / limits for a variety of different situations including residential properties.

The following table summarises the noise limits suggested by BS 8233 applying to residential properties:

Activity	Room	Good Design Range $L_{Aeq,\,T}$ dB	
		07:00-23:00hrs	23:00-07:00hrs
Resting	Living rooms	35	-
Dining	Dining room / area	40	-
Sleeping (daytime resting)	Bedroom (at night)	35	30

Table 2: Noise Limits for Residential Properties Suggested in BS 8233

3.4 World Health Organisation Environmental Noise Guidelines (ENG) 2018

The main purpose of the 2018 WHO guidelines is to provide recommendations for protecting human health from exposure to environmental noise originating from the following sources: transportation (road traffic, railway and aircraft), wind turbines and leisure activities.

The guidelines set out to define recommended exposure levels for environmental noise in order to protect population health. Exposure limits are average levels defined over a period of one year, measured outdoors in

free field at the most exposed façade. It should be noted that the document does not provide guideline limit values for multiple noise sources in combination.

The 2018 guidelines supersede the Community Noise Guidelines from 1999. Nevertheless, the document recommends that all CNG indoor guideline values and any values not covered by the current guidelines should remain valid. As such, the following guidance would remain appropriate:

For protection against sleep disturbance inside dwellings, night time noise levels should not exceed 30dB L_{Aeq} for continuous noise and 45dB L_{Amax} for single sound events.

To protect the majority of people from being seriously annoyed during the daytime, the outdoor sound level from steady, continuous noise (interpreted as noise from all sources combined) should not exceed 55dB L_{Aeq} on balconies, terraces and in outdoor living areas.

It should be noted that exposure levels defined in ENG and CNG are for guidance purposes as relates potential adverse health impacts and should not be interpreted as absolute limits or regulations.

3.5 Rochdale Borough Council Planning Condition 4

Planning Condition 4 states:
The flats hereby approved shall be designed and constructed to ensure that indoor noise levels do not exceed:

- 35 dB(A) Leq (1 hour) in bedrooms with windows shut and other means of ventilation provided between the hours of 07:00 and 23:00;
- 30 dB(A) Leq (5 minutes) in bedrooms with windows shut and other means of ventilation provided between the hours of 23:00 and 07:00;
- 35 dB(A) Leq (1 hour) in living rooms with windows shut and other means of ventilation provided between the hours of 07:00 and 23:00;
- 40 dB(A) Leq (1 hour) in all other habitable rooms with windows shut and other means of ventilation provided at all times.

Prior to the first occupation of each dwelling hereby approved, an acoustic verification report shall have been first submitted to and approved in writing by the Local Planning Authority, confirming that the above levels have been achieved.

3.6 Noise Assessment Criteria

Based on the guidance above it is recommended that the following criteria would be reasonable with the aim of minimising the impact of the environmental noise on the proposed new residential accommodation:

- Daytime noise levels not to exceed 35dB $L_{Aeq,\ 1\ hr}$ in living rooms
- Daytime noise levels not to exceed 40dB $L_{Aeq,\ 1\ hr}$ in dining room / kitchen
- Daytime noise levels in bedrooms not to exceed 35dB $L_{Aeq,\ 1\ hr}$
- Night-time noise levels in bedrooms not to exceed 30dB $L_{Aeq,\ 5\ min}$
- Night-time individual noise events in bedrooms shall not normally exceed 45dB $L_{Amax,F}$ more than 15 times

Table 4, Note 5 of BS 8233:2014 states: 'If relying on closed windows to meet the guide values, there needs to be an appropriate alternative ventilation that does not compromise the façade insulation or the resulting noise level. If applicable, any room should have adequate ventilation (e.g. trickle ventilators should be open) during assessment.'

4.0 Assessment of Noise Levels

4.1 Noise Risk Assessment (ProPG)

The risk assessment is based on survey data and incorporates a worst-case approach to potential night-time adverse effects. Adverse effect risk levels affecting the site are summarised in Table 3 below.

Façade Location	Noise level / guidance	
	$L_{Aeq,\,T}$	Risk of Adverse Effect
Day time (07:00 – 19:00 hours)	60 - 63	**Low - Medium**
Evening (19:00 – 23:00 hours)	58	**Low**
Night time (23:00 – 07:00 hours)	51 – 54	**Low - Medium**

Table 3: Potential adverse risk effects, various locations across the site.

The Façades with direct line of sight onto St Marys Gate would represent the most significant risk in terms of potential adverse impact.

Western and Southern perimeters would be deemed to represent a low - medium noise risk due to distance from St Marys Gate and screening. details of the proposed glazing and ventilation strategies to mitigate noise are shown below.

4.2 Road Traffic Noise Assessment

Daytime noise levels along St Marys Gate would indicate low to medium risk in terms of potential adverse effect on new dwellings. This risk may be reduced by following a good acoustic design process.

It should be noted that traffic noise levels gradually reduce during late night periods; as such, the risk of adverse effect (ProPG) would be assessed as medium for a typical 8-hour night-time average.

On the basis of the measured noise levels it is estimated that an overall noise reduction of 24 dB would be required through façades in order to achieve satisfactory conditions inside habitable rooms.

4.3 Noise Levels from Nearby Commercial Units.

The development is in close proximity (approx. 35m) to the pedestrian high street. During the time of survey, shops and restaurants were open, however bars and pubs were closed. It is expected that a significant noise source during the evening and early night time periods will be the White Lion Pub. Table 4 shows previously measured noise levels in a similar sized pub. The measurements were taken internally at the Chiverton Tap, on a busy Friday evening, in March 2018.

Parameter	Location	Linear Octave Band Centre Frequency (Hz)								Total dBA
		63	125	250	500	1k	2k	4k	8k	
Measured sound pressure level $L_{Aeq,40min}$	Ground Floor, Friday 21:00-22:00	88	82	81	83	76	72	66	69	81

Table 4: Measured internal noise levels, Chiverton Tap existing bar area

Calculated to the nearest façade on the proposed flats the incident sound levels are as follows:

Parameter	Location	Linear Octave Band Frequency (Hz)								Total dBA
		63	125	250	500	1k	2k	4k	8k	
Calculated specific sound pressure level from pub L_{Aeq}	1 m from open door / window of pub	73	67	66	68	61	56	51	54	66
Calculated specific sound pressure level from pub L_{Aeq}	Façade level outside the flats	57	51	50	52	45	41	35	38	35
Calculated sound pressure level L_{Aeq} from combined commercial and traffic noise (night-time period)	Façade level outside the flats	60	55	54	54	52	46	38	39	56

Table 5: Calculated external noise levels from existing pub based on Chiverton Tap noise data

General activity associated with the unit will customers entering and exiting the premises. Based on online information provided, it is likely that noise associated with the premises will be relatively low risk in terms of potential adverse impact. Traffic noise from nearby St Mary's gate is likely to mask noise from the premises.

5.0 Recommendations for Noise Mitigation

This section sets out the recommended minimum noise mitigation measures required to ensure satisfactory acoustic conditions inside habitable rooms throughout the scheme.

5.1 Glazing and Ventilation Specifications

The appropriate glazing specifications for the new dwellings based on the current proposed layout are summarised in Table 4.

Location	Glazing Acoustic Specifications	Suggested Glazing and Ventilation Types
Bedrooms, Living Rooms, Dining Rooms	Airborne sound insulation min. R_W 33dB and R_W+C_{tr} 29dB	Acoustically rated double glazing (e.g. 8mm float glass /16mm cavity / 4mm float glass) together with acoustic trickle vents (rated to $D_{n,e,w}$ ≥33dB when open) and Type 3 continuous mechanical ventilation

Table 6: Glazing and Ventilation minimum requirements

5.2 Other Elements of Both Building Envelope

Other elements of the building envelope should have the following minimum sound insulation performance:

- External Walls: minimum sound insulation R_W 45dB. This minimum is likely to be significantly exceeded by a normal brickwork façade. Where alternative external wall types are proposed on habitable areas it will be appropriate to check compliance with the R_W 45dB target.
- Roof: minimum sound insulation R_W 45dB. This minimum would likely be exceeded with a traditional slate tile roof with mineral wool loft insulation above plasterboard ceilings.
- Party Walls and Floors: It is understood that detailed party walls and floors have been specified by the architect to achieve suitable internal noise levels of sound insulation for building regulations.

6.0 Conclusions

Azymuth Acoustics UK has undertaken a a noise impact assessment for 4No apartments at Yorkshire Street, Rochdale.

The noise climate in the area for daytime and night-time is dominated by road traffic using St Mary's Gate (A58) and other surrounding roads (mainly Yorkshire Street).

Due to the recent impact of COVID-19, The noise impact assessment considers the absence of other noise sources, such as nearby pubs and restaurants units etc. As such, potential noise impacts have been calculated using previous measurements at similar premises.

Proposed development would present a Low – Medium risk of adverse effect as relates ProPG assessment methodology.

The residential development should be protected by noise mitigation measures including:

- Acoustic double glazing to rooms to achieve a minimum of 29 dB R_W+C_{tr}.

- System 3 mechanical extract ventilation, with acoustically rated trickle vents - $D_{n,e,w}$ (open) ≥33dB. Opening windows for purge ventilation is deemed to be generally acceptable

Appendix A – Glossary of Terms

Decibel (dB)
this is the unit used to measure sound. The human ear has an approximately logarithmic response to acoustic pressure over a very large dynamic range (typically 20 micro Pascal to 100 Pascal).

dB (A)
This is a measure of the overall noise level of sound across the audible spectrum with a frequency weighting (i.e. A-weighting) to compensate for the sensitivity of the human ear to sound of different frequencies. The A-weighting curve is implemented in sound level meters using an electronic filter that approximately corresponds to the frequency response of the ear.

Octave Band Noise Level
The human ear is sensitive to sound over a range of frequencies between approximately 20 Hz to 20 kHz. The ear is also generally more sensitive to medium and high frequencies than to low frequencies. In order to define the frequency content of a noise, the spectrum can be divided into frequency bands. The most commonly used frequency bands are octave bands, in which the mid-frequency of each band is twice that of the band below it.

L_{Aeq}
this is the equivalent steady sound level in dB (A) containing the same acoustic energy as the actual fluctuating sound level over a given time period.

Reverberation Time (RT or sometimes T_{30} or T_{60})
This is the time taken for the reverberant sound energy in an enclosure to decay one millionth of its equilibrium value, i.e. by 60 dB, after the source has been switched off, is known as the reverberation time. The reverberation time is frequency dependent and it is customary to measure its value in octave or one-third octave bands. Reverberation occurs when sound waves are repeatedly reflected from each surface of the room.

Sound Reduction Index (SRI)
Difference measured between the amount of energy flowing towards the wall in the source room and the total amount of energy flowing towards the wall in the source room and the total amount of energy entering the receiving room (usual range 100 - 3150 Hz for one third octave band values). The SRI varies with frequency and is measured in a laboratory in either octave or one-third octave bands.

SRI = L1 - L2 + 10 log (S/A)

Where: L1 = Noise level in the source room

L2 = Noise levels in the receiving room

S = Surface area of test specimen

A = Equivalent acoustic absorption area in the receiving room

Weighted Sound Reduction Index (R_w)
this is a weighted single figure descriptor of the sound insulation performance of a partition measured under laboratory conditions. The procedure used to quantify the R_w is to compare the sound reduction index (SRI) in each of the one-third octave bands from 100Hz to 3150Hz against a set of standard reference curves.
Appendix B – Graphical Results of Sound Insulation Tests

Appendix B – Full Tabulation of Noise Survey Results

Start	L_{Amax}	L_{Aeq}	L_{A10}	L_{A90}
23/10/2020 13:18:03	82.36	63.41	65.8	59.5
23/10/2020 13:33:03	70.42	62.17	64.5	58.5
23/10/2020 13:48:03	73.67	62.14	64.8	58.1
23/10/2020 14:03:03	76.45	61.62	64.3	57.1
23/10/2020 14:18:03	81.71	63.03	64.9	58.9
23/10/2020 14:33:03	84.09	61.6	63.8	57.7
23/10/2020 14:48:03	70.96	61.63	63.9	58
23/10/2020 15:03:03	82.98	62.44	65.1	57.7
23/10/2020 15:18:03	84.15	64.51	66.6	59.6
23/10/2020 15:33:03	77.04	63.61	66.2	59.3
23/10/2020 15:48:03	90.55	65.49	66.5	57.9
23/10/2020 16:03:03	80.05	62.83	65.3	57
23/10/2020 16:18:03	80.79	63.48	66.2	58.5
23/10/2020 16:33:03	82.31	64.32	66.3	56.9
23/10/2020 16:48:03	73.23	62.76	65.8	56.3
23/10/2020 17:03:03	71.53	62.79	65.9	57.4
23/10/2020 17:18:03	73.36	62.02	65.1	55
23/10/2020 17:33:03	71.41	61.43	64.7	53.3
23/10/2020 17:48:03	80.56	61	64.1	53.6
23/10/2020 18:03:03	74.62	61.44	63.8	55.2
23/10/2020 18:18:03	77.42	61.7	64.6	55.8
23/10/2020 18:33:03	72.33	60.6	63.2	55
23/10/2020 18:48:03	81.59	60.54	63	52.2
23/10/2020	70.74	58.24	61.4	51.3
19:03:03				
23/10/2020 19:18:03	83.96	60.16	62.2	51.5
23/10/2020 19:33:03	71.97	58.61	61.4	51.6
23/10/2020 19:48:03	69.09	58.32	61.6	51.2
23/10/2020 20:03:03	69.68	57.85	61.4	50
23/10/2020 20:18:03	68.25	57.35	60.7	49.8
23/10/2020 20:33:03	67.68	57.43	60.9	50.4
23/10/2020 20:48:03	88.81	58.96	60.8	49.1
23/10/2020 21:03:03	87.09	59.42	61.4	49.6
23/10/2020 21:18:03	75.62	57.98	61.2	48.6
23/10/2020 21:33:03	67.36	56.02	59.8	48.7
23/10/2020 21:48:03	69.82	56.32	59.7	49
23/10/2020 22:03:03	71.08	56.11	59.9	48.4
23/10/2020 22:18:03	75.58	56.99	60.2	48.4
23/10/2020 22:33:03	73.23	55.48	59	48.1
23/10/2020 22:48:03	80.32	55.8	58.6	47.1
23/10/2020 23:03:03	70.74	55.89	59.7	47.9
23/10/2020 23:18:03	72.79	55.5	59.2	47
23/10/2020 23:33:03	66.03	53.59	57.7	45.2
23/10/2020 23:48:03	71.45	52.73	56.2	44.7
24/10/2020 00:03:03	69.25	54.24	57.9	46.1
24/10/2020 00:18:03	67.41	53.41	57.3	45.3
24/10/2020 00:33:03	68.9	52.63	55.9	43.8
24/10/2020 00:48:03	65.14	51.83	55.9	43.1

Start	L_{Amax}	L_{Aeq}	L_{A10}	L_{A90}
24/10/2020 01:03:03	66.63	51.48	55.6	42.7
24/10/2020 01:18:03	65.59	49.66	52.6	41.3
24/10/2020 01:33:03	67.07	50.46	53.4	42
24/10/2020 01:48:03	69.33	51.23	53.6	41.7
24/10/2020 02:03:03	71.37	50.77	53.8	40.4
24/10/2020 02:18:03	67.14	49.72	51.7	40.3
24/10/2020 02:33:03	63.3	46.94	48.7	40.2
24/10/2020 02:48:03	65.38	45.34	46.5	38.5
24/10/2020 03:03:03	63.73	46.35	48.3	39.1
24/10/2020 03:18:03	63.85	46.58	47.9	38.4
24/10/2020 03:33:03	63.74	48.21	50.8	39.8
24/10/2020 03:48:03	62.69	46.6	49	39.1
24/10/2020 04:03:03	70.31	48.63	50.1	39.4
24/10/2020 04:18:03	60.77	44.07	45.5	38
24/10/2020 04:33:03	62.2	47.27	49.8	38.6
24/10/2020 04:48:03	66.46	47.52	49.3	39
24/10/2020 05:03:03	63.53	46.28	48.1	39.6
24/10/2020 05:18:03	68.6	46.24	44.5	38.1
24/10/2020 05:33:03	62.45	46.28	48.5	39.5
24/10/2020 05:48:03	66.06	47.86	50.6	40.1
24/10/2020 06:03:03	66.96	46.64	47.6	39.4
24/10/2020 06:18:03	68	49.08	51.3	41.2
24/10/2020 06:33:03	68.31	51.01	53.2	41.5
24/10/2020 06:48:03	65.8	50.81	54.4	43.2

Start	L_{Amax}	L_{Aeq}	L_{A10}	L_{A90}
24/10/2020 07:03:03	64.07	50.58	54.3	42.9
24/10/2020 07:18:03	63.34	49.55	52.9	43.4
24/10/2020 07:33:03	66.73	50.98	53.8	44.1
24/10/2020 07:48:03	67.26	51.97	55.5	45.2
24/10/2020 08:03:03	63.37	52.25	56	45.8
24/10/2020 08:18:03	81.95	65.78	69.3	48
24/10/2020 08:33:03	86.22	62.5	66.1	47.7
24/10/2020 08:48:03	68.29	53.89	57.5	47.1
24/10/2020 09:03:03	72.99	55.89	59.3	47.5
24/10/2020 09:18:03	70.81	55.4	58.7	47.8
24/10/2020 09:33:03	68.77	55.42	59	48
24/10/2020 09:48:03	72.92	57.35	60.8	48.8
24/10/2020 10:03:03	69.89	57.49	60.9	50.1
24/10/2020 10:18:03	69.11	57.5	60.7	50.7
24/10/2020 10:33:03	71.18	57.64	60.9	50.8
24/10/2020 10:48:03	69.61	59.37	63	52.5
24/10/2020 11:03:03	79.56	60.49	63.2	53.5
24/10/2020 11:18:03	71.59	59.46	62.5	53.1
24/10/2020 11:33:03	76.37	60.19	63	54.4
24/10/2020 11:48:03	70.37	60.16	62.9	55.5
24/10/2020 12:03:03	71.88	60.82	63.5	56.3
24/10/2020 12:18:03	72.3	60.61	63	56
24/10/2020 12:33:03	70.71	60.24	63	55.6
24/10/2020 12:48:03	75.39	60.17	62.9	55.7

Start	L_{Amax}	L_{Aeq}	L_{A10}	L_{A90}
24/10/2020 13:03:03	72.09	59.95	62.6	55.3
24/10/2020 13:18:03	77.49	60.8	63.2	56.1
24/10/2020 13:33:03	76.83	60.78	63.4	55.1
24/10/2020 13:48:03	72.25	59.8	62.4	54.7
24/10/2020 14:03:03	73.8	60.81	63.2	56.2
24/10/2020 14:18:03	86.16	61.13	62.9	55.4
24/10/2020 14:33:03	83.21	60.77	63	54.8
24/10/2020 14:48:03	71.14	60.04	62.8	55.1
24/10/2020 15:03:03	79.47	60.96	63.4	56.3
24/10/2020 15:18:03	84.26	62.75	63.5	56.4
24/10/2020 15:33:03	77.75	61.31	63.5	56.6
24/10/2020 15:48:03	79.03	60.29	62.8	55.3
24/10/2020 16:03:03	81.24	61.33	63.6	56.3
24/10/2020 16:18:03	75.23	59.99	62.6	54.6
24/10/2020 16:33:03	78.19	60.81	62.9	54.6
24/10/2020 16:48:03	79.1	59.47	62	53.9
24/10/2020 17:03:03	75.78	59.91	62.6	54.2
24/10/2020 17:18:03	76.02	59.63	62.1	53.7
24/10/2020 17:33:03	79.03	59.67	62.4	53.1
24/10/2020 17:48:03	80.64	59.7	61.8	53.2
24/10/2020 18:03:03	81.47	60.29	61.9	52.4
24/10/2020 18:18:03	79.97	58.96	61.7	52.4
24/10/2020 18:33:03	69.71	58.23	61.2	51.5
24/10/2020 18:48:03	75.24	58.78	61.6	52.1

Start	L_{Amax}	L_{Aeq}	L_{A10}	L_{A90}
24/10/2020 19:03:03	73.5	58.98	61.8	52.4
24/10/2020 19:18:03	73.97	60.05	61.9	52.3
24/10/2020 19:33:03	69.61	58.26	61.2	51.6
24/10/2020 19:48:03	84.38	60.52	62.2	56.3
24/10/2020 20:03:03	75.81	58.42	61.3	51.4
24/10/2020 20:18:03	70.19	57.17	60.5	50.4
24/10/2020 20:33:03	82.66	58.86	60.6	50.3
24/10/2020 20:48:03	78.54	58.51	61.1	50.6
24/10/2020 21:03:03	76.3	56.57	59.8	49.8
24/10/2020 21:18:03	65.74	55.23	58.7	49.3
24/10/2020 21:33:03	70.61	56.58	60.2	49.7
24/10/2020 21:48:03	72.02	55.92	59.2	49
24/10/2020 22:03:03	70.58	56.18	59.7	49.4
24/10/2020 22:18:03	70.08	56.61	60.1	49.6
24/10/2020 22:33:03	67.31	56.08	59.8	49.2
24/10/2020 22:48:03	69.02	55.75	59.6	48.6
24/10/2020 23:03:03	83.31	63.03	63.4	48.6
24/10/2020 23:18:03	78.07	58.09	60.1	48.3
24/10/2020 23:33:03	83.28	57.01	59.5	47.8
24/10/2020 23:48:03	68.16	54.32	58.1	47
25/10/2020 00:03:03	67.58	54.62	58.1	47.6
25/10/2020 00:18:03	72.04	55.2	58.4	47.1
25/10/2020 00:33:03	67.89	54.07	58	47.1
25/10/2020 00:48:03	67.05	53.89	57.3	48.5

Start	L_{Amax}	L_{Aeq}	L_{A10}	L_{A90}
25/10/2020 01:03:03	64.07	51.31	55	43.1
25/10/2020 01:18:03	70.88	54	57.3	43.7
25/10/2020 01:33:03	64.72	49.22	52.7	41.8
25/10/2020 01:48:03	64.32	49.23	52.6	41.3
25/10/2020 02:03:03	66.6	49.74	53.2	40.8
25/10/2020 02:18:03	63.95	46.92	48.6	39.6
25/10/2020 02:33:03	75.83	54.85	54.4	39.4
25/10/2020 02:48:03	63.76	46.71	48.3	38.8
25/10/2020 03:03:03	65.09	45.79	47.2	39
25/10/2020 03:18:03	63.08	43.86	44.5	38
25/10/2020 03:33:03	75.28	50.81	50.7	38.6
25/10/2020 03:48:03	65.5	46.61	47.2	37.9
25/10/2020 04:03:03	61.27	44.96	45.5	38
25/10/2020 04:18:03	64.33	46.63	48.1	38.4
25/10/2020 04:33:03	67.54	49.04	49	38.6
25/10/2020 04:48:03	70.59	48.18	49.3	39.4
25/10/2020 05:03:03	63.61	45.39	46.1	41.1
25/10/2020 05:18:03	67.23	47.57	49.3	39.4
25/10/2020 05:33:03	63.38	47.25	49.3	40.8
25/10/2020 05:48:03	65.66	49.44	52.8	42.2
25/10/2020 06:03:03	74.45	50.73	54.1	43.5

Start	L_{Amax}	L_{Aeq}	L_{A10}	L_{A90}
25/10/2020 06:18:03	70.38	53.23	56.2	44.3
25/10/2020 06:33:03	74.97	53.39	56.5	44.7
25/10/2020 06:48:03	70.06	54.97	58.4	47.9
25/10/2020 07:03:03	71.96	56.56	60.2	48.6
25/10/2020 07:18:03	70.3	56.33	59.9	49.1
25/10/2020 07:33:03	71.51	56.9	60	50.2
25/10/2020 07:48:03	69.27	57.52	60.7	51.3
25/10/2020 08:03:03	71.43	58.65	61.8	52.3
25/10/2020 08:18:03	83.29	68.3	67.4	53.8
25/10/2020 08:33:03	83.16	67.44	71	55.5
25/10/2020 08:48:03	81.2	64.27	63.4	53.9
25/10/2020 09:03:03	83.63	63.44	66.2	56.9
25/10/2020 09:18:03	72.78	62.52	65.5	56.4
25/10/2020 09:33:03	74.13	62.43	65.2	57
25/10/2020 09:48:03	77.18	64.67	67.8	58.9
25/10/2020 10:03:03	73.26	62.68	66	56.2
25/10/2020 10:18:03	73.86	61.4	63.9	56.1
25/10/2020 10:33:03	70.73	60.6	63.3	55.2
25/10/2020 10:48:03	73.29	61.56	64.4	56.4
25/10/2020 11:03:03	73.5	61.2	63.9	56.8