Proposed Drive Thru Restaurant at Land Adjacent to Maesteg Llanfair Caereinion Powys SY21 0HL

NOISE IMPACT ASSESSMENT

Acoustics Report M2403/R01 9th February 2024

- To: Roger Parry & Partners Hogstow Hall Minsterley Shrewsbury Shropshire SY5 0HZ
- By: Paul Smith BSc MIOA

1. Introduction

This acoustic report documents a noise impact assessment in relation to the proposed drive thru restaurant at land adjacent to Maesteg, Llanfair Caereinion, Powys; Figure 1.

The report is divided into the following sections:

- Section 2: Overview of the Development
- Section 3: Noise Assessment Criteria
- Section 4: Existing Noise Environment
- Section 5: Noise Impact Assessment
- Section 6: Conclusion
- Appendix A: Noise monitor and weather station data

2. Overview of the Development

A drive thru cafe is proposed at land at Greenfields Farm, Four Crosses, Llanymynech; Figure 1.

The scheme has yet to be finalised (an indicative layout is provided in Figure 2) and the end operator and opening times are currently unknown.

The indicative layout shows parking, charging for electric commercial and private vehicles (note that this element is currently a fundamental part of the proposed scheme), outside seating area, and a drive thru restaurant. The site will be accessed via the A458.

Maesteg, which is the nearest dwelling to the site (Figure 1), is 35m from the southern site boundary with an unobstructed view of the site.

The dominant noise source affecting the area is road traffic on the busy A458. Other noise sources that have the potential to affect the local area are the seasonal steam trains on the Welshpool & Llanfair Light Railway and commercial activities at Wynnstay Stores (builders' merchant and agricultural suppliers), both of which are located to the east of the A458.

Noise Impact Assessment



Figure 1. Aerial view (source: bing.com) monitor position and plan of indicative layout of proposed scheme

3. Noise Assessment Criteria

The following guidance documents have been used to review the potential noise impact of the proposed drive thru cafe.

3.1 National Planning Policy Framework

The National Planning Policy Framework (December 2023) states that "Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development". In respect to noise the document expands that planning polices and decisions should:

- mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life.
- identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason

The National Planning Policy Framework references the Noise Policy for England (2010). This document provides three 'Observed Effect Levels' with regard to noise, namely:

- NOEL (No Observed Effect Level): This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.
- LOAEL (Lowest Observed Adverse Effect Level): This is the level above which adverse effects on health and quality of life can be detected.
- SOAEL (Significant Observed Adverse Effect Level): This is the level above which significant adverse effects on health and quality of life occur.

Further guidance and clarification on the 'Observed Effect Level' based on the likely perception of a new noise source is provided in the Department for Communities and Local Government's (DCLG) Planning Practice Guidance. Table 1 provides their summary of the noise exposure hierarchy based on the likely average response.

3.2 BS4142:2014+A1:2019

BS4142:2014+A1:2019 provides a methodology to assess the impact of industrial and commercial noise at outdoor locations affecting dwellings, whereby the 'typical' background noise level is deducted from the industrial noise Rating Level (industrial noise corrected to account for the 'on-time' and noise character of the noise source). The following guidance is given based on the established difference:

- A difference of around +10dB or more is likely to be an indication of significant adverse impact, depending on context
- A difference of +5dB is likely to be an indication of an adverse impact, depending on context
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on context

Context, as defined in BS4142:2014, includes the consideration of the following factors:

- The absolute level of the noise emissions
- Character and level of the residual sound compared to the character and level of the Specific Level
- Sensitivity of the receptor and any acoustic design measures (e.g., façade sound insulation, use of mechanical ventilation and acoustic screening) incorporated at premises used for residential purposes

To take account of industrial/commercial noise sources that do not operate continually an 'ontime' correction is applied using:

Where:

 $r_{\text{ref.}}$ = reference time (1hr between 07:00 – 23:00hrs and 15 minutes between 23:00 – 07:00hrs)

r = total 'on-time' during the reference period

Note that the shorter reference time interval between 23:00 – 07:00hrs is designed to penalise industrial/commercial noise events that occur during the night.

BS4142 provides four noise character correction categories with associated penalties that must be applied when determining the Rating Level, namely:

- Tonality:
 - Not perceptible = 0dB
 - Just perceptible = +2dB
 - Clearly perceptible = +4dB
 - Highly perceptible = +6dB
- Impulsivity:
 - Not perceptible = 0dB
 - Just perceptible = +3dB
 - Clearly perceptible = +6dB
 - Highly perceptible = +9dB
- Intermittency: +3dB if the intermittency of operation is readily distinctive against the residual noise environment
- **Other:** +3dB applied if the specific sound is neither tonal or impulsive but features noise characteristics that are readily distinctive against the residual noise environment

With regard to noise ingress (noise from outside to inside), BS4142 states that 'The standard is not intended to be applied to the assessment of indoor sound levels' and the assessment methodology '... is not intended to be used to assess the extent of the impact at indoor locations'. BS4142 further advises that context of building envelope sound insulation and ventilation strategy as required to achieve good internal acoustic conditions can be taken into account.

Table 1. Noise Guidance)	exposure hierarchy based on the likley average response (source:	DCLG Planning	Practice
Perception	Examples of Outcomes	Increasing Effect Level	Action
Not noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
		Lowest Observed Adverse Effect Level	
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
		Significant Observed Adverse Effect Leve	
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

3.3 Noise ingress

BS8233 provides guidance noise ingress limits for habitable rooms within residential premises, namely;

- Living rooms: LAeq,16hr 35dB (day)
- Dining room/area: LAeq,16hr 40dB (day)
- Bedrooms: LAeq,16hr 35dB (day), LAeq,8hr 30dB (night)

In order to avoid sleep disturbance, in accordance with guidance given in PRoPG, individual noise events should not exceed 45 dB L_{Amax,F} more than 10 times within bedrooms during the night period.

The above noise limits must be met with windows closed and trickle vents (if applicable) open.

Where the external noise source has a specific character, such as a strong low-frequency content or is irregular enough to attract attention, BS8233 advises lower noise limits might be appropriate.

Taking into account the characteristics of the potential noise emissions from the proposed scheme (intermittent in the case of the deliveries/car movements/plant and some noise sources such as

deliveries may also include impulsive elements) we consider noise ingress levels 5dB below BS8233 noise ingress limits will be considered acceptable.

Purge ventilation, which may be required on occasion to mitigate against overheating, may require open windows. It is generally accepted that there is a compromise between providing rapid ventilation via an open window and the unavoidable higher noise ingress levels (a façade with an open window provides around a 13dB reduction between outside to inside).

For this situation 'Acoustics Ventilation and Overheating - Residential Design Guide: 2020' (AVO) advises that 'reasonable' internal conditions for habitable rooms may be considered to be noise ingress levels up to 5dB above BS8233's noise ingress limits.

3.4 Garden areas

BS8233:2014 states that for gardens and patio areas 'it is desirable that the external noise level does not exceed $L_{Aeq,T}$ 50dB with an upper guideline value of $L_{Aeq,T}$ 55dB'. However, BS8233 acknowledges that in higher urban noise environments these guidance values may not always be achievable.

4. Existing Noise Environment

4.1 Noise Survey

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A survey has been conducted to establish the existing environmental noise affecting the nearest dwellings to the proposed development. It should be highlighted that during the survey the Welshpool & Llanfair Light Railway was not operational.

- Survey dates: Tuesday 30th July Wednesday 31st January 2024
 - Weather; Table A2, Appendix A:
 - Precipitation: Dry
 - Wind Speed: Highest recorded wind speed of 3.7m/sec with a median of 0.0m/sec
 - Wind direction:
 - 8:30 16:00hrs: NW
 - 16:00 19:00hrs: W
 - 19:00 08:30hrs: SW
- Noise monitor locations: With the microphone attached to a tripod, the noise monitor was located at Position 1 as shown in Figure 1
- Weather station location: Weather station, mounted on a tripod, located at Position 1; Figure 1
- Equipment:
 - Weather Station: Kestrel type 4500
 - Noise monitors: Brüel & Kjær Type 2238; Position 1, Figure 1
- Monitor configuration:
 - Weather station: Configured to measure the average wind speed and temperature over consecutive 10-minute periods
 - Noise Monitors: Configured to measure consecutive 15-minute samples of noise.
- Calibration: Noise monitors calibrated before and after the survey using a Brüel & Kjær Type 4231 calibrator with no deviations found

All noise measurements are free-field. Full tabulated results are given in Tables A1 and A2, Appendix A.

The weather conditions will not have adversely affected the noise measurements.

4.2 Survey observations

During the setting up and collection of the noise monitors it was observed that the dominant noise source affecting the area was road traffic (cars, vans and HGVs) on the busy A458.

No other noise sources affecting the local area were noted.

4.3 Existing environmental noise levels

Figure 2 shows the variation in the measured maximum ($L_{Amax,F}$), ambient (L_{Aeq}) and background (L_{A90}) noise levels obtained at Position 1.



Figure 2. Position 1 noise monitor data (free-field)

As can be seen in Figure 2 there is an identifiable reduction in the ambient noise levels during the night period, which will be due to the lower traffic volumes on the A458. There is however a much more limited variation in the background noise levels throughout the entire survey period.

From the survey data the following have been established from Position 1 measurement data; Table 2:

- typical day and night period background noise levels
- night period maximum noise level that is not normally exceeded
- day and night ambient noise levels
- average 1hr ambient noise level between 07:00 23:00hrs

Table 2. Established noise levels at Position 1								
Day (07:00 - 23:00hrs) Night (23:00 - 07:00hrs)								
LAeq,1hr dB	LAeq,16hr dB	LA90 dB	LAeq,8hr dB LAmax,F dB LA90 d					
57 58 38 50 71 36								
Note 1: L Aeq.1hr is the average 1hr ambient noise level during the assessment period								

The noise levels presented in Table 1 are consider to be representative to those that will occur at the nearest dwelling (Maesteg) to the scheme.

It should be noted that based on the established existing external noise levels:

- with open windows AVO's guidance noise ingress limits (BS8233 noise ingress limits + 5dB) will be exceeded at all times in the nearest dwelling (open window = 13dB reduction from outside to inside)
- BS8233's guidance noise limits for external amenity areas (i.e. gardens) are currently exceeded

5. Noise Impact Assessment

5.1 Existing Noise Environment

The existing noise environment is dominated by road traffic, with the noise levels sufficiently high at the closest dwelling to the proposed scheme that:

- AVO's guidance noise limits with an open windows are exceed
- BS8233 guidance noise limits are exceeded in external amenity areas

5.2 Rating Level Limits

Where the Rating Level is at parity with the typical background noise level BS4142 states that the Specific Level will have a low impact. On this basis aggregate Rating Level limits corresponding to a 'low' noise impact have been established based on the determined typical background noise levels:

- Day (07:00 23:00hrs): 38dB
- Night (23:00 07:00hrs): 36dB

The above Rating Level limits can be used to inform on the final design of the scheme.

It should be highlighted that the Rating Level limits do not take into account context. This, for example, could be considered relevant during the night period when the occupiers are expected in be indoors; for this scenario the noise ingress via an open window maybe considered a better indicator to the potential noise impact than the Rating Level.

5.3 Drive Thru Restaurant Noise Sources

Though a final scheme for the proposed drive thru restaurant has yet to be developed the noise sources associated with the development will be:

• Plant:

- *Overview:* the type, number and location of the plant are currently unknown. However, it is likely to consist of kitchen extract(s) and condenser units.
- Noise level: expected to be in the range of LAeq 50 75dB at 1m per item of plant.
- Noise Character: potentially plant can be tonal and may be intermittent in operation. The supplier of the plant should be able to advise if the item of equipment has a tonal component; at highest a BS4142 4dB tonality correction is envisaged ('clearly perceptible' tonality). Intermittent operation of the plant is unlikely to be 'readily distinctive against the residual noise environment' at the nearest dwellings; a 0dB intermittency correction is therefore considered appropriate in this case
- *Context:* The nearest dwelling is not currently not exposed to any plant noise.
- Deliveries:
 - Overview: deliveries will be during the day period only using either a box van or HGV. Stock will be manually loaded onto trolleys, with deliveries expected to take approximately 30minutes to complete.

- Noise level: LAeq 63dB at 5m (in house noise data)
- Noise Character: The delivery process may include impulsive noises (e.g., 'bang's associated with the use of trolleys/tail lifts etc. Trucks that include a refrigeration unit may also include a tonal element. On the basis that there is a 'clearly perceptible' impulsivity and tonality element to the delivery noise a total correction of 10dB would therefore be applicable. However, it is standard practice to only apply the highest character correction, which for this scenario would be 6dB.
- *Context:* The nearest dwelling is currently not exposed to any delivery noise.
- Customer vehicle movements:
 - Overview: Vehicles will enter and exit the site from the A458. Car speeds within the site will be low due to the site layout. Customers will either park their cars (in the car park or for electric charging) or remain within their vehicles for the order and collection of food/drinks
 - Noise Level: SEL 72dB and L_{Amax,F} 63dB at 10m; these values are for petrol/diesel vehicles. Eclectic vehicles will generate significantly lower noise levels (for electric vehicles the main noise source is tyre noise, which at 5 10mph is very low). For the assessment it has been assumed that the vehicles will be petrol/diesel powered, which represents the worst-case scenario
 - Noise Character: Due to the low speed of the vehicles within the site (5 10mph) the noise emissions are not expected to be tonal or impulsive.
 - *Context:* The area is already dominated by vehicle noise hence car related noise is within context of the existing noise environment
- Customers ordering & payment
 - Overview: It is expected that customers will order their food via either a telecommunications system or in person
 - Noise Level: 54 60dB at 2m (represents normal to raised speech)
 - Noise Character: No character corrections applicable.
 - Context: There are no other similar existing noise sources

5.4 Potential Noise Impact

As a final scheme has yet to be developed it is not possible at this stage to accurately determine the Rating Levels of the drive thru restaurant. However, example calculations have been undertaken using the indicative site plan in order to review the potential noise impact based on; Table 3:

- *Plant:* two items of plant operating during the day and evening and one item of plant running during the night (all at 65dB(A) at 1m). The plant has been assumed to be located on the east façade of the restaurant building; at this location the plant would be fully acoustically shielded from the nearest dwelling by the restaurant building itself.
- Deliveries: 30minute delivery during the day period only.
- *Customer vehicle movements:* A busy drive thru restaurant would be expected to have around 30 customers per hour during busy periods falling to 9/hr during the quietest periods. For the assessment the distance to the vehicle has been taken from the closest section of site access road to the dwelling
- *Customer ordering & payment*: a total 'on-time' of customers talking of 15minutes during the day and evening and 5minutes during the night over the 1hr and 15minute BS4142

assessment periods respectively. The nearest façade of the restaurant to the dwelling has been taken to be the noise source location.

Table 3. Calculated Rating and Assessment Level for typical drive thru restaurant noise sources at nearest dwelling (Maesteg)										
			m	Day (07:00 - 23:00hrs)			Night (23:00 - 07:00hrs)			
Noise Source	Distance, m	Distance correction, dE	Shielding Correction, d	Rating Level dB	Typical L _{A90} dB	Assessment Level dB	Rating Level dB	Typical L _{A90} dB	Assessment Level dB	
			Lp at 1m, dB	65			65			
Ħ		2			1					
Plar		3			0					
	BS4142	2 Noise Chara	4			4				
	53	34.5	10	28	38	-10	35	36	-1	
			SEL at 10m	72			72			
sle ents			30			9				
ehic 'eme		no. of	15			10				
_> ∧om	assess	sment time pe	riod correction	36			36			
	41	12.3	0	39	38	1	34	36	-2	
S			Lp at 5m, dB	63						
)eliverie:		On time correction								
	BS4142	6								
	40	18.1	0	48	38	10		N/A		
mer ng/ ing			Lp at 2m, dB	60			60			
stor derir lecti		On t	ime correction	-6			-5			
O C C C	47	27.4	0	27	38	-11	28	36	-8	

We define Assessment Level = $RL - min L_{A90} dB$, where:

RL = aggregate Rating Level, dB(A)

L_{A90} dB = the typical background noise level, L_{A90}

Where the Rating Level is at parity with the typical background noise level (Assessment Level = 0 dB) BS4142 states that the Specific Level will have a low impact; an adverse impact is indicated where the Rating Level is \geq 5dB and <10dB above the typical background noise level.

The example calculations presented in Table 3 establish that the BS4142 noise impact for the assessed noise sources/example operating scenarios is:

- Plant: low noise impact day and night
- Vehicle movements: low noise impact day and night (note that a 1dB change in noise level is not perceptible i.e., an Assessment Level of 1dB would be perceived as the same as 0dB). It should be highlighted that the Rating Levels calculated for on-site vehicle movements were based on all vehicles been petrol/diesel powered. With electric vehicles becoming the norm in the near future combined with the proposed significant number of electric vehicle charging points at the drive thru restaurant, it is likely that the noise emissions from on-site vehicles will be lower than calculated.
- *Deliveries:* 'adverse' to 'significant adverse' noise impact during the day. We therefore advise that attention is paid to mitigation measures that maybe required in relation to delivery noise emissions affecting the nearest dwelling.
- Customer ordering/collecting: low noise impact day and night

During the night period, it is expected that the occupiers of the nearest dwelling will be indoors. On this basis the noise ingress via an open window (13dB reduction from outside to inside) of the assessed noise sources will be ≤25dB. This complies with our suggested noise ingress limit with reference to BS8233/AVO.

5.5 Mitigation Measures

As identified in the example calculation (Table 3) there is the potential for the Rating Levels of deliveries to exceed the typical background noise level during the day period at the nearest dwelling.

This can be addressed by the installation of 2m high close-boarded timber fence/masonry wall with a minimum surface density of 10km/m² around the delivery area as identified in Figure 3. The fence/wall will block the line of sight between the delivery area and the ground floor of the nearest dwelling, resulting in up to 10dB shielding attenuation. With this measure, the BS4142 noise impact would be reduced to low.

In addition to the noise barriers, the follow measures are also worthy of consideration in the final design of the scheme:

- Plant:
 - Location: Locate the plant (or associated duct termination) so that the line of sight is fully blocked by a solid barrier. This could be a solid fence (close-boarded timber or masonry) or the restaurant building itself. Up to 10dB shielding attenuation can be achieved
 - *Choose quiet plant:* select plant that has a low noise output. Condenser units often have a night-time mode with a reduced noise level.
 - *Fit attenuators:* Attenuators can be fitted to the atmosphere side of extract fans, resulting in 5 20dB attenuation depending on the size of the attenuator
- *Noise management:* Signage to encourage drivers to be considerate to the neighbours (e.g., to not leave engines idling, rev engines or have loud music). This can be enforced by staff if required.



Figure 3. Indicative site plan with the mitigation measure of a solid timber fence/masonry wall identified

5.6 Assessment uncertainty

With all calculations there is a level of uncertainty, which in this case we do not expect to be greater than +/-3dB (3dB is a just perceptible change in noise level). This small level of uncertainty does not have any meaningful significance to the outcome of the assessment i.e., would not change the identified low noise impacts to adverse.

The established representative background noise levels are consistent with the survey observations; lower typical background noise levels that would change the survey findings are not expected.

The example calculation of the potential noise impact is based on typical noise sources/operation of a generic drive thru restaurant and therefore may not represent those that will occur at the proposed scheme. It is therefore advised that once the scheme has further been developed, the noise emissions from each noise source is reviewed against the Rating Level limits detailed in this report; any required mitigation measures can then be included in the design as required.

6. Conclusion

A noise survey has been conducted to determine the existing environmental noise levels at the nearest dwelling to the proposed drive thru restaurant at land adjacent to Maesteg, Llanfair Caereinion, Powys; Figure 1.

The existing noise environment is dominated by road traffic, with the noise levels sufficiently high at the nearest dwelling to the scheme that guidance limits for noise ingress via an open window and external levels in amenity areas are exceeded.

The vehicle related noise emissions associated with the drive thru restaurant are within context of the existing noise environment.

The scheme has yet to be finalised (an indicative layout is provided in Figure 1) and the end operator and opening times are currently unknown. However, based on the survey data aggregate day and night period Rating Level limits have been established that will result in a low noise impact according to BS4142. These can be used to inform the final design of the scheme. Note that during the night period noise ingress levels via an open window maybe considered a better indicator to the resultant noise impact.

An example BS4142 calculation (Table 3) has been undertaken based on the indicative layout and assumed operation of the drive thru restaurant. This found that there is potential for an 'adverse' to 'significant adverse' noise impact from deliveries; the other noise sources were found to result in a 'low' noise impact.

To reduce the delivery noise emissions, as required to achieve a low noise impact, we advise that a 2m high close-boarded timber fence/masonry wall is considered as indicated in Figure 3.

Additional mitigation measures have been discussed for consideration in the final design.

On the basis that it will be possible to achieve a BS4142 low noise impact during the day and night (and acceptable noise ingress levels via an open window with regard to sleep disturbance), we conclude that in-principal the proposed drive thru restaurant is acceptable on noise grounds.

Appendix A: Nois	e Monitor and	Weather	Station	Survey	Data

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$\begin{array}{cccccccccccccccccccccccccccccccccccc$	10:30	70.2	56.0	42.0	22.40	69.0	50.4	26.5
11.1569.355.940.523.3066.246.536.311:1569.355.940.523.3065.245.735.511:3071.558.739.523.4572.051.136.012:0075.459.143.000:1567.746.436.012:1569.758.342.000:3070.048.736.012:3074.658.342.500:4566.145.236.012:4568.456.138.501:0041.236.636.013:0070.056.538.001:1538.536.436.013:1577.558.038.001:3067.845.536.013:3069.857.437.501:4538.036.335.514:4574.457.438.002:1567.746.835.514:1574.457.438.002:3069.846.235.514:3072.757.639.002:4538.436.335.514:4574.157.837.503:0059.639.735.015:0081.558.840.003:1571.047.334.515:1569.257.939.504:3067.148.035.516:0071.560.339.504:3067.148.035.516:0071.560.339.504:3067.1 <td>11:00</td> <td>70.3</td> <td>50.9</td> <td>39.5</td> <td>23.00</td> <td>00.Z</td> <td>16.6</td> <td>26.5</td>	11:00	70.3	50.9	39.5	23.00	00.Z	16.6	26.5
11.13 33.3 35.3 46.3 22.30 35.2 45.7 35.3 11.30 71.5 58.7 39.5 23.45 72.0 51.1 36.0 12:00 75.4 59.1 43.0 $00:15$ 67.7 46.4 36.0 12:15 69.7 58.3 42.0 $00:30$ 70.0 48.7 36.0 12:45 68.4 56.1 38.5 $01:00$ 41.2 36.6 36.0 12:45 68.4 56.1 38.5 $01:00$ 41.2 36.6 36.0 13:00 70.0 56.5 38.0 $01:15$ 38.5 36.4 36.0 13:15 77.5 58.0 38.0 $01:30$ 67.8 45.5 36.0 13:30 69.8 57.4 37.5 $02:00$ 69.0 47.5 36.0 14:00 72.6 58.0 38.0 $02:15$ 67.7 46.8 35.5 14:15 74.4 57.4 38.0 $02:30$ 69.8 46.2 35.5 14:30 72.7 57.6 39.0 $02:45$ 38.4 36.3 35.5 14:45 74.1 57.8 37.5 $03:00$ 59.6 39.7 35.0 15:15 69.2 57.9 39.5 $03:30$ 61.5 39.6 34.0 15:30 76.0 59.4 46.0 $03:45$ 68.5 48.5 34.0 15:30 76.4 60.5 51.0 $04:30$ 67.1 $48.$	11.00	60.2	55.0	41.0	23.13	65.2	40.0	30.5
11:3071.353.753.323.4372.051.156.011:4570.457.741.000:0072.551.936.012:0075.459.143.000:1567.746.436.012:1569.758.342.000:3070.048.736.012:3074.658.342.500:4566.145.236.012:4568.456.138.501:0041.236.636.013:0070.056.538.001:3067.845.536.013:3069.857.437.501:4538.036.335.513:4570.957.337.502:0069.047.536.014:0072.658.038.002:3069.846.235.514:3072.757.639.002:4538.436.335.514:4574.157.837.503:0059.639.735.015:0081.558.840.003:1571.047.334.515:1569.257.939.503:3061.539.634.015:3076.059.446.003:4568.548.534.015:3070.158.841.004:4568.651.435.516:3070.158.841.004:4568.651.435.516:3070.158.841.004:4568.6 <td>11.13</td> <td>71.5</td> <td>59.7</td> <td>20.5</td> <td>23.30</td> <td>72.0</td> <td>4J.7 51 1</td> <td>36.0</td>	11.13	71.5	59.7	20.5	23.30	72.0	4J.7 51 1	36.0
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	11:45	71.5	57.7	<u> </u>	23.45	72.0	51.0	26.0
12:00 73.4 53.1 43.0 $00:13$ 67.7 $74.6.4$ 36.0 $12:15$ 69.7 58.3 42.0 $00:30$ 70.0 48.7 36.0 $12:30$ 74.6 58.3 42.5 $00:45$ 66.1 45.2 36.0 $12:45$ 68.4 56.1 38.5 $01:00$ 41.2 36.6 36.0 $13:00$ 70.0 56.5 38.0 $01:15$ 38.5 36.4 36.0 $13:15$ 77.5 58.0 38.0 $01:30$ 67.8 45.5 36.0 $13:30$ 69.8 57.4 37.5 $01:45$ 38.0 36.3 35.5 $13:45$ 70.9 57.3 37.5 $02:00$ 69.0 47.5 36.0 $14:00$ 72.6 58.0 38.0 $02:15$ 67.7 46.8 35.5 $14:15$ 74.4 57.4 38.0 $02:30$ 69.8 46.2 35.5 $14:30$ 72.7 57.6 39.0 $02:45$ 38.4 36.3 35.5 $14:45$ 74.1 57.8 37.5 $03:00$ 59.6 39.7 35.0 $15:00$ 81.5 58.8 40.0 $03:15$ 71.0 47.3 34.5 $16:00$ 71.5 60.5 51.0 $04:00$ 68.5 48.5 34.0 $15:45$ 76.4 60.5 51.0 $04:00$ 68.3 45.9 34.5 $16:00$ 71.5 60.3 39.5	12:00	70.4	50.1	41.0	00.00	67.7	01.9	26.0
12:30 74.6 58.3 42.0 00.30 70.0 74.7 74.6 58.3 $12:45$ 68.4 56.1 38.5 $01:00$ 41.2 36.6 36.0 $13:00$ 70.0 56.5 38.0 $01:15$ 38.5 36.4 36.0 $13:15$ 77.5 58.0 38.0 $01:30$ 67.8 45.5 36.0 $13:30$ 69.8 57.4 37.5 $01:45$ 38.0 36.3 35.5 $13:45$ 70.9 57.3 37.5 $02:00$ 69.0 47.5 36.0 $14:00$ 72.6 58.0 38.0 $02:15$ 67.7 46.8 35.5 $14:15$ 74.4 57.4 38.0 $02:30$ 69.8 46.2 35.5 $14:30$ 72.7 57.6 39.0 $02:45$ 38.4 36.3 35.5 $14:45$ 74.1 57.8 37.5 $03:00$ 59.6 39.7 35.0 $15:00$ 81.5 58.8 40.0 $03:15$ 71.0 47.3 34.5 $15:15$ 69.2 57.9 39.5 $03:30$ 61.5 39.6 34.0 $15:30$ 76.0 59.4 46.0 $03:45$ 68.5 48.5 34.0 $15:45$ 76.4 60.5 51.0 $04:00$ 68.3 45.9 34.5 $16:00$ 71.5 60.3 39.5 $04:15$ 68.6 51.4 35.5 $16:30$ 70.1 58.8 41	12:00	60.7	59.1	43.0	00.15	70.0	40.4	26.0
12:30 $74:0$ 36.3 $42:3$ $00:43$ $00:11$ 43.2 36.0 $12:45$ 68.4 56.1 38.5 $01:00$ 41.2 36.6 36.0 $13:00$ 70.0 56.5 38.0 $01:15$ 38.5 36.4 36.0 $13:15$ 77.5 58.0 38.0 $01:30$ 67.8 45.5 36.0 $13:30$ 69.8 57.4 37.5 $01:45$ 38.0 36.3 35.5 $13:45$ 70.9 57.3 37.5 $02:00$ 69.0 47.5 36.0 $14:00$ 72.6 58.0 38.0 $02:15$ 67.7 46.8 35.5 $14:10$ 72.6 58.0 38.0 $02:30$ 69.8 46.2 35.5 $14:30$ 72.7 57.6 39.0 $02:45$ 38.4 36.3 35.5 $14:45$ 74.1 57.8 37.5 $03:00$ 59.6 39.7 35.0 $15:00$ 81.5 58.8 40.0 $03:15$ 71.0 47.3 34.5 $15:15$ 69.2 57.9 39.5 $03:30$ 61.5 39.6 34.0 $15:30$ 76.0 59.4 46.0 $03:45$ 68.5 48.5 34.0 $15:45$ 76.4 60.5 51.0 $04:30$ 67.1 48.0 35.5 $16:00$ 71.5 60.3 39.5 $04:15$ 68.6 51.4 35.5 $16:00$ 71.5 60.6 43.5 0	12.10	74.6	50.5	42.0	00.30	70.0 66.1	40.7	26.0
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	12:30	68.4	56.1	42.0	00.45	41.2	40.Z	36.0
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	12.40	70.0	50.1	20.0	01.00	41.Z	30.0	30.0
13:13 77.5 36.036.0 01.30 01.30 07.3 45.5 36.0 13:30 69.8 57.4 37.5 $01:45$ 38.0 36.3 35.5 13:45 70.9 57.3 37.5 $02:00$ 69.0 47.5 36.0 14:00 72.6 58.0 38.0 $02:15$ 67.7 46.8 35.5 14:15 74.4 57.4 38.0 $02:30$ 69.8 46.2 35.5 14:30 72.7 57.6 39.0 $02:45$ 38.4 36.3 35.5 14:45 74.1 57.8 37.5 $03:00$ 59.6 39.7 35.0 15:00 81.5 58.8 40.0 $03:15$ 71.0 47.3 34.5 15:15 69.2 57.9 39.5 $03:30$ 61.5 39.6 34.0 15:30 76.0 59.4 46.0 $03:45$ 68.5 48.5 34.0 15:45 76.4 60.5 51.0 $04:00$ 68.3 45.9 34.5 16:00 71.5 60.3 39.5 $04:15$ 66.9 43.9 35.0 16:15 75.2 60.1 39.5 $04:30$ 67.1 48.0 35.5 16:30 70.1 58.8 41.0 $05:00$ 74.5 50.3 35.5 16:30 70.1 58.8 41.0 $05:30$ 72.5 54.2 36.0 17:10 73.6 60.6 43.5 $05:45$ 70.0 <	13.00	70.0	50.5	30.0	01.10	30.3	30.4	30.0
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	13.13	C. 11	50.U	30.0	01:45	07.0	40.0	30.0
13.45 70.9 57.3 37.5 02.00 69.0 47.5 36.0 $14:00$ 72.6 58.0 38.0 $02:15$ 67.7 46.8 35.5 $14:15$ 74.4 57.4 38.0 $02:45$ 38.4 36.3 35.5 $14:30$ 72.7 57.6 39.0 $02:45$ 38.4 36.3 35.5 $14:45$ 74.1 57.8 37.5 $03:00$ 59.6 39.7 35.0 $15:00$ 81.5 58.8 40.0 $03:15$ 71.0 47.3 34.5 $15:15$ 69.2 57.9 39.5 $03:30$ 61.5 39.6 34.0 $15:30$ 76.0 59.4 46.0 $03:45$ 68.5 48.5 34.0 $15:45$ 76.4 60.5 51.0 $04:00$ 68.3 45.9 34.5 $16:00$ 71.5 60.3 39.5 $04:15$ 66.9 43.9 35.0 $16:15$ 75.2 60.1 39.5 $04:30$ 67.1 48.0 35.5 $16:30$ 70.1 58.8 41.0 $05:00$ 74.5 50.3 35.5 $17:00$ 73.6 60.6 43.5 $05:15$ 69.8 53.4 37.0 $17:15$ 70.5 59.9 39.0 $05:30$ 72.5 54.2 36.0 $17:30$ 71.8 59.6 38.0 $05:45$ 70.0 51.2 35.0 $18:30$ 70.7 56.4 36.5 06	13.30	09.0 70.0	57.2	37.3	01.45	30.0	30.3	30.0
14.00 72.6 38.0 38.0 02.13 67.7 46.6 33.5 $14:15$ 74.4 57.4 38.0 $02:30$ 69.8 46.2 35.5 $14:30$ 72.7 57.6 39.0 $02:45$ 38.4 36.3 35.5 $14:45$ 74.1 57.8 37.5 $03:00$ 59.6 39.7 35.0 $15:00$ 81.5 58.8 40.0 $03:15$ 71.0 47.3 34.5 $15:15$ 69.2 57.9 39.5 $03:30$ 61.5 39.6 34.0 $15:30$ 76.0 59.4 46.0 $03:45$ 68.5 48.5 34.0 $15:45$ 76.4 60.5 51.0 $04:00$ 68.3 45.9 34.5 $16:00$ 71.5 60.3 39.5 $04:15$ 66.9 43.9 35.0 $16:15$ 75.2 60.1 39.5 $04:30$ 67.1 48.0 35.5 $16:30$ 70.1 58.8 41.0 $04:45$ 68.6 51.4 35.5 $16:45$ 74.7 60.5 44.0 $05:00$ 74.5 50.3 35.5 $17:00$ 73.6 60.6 43.5 $05:15$ 69.8 53.4 37.0 $17:30$ 71.8 59.6 38.0 $05:45$ 70.0 51.2 35.0 $17:45$ 74.6 60.8 37.5 $06:15$ 68.8 53.6 35.0 $18:00$ 71.7 58.9 37.5 06	13.45	70.9	57.3	37.3	02.00	67.7	47.0	30.0
14.15 74.4 57.4 38.0 02.30 69.8 46.2 33.5 $14:30$ 72.7 57.6 39.0 $02:45$ 38.4 36.3 35.5 $14:45$ 74.1 57.8 37.5 $03:00$ 59.6 39.7 35.0 $15:00$ 81.5 58.8 40.0 $03:15$ 71.0 47.3 34.5 $15:15$ 69.2 57.9 39.5 $03:30$ 61.5 39.6 34.0 $15:30$ 76.0 59.4 46.0 $03:45$ 68.5 48.5 34.0 $15:45$ 76.4 60.5 51.0 $04:00$ 68.3 45.9 34.5 $16:00$ 71.5 60.3 39.5 $04:15$ 66.9 43.9 35.0 $16:15$ 75.2 60.1 39.5 $04:30$ 67.1 48.0 35.5 $16:30$ 70.1 58.8 41.0 $04:45$ 68.6 51.4 35.5 $16:45$ 74.7 60.5 44.0 $05:00$ 74.5 50.3 35.5 $17:00$ 73.6 60.6 43.5 $05:15$ 69.8 53.4 37.0 $17:15$ 70.5 59.9 39.0 $05:30$ 72.5 54.2 36.0 $17:30$ 71.8 59.6 38.0 $05:45$ 70.0 51.2 35.0 $17:45$ 74.6 60.8 37.5 $06:00$ 66.5 49.0 34.5 $18:00$ 71.7 58.9 37.5 06	14.00	72.0	50.0	20.0	02.10	60.9	40.0	35.5
14.30 72.7 57.6 39.0 02.43 36.4 30.3 35.5 $14:45$ 74.1 57.8 37.5 $03:00$ 59.6 39.7 35.0 $15:00$ 81.5 58.8 40.0 $03:15$ 71.0 47.3 34.5 $15:15$ 69.2 57.9 39.5 $03:30$ 61.5 39.6 34.0 $15:30$ 76.0 59.4 46.0 $03:45$ 68.5 48.5 34.0 $15:45$ 76.4 60.5 51.0 $04:00$ 68.3 45.9 34.5 $16:00$ 71.5 60.3 39.5 $04:15$ 66.9 43.9 35.0 $16:15$ 75.2 60.1 39.5 $04:30$ 67.1 48.0 35.5 $16:30$ 70.1 58.8 41.0 $04:45$ 68.6 51.4 35.5 $16:45$ 74.7 60.5 44.0 $05:00$ 74.5 50.3 35.5 $17:00$ 73.6 60.6 43.5 $05:15$ 69.8 53.4 37.0 $17:30$ 71.8 59.6 38.0 $05:45$ 70.0 51.2 35.0 $17:45$ 74.6 60.8 37.5 $06:15$ 68.8 53.6 35.0 $18:00$ 71.7 58.9 37.5 $06:15$ 68.8 53.6 35.0 $18:30$ 70.7 56.4 36.5 $06:45$ 72.0 56.9 37.0 $18:30$ 70.7 56.4 36.5 07	14.10	74.4	57.6	30.0	02:30	09.0 20.4	40.Z	30.0 25.5
14.45 74.1 57.6 37.5 03.00 59.6 39.7 33.0 $15:00$ 81.5 58.8 40.0 $03:15$ 71.0 47.3 34.5 $15:15$ 69.2 57.9 39.5 $03:30$ 61.5 39.6 34.0 $15:30$ 76.0 59.4 46.0 $03:45$ 68.5 48.5 34.0 $15:45$ 76.4 60.5 51.0 $04:00$ 68.3 45.9 34.5 $16:00$ 71.5 60.3 39.5 $04:15$ 66.9 43.9 35.0 $16:15$ 75.2 60.1 39.5 $04:30$ 67.1 48.0 35.5 $16:30$ 70.1 58.8 41.0 $04:45$ 68.6 51.4 35.5 $16:45$ 74.7 60.5 44.0 $05:00$ 74.5 50.3 35.5 $17:00$ 73.6 60.6 43.5 $05:15$ 69.8 53.4 37.0 $17:15$ 70.5 59.9 39.0 $05:30$ 72.5 54.2 36.0 $17:30$ 71.8 59.6 38.0 $05:45$ 70.0 51.2 35.0 $18:00$ 71.7 58.9 37.5 $06:15$ 68.8 53.6 35.0 $18:30$ 70.7 56.4 36.5 $06:45$ 72.0 56.9 37.0 $18:30$ 70.7 56.4 36.5 $07:15$ 71.0 56.2 39.5 $19:00$ 77.5 58.5 36.5 07	14.30	74.1	07.0 57.0	39.0	02.45	50.4	30.3	35.5
13.00 81.3 38.8 40.0 03.13 71.0 47.3 34.3 15.15 69.2 57.9 39.5 $03:30$ 61.5 39.6 34.0 $15:30$ 76.0 59.4 46.0 $03:45$ 68.5 48.5 34.0 $15:45$ 76.4 60.5 51.0 $04:00$ 68.3 45.9 34.5 $16:00$ 71.5 60.3 39.5 $04:15$ 66.9 43.9 35.0 $16:15$ 75.2 60.1 39.5 $04:30$ 67.1 48.0 35.5 $16:30$ 70.1 58.8 41.0 $04:45$ 68.6 51.4 35.5 $16:45$ 74.7 60.5 44.0 $05:00$ 74.5 50.3 35.5 $17:00$ 73.6 60.6 43.5 $05:15$ 69.8 53.4 37.0 $17:15$ 70.5 59.9 39.0 $05:30$ 72.5 54.2 36.0 $17:30$ 71.8 59.6 38.0 $05:45$ 70.0 51.2 35.0 $17:45$ 74.6 60.8 37.5 $06:15$ 68.8 53.6 35.0 $18:00$ 71.7 58.9 37.5 $06:15$ 68.8 53.6 35.0 $18:30$ 70.7 56.4 36.5 $06:45$ 72.0 56.2 37.0 $18:45$ 69.2 55.8 37.0 $07:07$ 72.9 56.5 40.0 $19:00$ 77.5 58.5 36.5 07	14.40	015	57.0	37.5	03.00	71.0	39.7	24.5
13.13 09.2 37.3 39.3 03.30 01.5 39.0 34.0 $15:30$ 76.0 59.4 46.0 $03:45$ 68.5 48.5 34.0 $15:45$ 76.4 60.5 51.0 $04:00$ 68.3 45.9 34.5 $16:00$ 71.5 60.3 39.5 $04:15$ 66.9 43.9 35.0 $16:15$ 75.2 60.1 39.5 $04:30$ 67.1 48.0 35.5 $16:30$ 70.1 58.8 41.0 $04:45$ 68.6 51.4 35.5 $16:45$ 74.7 60.5 44.0 $05:00$ 74.5 50.3 35.5 $17:00$ 73.6 60.6 43.5 $05:15$ 69.8 53.4 37.0 $17:15$ 70.5 59.9 39.0 $05:30$ 72.5 54.2 36.0 $17:30$ 71.8 59.6 38.0 $05:45$ 70.0 51.2 35.0 $17:45$ 74.6 60.8 37.5 $06:15$ 68.8 53.6 35.0 $17:45$ 74.6 60.8 37.5 $06:00$ 66.5 49.0 34.5 $18:00$ 71.7 58.9 37.5 $06:15$ 68.8 53.6 35.0 $18:30$ 70.7 56.4 36.5 $06:45$ 72.0 56.2 37.0 $18:45$ 69.2 55.8 37.0 $07:00$ 70.9 55.7 38.0 $19:00$ 77.5 58.5 36.5 07	15:00	60.2	57.0	40.0	03.10	61.5	47.3	24.0
15.30 76.0 59.4 46.0 03.43 66.5 44.5 34.5 15.45 76.4 60.5 51.0 $04:00$ 68.3 45.9 34.5 $16:00$ 71.5 60.3 39.5 $04:15$ 66.9 43.9 35.0 $16:15$ 75.2 60.1 39.5 $04:30$ 67.1 48.0 35.5 $16:30$ 70.1 58.8 41.0 $04:45$ 68.6 51.4 35.5 $16:45$ 74.7 60.5 44.0 $05:00$ 74.5 50.3 35.5 $17:00$ 73.6 60.6 43.5 $05:15$ 69.8 53.4 37.0 $17:15$ 70.5 59.9 39.0 $05:30$ 72.5 54.2 36.0 $17:30$ 71.8 59.6 38.0 $05:45$ 70.0 51.2 35.0 $17:45$ 74.6 60.8 37.5 $06:00$ 66.5 49.0 34.5 $18:00$ 71.7 58.9 37.5 $06:15$ 68.8 53.6 35.0 $18:15$ 70.3 57.5 36.0 $06:30$ 76.2 56.2 37.0 $18:45$ 69.2 55.8 37.0 $07:00$ 70.9 55.7 38.0 $19:00$ 77.5 58.5 36.5 $07:15$ 71.0 56.2 39.5 $19:15$ 71.1 56.2 37.0 72.9 56.5 40.0 $19:30$ 69.4 56.3 37.0 $07:45$ 73	15.15	76.0	57.9	39.5	03.30	01.5	39.0 40 E	34.0
15.45 76.4 60.5 51.0 04.00 68.3 43.9 34.3 $16:00$ 71.5 60.3 39.5 $04:15$ 66.9 43.9 35.0 $16:15$ 75.2 60.1 39.5 $04:30$ 67.1 48.0 35.5 $16:30$ 70.1 58.8 41.0 $04:45$ 68.6 51.4 35.5 $16:45$ 74.7 60.5 44.0 $05:00$ 74.5 50.3 35.5 $17:00$ 73.6 60.6 43.5 $05:15$ 69.8 53.4 37.0 $17:15$ 70.5 59.9 39.0 $05:30$ 72.5 54.2 36.0 $17:30$ 71.8 59.6 38.0 $05:45$ 70.0 51.2 35.0 $17:45$ 74.6 60.8 37.5 $06:00$ 66.5 49.0 34.5 $18:00$ 71.7 58.9 37.5 $06:15$ 68.8 53.6 35.0 $18:15$ 70.3 57.5 36.0 $06:30$ 76.2 56.2 37.0 $18:30$ 70.7 56.4 36.5 $07:15$ 71.0 56.2 39.5 $19:00$ 77.5 58.5 36.5 $07:30$ 72.9 56.5 40.0 $19:30$ 69.4 56.3 37.0 $07:45$ 73.9 57.8 42.0 $19:45$ 70.8 54.7 36.5 $08:00$ 69.2 57.0 39.5	15.30	70.0	09.4 60.5	40.0	03.45	00.0 60.0	40.0	34.0
16.00 71.5 60.3 39.5 04.15 60.9 43.9 35.0 $16:15$ 75.2 60.1 39.5 $04:30$ 67.1 48.0 35.5 $16:30$ 70.1 58.8 41.0 $04:45$ 68.6 51.4 35.5 $16:45$ 74.7 60.5 44.0 $05:00$ 74.5 50.3 35.5 $17:00$ 73.6 60.6 43.5 $05:15$ 69.8 53.4 37.0 $17:15$ 70.5 59.9 39.0 $05:30$ 72.5 54.2 36.0 $17:30$ 71.8 59.6 38.0 $05:45$ 70.0 51.2 35.0 $17:45$ 74.6 60.8 37.5 $06:00$ 66.5 49.0 34.5 $18:00$ 71.7 58.9 37.5 $06:15$ 68.8 53.6 35.0 $18:15$ 70.3 57.5 36.0 $06:30$ 76.2 56.2 37.0 $18:30$ 70.7 56.4 36.5 $06:45$ 72.0 56.9 37.0 $18:45$ 69.2 55.8 37.0 $07:00$ 70.9 55.7 38.0 $19:00$ 77.5 58.5 36.5 $07:15$ 71.0 56.2 39.5 $19:15$ 71.1 56.2 36.5 $07:30$ 72.9 56.5 40.0 $19:30$ 69.4 56.3 37.0 $07:45$ 73.9 57.8 42.0 $19:45$ 70.8 54.7 36.5 08	15.45	70.4	60.2	20.5	04.00	00.3 66.0	40.9	34.3
16.13 73.2 60.1 39.3 04.30 67.1 48.0 33.3 $16:30$ 70.1 58.8 41.0 $04:45$ 68.6 51.4 35.5 $16:45$ 74.7 60.5 44.0 $05:00$ 74.5 50.3 35.5 $17:00$ 73.6 60.6 43.5 $05:15$ 69.8 53.4 37.0 $17:15$ 70.5 59.9 39.0 $05:30$ 72.5 54.2 36.0 $17:30$ 71.8 59.6 38.0 $05:45$ 70.0 51.2 35.0 $17:45$ 74.6 60.8 37.5 $06:00$ 66.5 49.0 34.5 $18:00$ 71.7 58.9 37.5 $06:15$ 68.8 53.6 35.0 $18:15$ 70.3 57.5 36.0 $06:30$ 76.2 56.2 37.0 $18:30$ 70.7 56.4 36.5 $06:45$ 72.0 56.9 37.0 $18:45$ 69.2 55.8 37.0 $07:00$ 70.9 55.7 38.0 $19:00$ 77.5 58.5 36.5 $07:15$ 71.0 56.2 39.5 $19:15$ 71.1 56.2 36.5 $07:30$ 72.9 56.5 40.0 $19:30$ 69.4 56.3 37.0 $07:45$ 73.9 57.8 42.0 $19:45$ 70.8 54.7 36.5 08.00 69.2 57.0 39.5	16:15	71.0	60.1	20.5	04.15	67.1	43.9	25.5
10.30 70.1 36.8 41.0 04.43 08.0 51.4 33.3 16.45 74.7 60.5 44.0 $05:00$ 74.5 50.3 35.5 $17:00$ 73.6 60.6 43.5 $05:15$ 69.8 53.4 37.0 $17:15$ 70.5 59.9 39.0 $05:30$ 72.5 54.2 36.0 $17:30$ 71.8 59.6 38.0 $05:45$ 70.0 51.2 35.0 $17:45$ 74.6 60.8 37.5 $06:00$ 66.5 49.0 34.5 $18:00$ 71.7 58.9 37.5 $06:15$ 68.8 53.6 35.0 $18:15$ 70.3 57.5 36.0 $06:30$ 76.2 56.2 37.0 $18:30$ 70.7 56.4 36.5 $06:45$ 72.0 56.9 37.0 $18:45$ 69.2 55.8 37.0 $07:00$ 70.9 55.7 38.0 $19:00$ 77.5 58.5 36.5 $07:15$ 71.0 56.2 39.5 $19:15$ 71.1 56.2 36.5 $07:30$ 72.9 56.5 40.0 $19:30$ 69.4 56.3 37.0 $07:45$ 73.9 57.8 42.0 $19:45$ 70.8 54.7 36.5 $08:00$ 69.2 57.0 39.5	16.20	70.1	59.9	39.5	04.30	68.6	40.0 51.4	35.5
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	16:45	70.1	50.0 60.5	41.0	04.45	74.5	50.2	25.5
17.0073.660.643.303.1569.853.437.017:1570.559.939.005:3072.554.236.017:3071.859.638.005:4570.051.235.017:4574.660.837.506:0066.549.034.518:0071.758.937.506:1568.853.635.018:1570.357.536.006:3076.256.237.018:3070.756.436.506:4572.056.937.018:4569.255.837.007:0070.955.738.019:0077.558.536.507:1571.056.239.519:1571.156.236.507:3072.956.540.019:3069.456.337.007:4573.957.842.019:4570.854.736.508:0069.257.039.5	17:00	72.6	60.6	44.0	05.00	60.9	50.5	27.0
17.15 70.5 59.9 39.0 05.30 72.5 54.2 36.0 17:30 71.8 59.6 38.0 05:45 70.0 51.2 35.0 17:45 74.6 60.8 37.5 06:00 66.5 49.0 34.5 18:00 71.7 58.9 37.5 06:15 68.8 53.6 35.0 18:15 70.3 57.5 36.0 06:30 76.2 56.2 37.0 18:30 70.7 56.4 36.5 06:45 72.0 56.9 37.0 18:45 69.2 55.8 37.0 07:00 70.9 55.7 38.0 19:00 77.5 58.5 36.5 07:15 71.0 56.2 39.5 19:15 71.1 56.2 36.5 07:30 72.9 56.5 40.0 19:30 69.4 56.3 37.0 07:45 73.9 57.8 42.0 19:45 70.8 54.7 36.5 08.00 69.2 57.0 39.5 19:45 70.	17.00	73.0	50.0	43.5	05.10	09.0	54.2	37.0
17.30 71.8 35.0 36.0 05.45 70.0 51.2 35.0 17:45 74.6 60.8 37.5 06:00 66.5 49.0 34.5 18:00 71.7 58.9 37.5 06:15 68.8 53.6 35.0 18:15 70.3 57.5 36.0 06:30 76.2 56.2 37.0 18:30 70.7 56.4 36.5 06:45 72.0 56.9 37.0 18:45 69.2 55.8 37.0 07:00 70.9 55.7 38.0 19:00 77.5 58.5 36.5 07:15 71.0 56.2 39.5 19:15 71.1 56.2 36.5 07:30 72.9 56.5 40.0 19:30 69.4 56.3 37.0 07:45 73.9 57.8 42.0 19:45 70.8 54.7 36.5 08.0 69.2 57.0 39.5	17.13	70.5	50.6	39.0	05:30	72.5	51.2	35.0
17.43 74.6 60.8 37.5 60.00 60.3 49.0 34.3 18:00 71.7 58.9 37.5 06:15 68.8 53.6 35.0 18:15 70.3 57.5 36.0 06:30 76.2 56.2 37.0 18:30 70.7 56.4 36.5 06:45 72.0 56.9 37.0 18:45 69.2 55.8 37.0 07:00 70.9 55.7 38.0 19:00 77.5 58.5 36.5 07:15 71.0 56.2 39.5 19:15 71.1 56.2 36.5 07:30 72.9 56.5 40.0 19:30 69.4 56.3 37.0 07:45 73.9 57.8 42.0 19:45 70.8 54.7 36.5 08:00 69.2 57.0 39.5	17:45	71.0	59.0 60.9	30.0	05.45	70.0 66.5	40.0	34.5
18:00 71.7 58.9 37.5 06.15 68.8 53.6 35.0 18:15 70.3 57.5 36.0 06:30 76.2 56.2 37.0 18:30 70.7 56.4 36.5 06:45 72.0 56.9 37.0 18:45 69.2 55.8 37.0 07:00 70.9 55.7 38.0 19:00 77.5 58.5 36.5 07:15 71.0 56.2 39.5 19:15 71.1 56.2 36.5 07:30 72.9 56.5 40.0 19:30 69.4 56.3 37.0 07:45 73.9 57.8 42.0 19:45 70.8 54.7 36.5 08:00 69.2 57.0 39.5	10.00	74.0	59.0	37.5	06:15	60.0	49.0	34.5
18.15 70.3 57.5 36.0 06.30 76.2 56.2 37.0 18:30 70.7 56.4 36.5 06:45 72.0 56.9 37.0 18:45 69.2 55.8 37.0 07:00 70.9 55.7 38.0 19:00 77.5 58.5 36.5 07:15 71.0 56.2 39.5 19:15 71.1 56.2 36.5 07:30 72.9 56.5 40.0 19:30 69.4 56.3 37.0 07:45 73.9 57.8 42.0 19:45 70.8 54.7 36.5 08.00 69.2 57.0 39.5	10.00	70.2	00.9 57.5	37.3	06.10	00.0	56.0	35.0
10.30 70.7 50.4 30.5 00.45 72.0 50.9 37.0 18:45 69.2 55.8 37.0 07:00 70.9 55.7 38.0 19:00 77.5 58.5 36.5 07:15 71.0 56.2 39.5 19:15 71.1 56.2 36.5 07:30 72.9 56.5 40.0 19:30 69.4 56.3 37.0 07:45 73.9 57.8 42.0 19:45 70.8 54.7 36.5 08.00 69.2 57.0 39.5	10.10	70.3	57.5	30.0	06.30	72.0	56.0	37.0
10:45 03.2 35.6 37.6 07.00 70.9 55.7 38.0 19:00 77.5 58.5 36.5 07:15 71.0 56.2 39.5 19:15 71.1 56.2 36.5 07:30 72.9 56.5 40.0 19:30 69.4 56.3 37.0 07:45 73.9 57.8 42.0 19:45 70.8 54.7 36.5 08:00 69.2 57.0 39.5	10.30	60.2	50.4	30.0	00.40	70.0	50.9	30.0
19:00 17:5 56.5 56.5 67:15 71.0 56.2 39.5 19:15 71.1 56.2 36.5 07:30 72.9 56.5 40.0 19:30 69.4 56.3 37.0 07:45 73.9 57.8 42.0 19:45 70.8 54.7 36.5 08:00 69.2 57.0 39.5	10.40	09.Z	50.0	365	07.00	71.0	55.7	30.U
19:10 71.1 50.2 50.5 07.50 72.9 56.5 40.0 19:30 69.4 56.3 37.0 07:45 73.9 57.8 42.0 19:45 70.8 54.7 36.5 08:00 69.2 57.0 39.5	19.00	71 1	56.0	30.5	07.10	72.0	50.2	39.0
19:45 70.8 54.7 36.5 08:00 69.2 57.0 39.5	10.20	60.4	56.2	37.0	07.30	72.0	57.0	40.0
	19.30	09.4 70 0	50.5	31.0	01.40	60.0	57.0	42.U 30.5
20:00 1 70 0 1 56 0 1 36 0 1 09:15 1 73 1 1 56 7 1 70 0	20.00	70.0	56.0	36.0	00.00	09.Z	56.4	10 0
20.15 71.1 55.1 36.0 08.30 75.8 57.8 41.5	20.00	71.1	55.0	36.0	00.10	75.9	57 Q	<u>−</u> 0.0 <u>⊿1</u> 5

Appendix A: Noise Monitor and Weather Station Survey Data

Table A	2. Weat	her stati	on data								
Start Time	Wind Speed , m/s	Temp, °C									
08:20	0.4	7.5	14:30	0.8	7.8	20:40	0.0	-0.5	02:50	1.2	-0.4
08:30	0.3	6.2	14:40	0.0	8.3	20:50	0.0	-0.6	03:00	0.8	-0.1
08:40	0.0	6.4	14:50	0.0	8.1	21:00	0.0	-1.7	03:10	0.0	-0.5
08:50	0.0	6.3	15:00	0.0	8.3	21:10	0.0	-1.4	03:20	0.7	0.9
09:00	0.0	6.4	15:10	0.3	8.0	21:20	0.0	-1.3	03:30	0.4	1.3
09:10	0.6	6.4	15:20	0.0	9.0	21:30	0.0	-2.0	03:40	0.6	1.7
09:20	0.0	6.6	15:30	0.0	8.4	21:40	0.0	-2.3	03:50	1.0	1.9
09:30	1.1	6.6	15:40	0.7	7.2	21:50	0.0	-1.9	04:00	2.6	2.4
09:40	0.0	6.6	15:50	0.0	6.2	22:00	0.0	-2.4	04:10	1.0	1.6
09:50	1.0	6.7	16:00	0.0	5.5	22:10	0.0	-1.3	04:20	0.0	1.3
10:00	0.0	6.7	16:10	0.0	4.8	22:20	0.0	-2.4	04:30	0.0	1.2
10:10	0.9	6.6	16:20	0.0	3.6	22:30	0.0	-1.6	04:40	0.0	0.9
10:20	2.0	6.7	16:30	0.5	4.1	22:40	0.0	-2.3	04:50	0.0	1.1
10:30	0.6	6.7	16:40	0.0	3.0	22:50	0.0	-1.5	05:00	0.0	1.8
10:40	0.0	6.6	16:50	0.0	2.0	23:00	0.0	-2.5	05:10	0.0	1.8
10:50	0.0	6.8	17:00	0.0	2.3	23:10	0.0	-1.3	05:20	0.0	1.8
11:00	0.0	7.0	17:10	0.7	2.9	23:20	0.0	-1.2	05:30	0.0	1.5
11:10	0.5	7.2	17:20	0.6	2.2	23:30	0.0	-1.0	05:40	0.5	2.5
11:20	0.0	7.9	17:30	0.0	0.9	23:40	0.0	-1.1	05:50	0.0	2.5
11:30	0.5	7.5	17:40	0.0	0.7	23:50	2.0	1.8	06:00	0.0	2.9
11:40	1.5	7.3	17:50	0.0	0.8	00:00	0.0	-0.1	06:10	1.2	4.0
11:50	0.0	8.0	18:00	0.0	-0.5	00:10	0.0	0.4	06:20	2.7	4.2
12:00	0.0	7.8	18:10	0.0	0.2	00:20	0.0	0.7	06:30	1.5	4.5
12:10	0.4	11.0	18:20	0.0	-0.4	00:30	0.0	-0.2	06:40	0.0	4.0
12:20	0.8	8.9	18:30	0.0	-0.8	00:40	0.0	-0.5	06:50	0.0	4.4
12:30	0.0	9.6	18:40	0.0	-1.1	00:50	0.0	-1.1	07:00	2.6	5.3
12:40	0.7	8.2	18:50	0.0	-1.2	01:00	0.0	-1.1	07:10	2.3	5.0
12:50	0.9	7.4	19:00	0.0	-0.2	01:10	0.0	-1.2	07:20	1.4	5.2
13:00	0.0	13.8	19:10	0.0	-1.2	01:20	0.0	-1.5	07:30	2.6	5.2
13:10	0.6	10.9	19:20	0.0	-1.1	01:30	0.0	-1.8	07:40	3.7	5.4
13:20	0.0	10.7	19:30	0.0	-0.9	01:40	0.0	-2.1	07:50	2.2	5.2
13:30	0.6	7.8	19:40	0.0	-0.7	01:50	0.0	-2.4	08:00	2.7	5.5
13:40	0.0	8.4	19:50	0.0	-0.4	02:00	0.0	-1.3	08:10	3.2	5.7
13:50	0.0	8.8	20:00	0.0	-1.3	02:10	0.0	-1.4	08:20	2.5	5.6
14:00	0.0	8.5	20:10	0.0	-0.9	02:20	0.0	-2.0			
14:10	0.0	9.1	20:20	0.0	-0.3	02:30	0.0	-1.8			
14:20	0.0	8.6	20:30	0.0	-0.7	02:40	0.0	-1.2			