NOISE SURVEY LTD

Noise Assessment Report

Report Ref:	210TOWNHALL
Client:	Torrian Construction
Site Location:	Former Council Offices High Street Hoyland Barnsley S74 9AD
Date of Issue:	05 November 2018
Date of Measurements:	Tuesday 4th July – Thursday 6th July 2017 (Day and Night) Tuesday 30th October – Wednesday 31st October 2018 (Day and Night at ML4)

Picture 1: The building to the right is Former Council Offices . This measurement location is labelled ML2.

Executive Summary

The front of Former Council Offices (ML1) has a daytime level of $L_{Aeq\ (16\ hour)}$ 81dB and a night time $L_{Aeq\ (8\ hour)}$ of 53dB. LAFmx reached 85dB during the night.

The side of Former Council Offices that has the mechanical vents to the ground floor (ML2) has a daytime level of $L_{Aeq\ (16\ hour)}$ 76dB a night time $L_{Aeq\ (8\ hour)}$ of 59dB. LAFmx reached 88dB during the night.

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The side of Former Council Offices that is above the Cooperative food store and opposite Hoyland Market (ML3) has a daytime level of $L_{Aeq\ (16\ hour)}$ 55dB a night time $L_{Aeq\ (8\ hour)}$ of 43dB. LAFmx reached 75dB during the night.

The rear of Former Council Offices is opposite a loading area for the retail stores. This measurement location is marked as ML4. The day time $L_{Aeq(16hour)}$ is 55dB and the night time level is $L_{Aeq(8\ hour)}$ 52dB and LAFmax 83dB.

In relation to BS8233:2014 and WHO (2009) these levels are too high and have to be actively reduced in order to ensure that internal noise levels for each dwelling does meet the guidelines. However reduction of the external noise to acceptable levels internally is achievable. This can be done by using windows, doors that has the $R_{,w}$ (C;Ctr) and windows with the recommended Dn,e,W respectively specified herein for the respective rooms.

The WHO (2009) recommendation for L_{AFmax} of 60dB and an $L_{Aeq\ (8\ hour)}$ of 45dB outside bedrooms may not be achievable. However the development should not be prohibited if the planners deem the development as desirable in the circumstances as acknowledged in BS8233:2014.

Application of the sound reduction recommendations in this report will meet the standards for internal noise levels required by the national planning policy framework guidelines. If users of the property keep external windows and doors closed, they will be at a low risk of adverse noise impact.

Uncertainty in the measurement is ± 4 dB

Objective

The property known as Former Council Offices on High Street Hoyland Barnsley S74 9AD was a building used as offices. The Client proposes to convert the existing building into residential flats from the 1st to the 2nd floor. There are no flats on the ground floor.

The purposes of this noise assessment is to determine the level of environmental noise likely to impact the building and the type and level of sound reduction required from external windows, doors and ventilation that is required to satisfy the guidelines in BS8233:2014 and WHO(2009).

Source under Assessment

To the front of the property is High Street (ML1) characterized by road traffic and pedestrian noise. To the right of the building is Hoyland Street market (ML3) and to the left of the building is the Hoyland Center (ML2). At the rear of the property (ML4) is a loading area for the retail stores. The building is located in a commercial area.

Picture 2: Measurements at the first floor level of Former Council Offices facing high street. This measurement location is labelled ML1.

Methodology

Measurements were taken at four locations including the front, rear and both sides of Former Council Offices. Three Casella Cel-490 type 1 sound level meters were used to take measurements of ambient noise levels. The meters were calibrated and placed at all four sides of the building at first floor level. The meters were calibrated before and after the measurements successfully.

Façade Correction

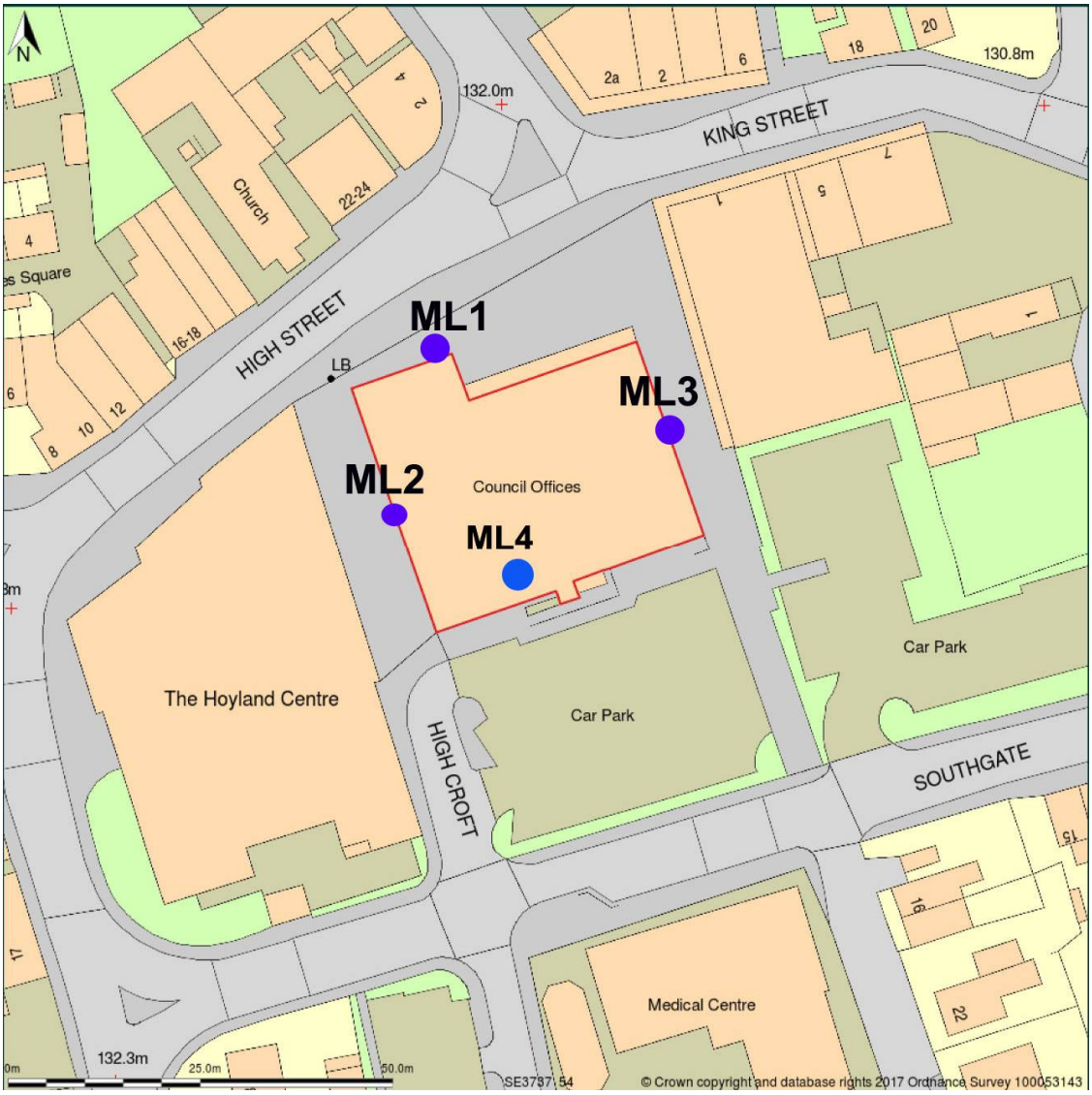
Façade measurements occur when the meter is in front of a large reflective surface at a distance of less than 3.5m away from the reflective surface. In order to convert measurements to free field

equivalents, a façade correction is required. This is done by reducing the measured levels by up to 3dB. In this instance a façade correction is required for measurements above the mechanical ventilation (ML2) because the meter was 1m from the façade. The other three measurement locations (ML1, ML3 and ML4) were equivalent to free field conditions and require no façade correction.

Picture 3: Measurements to the side of Former Council Offices facing Hoyland Market and above the Co-operative food store. This measurement location is labelled ML3.

Picture 4: Measurements at the side of Former Council Offices above the mechanical ventilation system. This measurement location is labelled ML2.

Site and Measurement Locations



Site plan 1: This is a site location plan purchased and cropped from the website https://www.buyaplan.co.uk on 10th June 2017 at13:00. The full site plan is attached as part of this report in the Appendix. The red border indicates Former Council Offices . The blue circles show measurement locations 1 – 3 respectively.

Date and Time of Measurements

Tuesday 4th July – Thursday 6th July 2017 (Day and Night)

Tuesday 30th October – Wednesday 31st October 2018 (Day and Night at ML4) opposite retail loading area.

Measuring Equipment & Calibration

The sound level meters used at ML1, ML2, ML4 and ML3 were Casella Cel-490, a class 1 meter laboratory calibrated traceable to UKAS standards serial number 240855, 230643 and 240790. At the beginning and at the end of measurements the meter was calibrated with an acoustic calibrator before and after the measurements with negligible deviation (≤ 0.4dB). The meters all calibrated successfully before and after measurements.

Ambient Noise Levels

ML1 Noise Levels (Front with High Street)

Day $L_{Aeq\ (16\ hour)}$ = 81 dB LAFmx 110dB Night $L_{Aeq\ (8\ hour)}$ 53dB LAFmx 85dB

ML2 Noise Levels (Side next to Hoyland Center). A façade correction of -3dB has been applied to these results.

Day $L_{Aeq\ (16\ hour)}$ 76dB LAFmx 104dB Night $L_{Aeq\ (16\ hour)}$ 59dB LAFmx 88dB

ML3 Noise Levels (Side next to Hoyland market)

Day $L_{Aeq\ (16\ hour)}$ 55dB LAFmx 88dB Night $L_{Aeq\ (8\ hour)}$ 43dB LAFmx 75dB

ML4 Noise Levels (at the rear opposite the loading area for the retail shops)

Day LAeq(16 hour) 55dB LAFmx 88 Night LAeq(8 hour) 52dB LAFmx 83dB

(see measurement data in the Appendix).

The noise levels exceed the BS8233:2014 guidelines and require mitigation.

BS8233:2014 Criteria

Table 1 below is taken from BS8233:2014. It shows the guide lines for internal ambient noise levels. The guidelines in BS8233:2014 are also advised by WHO (2009).

Activity	Location	Day (07:00 -23:00)	Night (23:00 – 07:00)
Resting	**Living Room**	**35** $_{\text{LAeq (16 hour)}}$	-
Dining	**Dining room/area**	**40** $_{\text{LAeq (16 hour)}}$	-
Sleeping(daytime resting)	**Bedroom**	**35** $_{\text{LAeq (16 hour)}}$	**30** $_{\text{LAeq (16 hour)}}$

Table 1: BS8233:2014 noise level for internal habitable rooms.

In addition the WHO (2009) has guidance for outdoor living areas such as gardens for day time noise of 50 – 55dB $L_{Aeq\ (16\ hour)}$. It has a L_{AFmax} of 45dB inside bedrooms and a L_{AFmax} of 60dB outside bedrooms, (see table 2 below).

Specific Environment	LAeq dB	Time base (hours)	LAFmax dB
Outdoor living area (day)	55	16	
Outdoor living area (evening)	50	16	
Inside bedrooms (sleeping)	30	8	45
Outside bedrooms	45	8	60

Table 2: WHO (2009) guidelines

Recommendations for Dwelling facing ML1 (Former Council Offices Front to High Street)

- Living rooms should have windows, external doors, and external walling with a sound reduction of R_w(c;ctr) 50dB. Acoustic ventilation should have a Dn,e,w of 52dB. The sound reduction is set to account for some uncertainty ±4dB (see uncertainty section below).

- Dining rooms should have windows, external doors and external walling with a sound reduction of R_w(c;ctr) 45dB. Acoustic ventilation should have a Dn,e,w of 47dB. The sound reduction is set to account for some uncertainty ±4dB (see uncertainty section below).

- Bed rooms should have windows, external doors and external walling with a sound reduction of R_w(c;ctr) 50dB. Acoustic ventilation should have a Dn,e,w of 52dB. The

sound reduction is set to account for some for WHO (2009) recommendations of LAFmx night of 45dB inside bedrooms and to allow for some uncertainty.

Recommendations for Dwelling facing ML2 (Former Council Offices Side and above mechanical vents opposite Hoyland Center)

- Living rooms should have windows, external doors and external walling with a sound reduction of R_w(c;ctr) 45dB. Acoustic ventilation should have a Dn,e,w of 47dB. The sound reduction is set to account for some uncertainty ±4dB (see uncertainty section below).

- Dining rooms should have windows, external doors and external walling with a sound reduction of R_w(c;ctr) 40dB. Acoustic ventilation should have a Dn,e,w of 42dB. The sound reduction is set to account for some uncertainty ±4dB (see uncertainty section below).

- Bed rooms should have windows, external doors and external walling with a sound reduction of R_w(c;ctr) 47dB. Acoustic ventilation should have a Dn,e,w of 49dB. The sound reduction is set to account for some for WHO (2009) recommendations of LAFmx night of 45dB inside bedrooms and to allow for some uncertainty.

Recommendations for Dwelling facing ML3 (Former Council Offices facing Hoyland Market and above the Cooperative Food Store)

- Living rooms should have windows, external doors and external walling with a sound reduction of R_w(c;ctr) 24dB. Acoustic ventilation should have a Dn,e,w of 26dB. The sound reduction is set to account for some uncertainty ±4dB (see uncertainty section below).

- Dining rooms should have windows, external doors and external walling with a sound reduction of R_w(c;ctr) 19dB. Acoustic ventilation should have a Dn,e,w of 22dB. The sound reduction is set to account for some uncertainty ±4dB (see uncertainty section below).

- Bed rooms should have windows, external doors and external walling with a sound reduction of R_w(c;ctr) 34dB. Acoustic ventilation should have a Dn,e,w of 36dB. The

sound reduction is set to account for some for WHO (2009) recommendations of LAFmx night of 45dB inside bedrooms and to allow for some uncertainty.

Recommendations for Dwelling facing ML4 (Former Council Offices Rear facing Loading Area)

- Living rooms should have windows, external doors and external walling with a sound reduction of R_w(c;ctr) 24dB. Acoustic ventilation should have a Dn,e,w of 26dB. The sound reduction is set to account for some uncertainty ±4dB (see uncertainty section below).

- Dining rooms should have windows, external doors and external walling with a sound reduction of R_w(c;ctr) 19dB. Acoustic ventilation should have a Dn,e,w of 21dB. The sound reduction is set to account for some uncertainty ±4dB (see uncertainty section below).

- Bed rooms should have windows, external doors and external walling with a sound reduction of R_w(c;ctr) 42dB. Acoustic ventilation should have a Dn,e,w of 44dB. The sound reduction is set to account for some for WHO (2009) recommendations of LAFmx night of 45dB inside bedrooms and to allow for some uncertainty.

It should be noted that the development relies on windows and doors being closed to achieve internal guideline noise levels. As a result acoustic ventilation must be provided that does not require windows to be open. Acoustic ventilation in bedrooms, dining rooms and living rooms must achieve the minimum sound reduction stated for that room.

WHO (2009) has an external LAFmx night of 60dB outside bedrooms. This is not achievable because LAFmx night is 85dB at ML1, 88dB at ML2, 83dB at ML4 and 75dB at ML3.

A data sheet from Pilkington glass has been attached showing glazing that achieves the sound reductions index of R_w(c;ctr) 50dB as recommended in this report.

Pilkington provides glazing. Huet provides acoustic doors that achieve the required $R_{,w}$(c;ctr) Greenwoods acoustic ventilation provides ventilation that would be suitable. Data sheets have been attached as part of this report to assist the Client in achieving the required sound insulation.

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The client does not have to source these products from the suppliers mentioned in this report. The suppliers mentioned herein are for example purposes only.

No special acoustic measures are required for hallways, bathrooms and kitchens unless they form part of a Dining room, Living room or bedroom.

The day time noise levels are outside the LAeq (16 hour) 50 – 55dB for outside living space.

Achieving the sound reduction as stated in this report will meet the standards for day and night time levels in the specified rooms.

Context of the Noise Environment

WHO (2009) provides guidance of night time $L_{Aeq\ (8\ hour)}$ of 45dB outside bedrooms. Adverse health effects arise from sleep disturbance when the window to the bedroom is left open. This means that persons sleeping with the window open are likely to have disturbed sleep if outside noise levels are greater than night time $L_{Aeq\ (8\ hour)}$ 45dB. For this reason the WHO (2009) guidelines recommend noise levels outside bedrooms to be $L_{Aeq\ (8\ hour)}$ 45dB or lower. This requirement may not achievable in the presence of road traffic noise.

Should $L_{Aeq\ (8\ hour)}$ 45 dB outside bedrooms not be achievable BS8233:2014 (see below) provides for the approval of development if the planners deem the development as desirable.

LAFmx 45dB Inside Bedrooms

The SRI of the windows, external doors and ventilation has been calculated to reduce internal LAFmx to 45dB and to also achieve the day time $L_{Aeq\ (16hour)}$ of 35dB and the night time $L_{Aeq(8hour)}$ of 30dB.

National Planning Policy Framework (NPPF) and Litchfield District Local Plan Strategy 2015 Policy BE1 'High Quality Development'

The national policy framework states at paragraph 109 new and existing developments should be prevented;

"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.."

At paragraph 123 the NPPF states;

"Planning policies and decisions should aim to avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development.."

The proposed development is within an elevated noise environment where LAFmax reached 85dB during the night at ML1. The area has a daytime level of $L_{Aeq\ (16\ hour)}$ 81dB and a night time $L_{Aeq\ (8\ hour)}$ of 53dB at ML1.

At ML2 LAFmax reached 88dB night and has a daytime level of $L_{Aeq\ (16\ hour)}$ 76dB and a night time $L_{Aeq\ (8\ hour)}$ of 59dB.

At ML3 LAFmax reached 75dB night and has a daytime level of $L_{Aeq\ (16\ hour)}$ 55dB and a night time $L_{Aeq\ (8\ hour)}$ of 43dB.

At ML4 LAFmax reached 83dB night and has a daytime level of $L_{Aeq\ (16\ hour)}$ 55dB and a night time $L_{Aeq\ (8\ hour)}$ of 52dB.

Achieving the weighted sound reduction index for windows, doors and ventilation as specified in this report will satisfy the main standards for internal habitable rooms and should fulfill the internal requirements of the national planning policy framework.

It should be noted that users of the proposed dwellings are at risk of adverse noise impact when external doors and windows are left open.

BS8233:2014 accepts that external noise level guidelines may not be attainable but in certain circumstances development is acceptable, see section 7.7.2 and 7.7.3.2 of BS8233:2014 reproduced below.

Section 7.7.2 Internal Ambient Noise Levels for Dwellings of BS8233:2014 states

Note 4: 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_{AFMAX} depending on the character and number of events per night. Sporadic noise events could require separate values.

Note 5: 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.

Note 7: Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.

Section 7.7.3.2 Design Criteria for External Noise of BS8233:2014 states

"For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50dB $L_{Aeq,T}$ with an upper guideline of 55dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited," (BS8233:2014).

Uncertainty

The noise levels were obtained by direct onsite measurements. The sound level meter was fitted with a wind shield and maintained on a tripod throughout the measurement period. Once readings were started, the sound level meter was free from human interference. This was done to minimize uncertainty in the readings.

In addition, the readings were taken during suitable weather conditions. Each measurement was conducted for a duration sufficient to provide a representation of $L_{Aeq,(8\ hour)}$ for night time and $L_{Aeq,\ (16\ hour)}$ for day time.

The site was subject to construction noise (during the July 2017 measurements) that will not be present once the developments are completed. No adjustment to account for this reduction in noise levels has been made to the measurements data. At the time of the October 2018 measurements, construction at the adjacent building was complete and no construction noise was measured.

Additional measurements at ML3 (measured July 2017) were not used because workmen had placed a radio, generating elevated noise levels, next to the microphone (see appendix for measurement data).

The calibration of the sound level meter at the beginning and end of the readings showed a maximum drift of 0.4 dB at the start and end of the reading. This is considered normal.

Laboratory calibration uncertainty of the sound level meter is ± 1 dB

The nature of the road traffic noise may vary from time to time depending on but not limited to the number of vehicles, type of vehicles and the speed at which they are travelling. An uncertainty factor of ±4dB has been added to account for variations that can occur day to day.

$$u = \sqrt{a^2 + b^2 + c^2 ...etc}$$

U= $\sqrt{1}$ **+4²**

U = ± 4 dB

Uncertainty in the measurement is ± 4 dB

Conclusion

The front of Former Council Offices (ML1) has a daytime level of $L_{Aeq\ (16\ hour)}$ 81dB and a night time $L_{Aeq\ (8\ hour)}$ of 53dB. LAFmx reached 85dB during the night.

The side of Former Council Offices that has the mechanical vents to the ground floor (ML2) has a daytime level of $L_{Aeq\ (16\ hour)}$ 76dB a night time $L_{Aeq\ (8\ hour)}$ of 59dB. LAFmx reached 88dB during the night.

The side of Former Council Offices that is above the Cooperative food store and opposite Hoyland Market (ML3) has a daytime level of $L_{Aeq\ (16\ hour)}$ 55dB a night time $L_{Aeq\ (8\ hour)}$ of 43dB. LAFmx reached 75dB during the night.

The rear of Former Council Offices is opposite a loading area for the retail stores. This measurement location is marked as ML4. The day time $L_{Aeq(16hour)}$ is 55dB and the night time level is $L_{Aeq(8\ hour)}$ 52dB and LAFmax 83dB.

In relation to BS8233:2014 and WHO (2009) these levels are too high and have to be actively reduced in order to ensure that internal noise levels for each dwelling does meet the guidelines. However reduction of the external noise to acceptable levels internally is achievable. This can be done by using windows, doors that has the $R_{,w}$ (C;Ctr) and windows with the recommended Dn,e,W respectively specified herein for the respective rooms.

The WHO (2009) recommendation for L_{AFmax} of 60dB and an $L_{Aeq\ (8\ hour)}$ of 45dB outside bedrooms may not be achievable. However the development should not be prohibited if the planners deem the development as desirable in the circumstances as acknowledged in BS8233:2014.

Application of the sound reduction recommendations in this report will meet the standards for internal noise levels required by the national planning policy framework guidelines. If users of the property keep external windows and doors closed, they will be at a low risk of adverse noise impact.

Uncertainty in the measurement is ± 4 dB

Signed:
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BIBLIOGRAPHY

British Standards Institution (2014) BS EN 8233:2014 **Guidance on Sound Insulation and Noise Reduction for Buildings.** London. BSI

World Health Organization Europe (2009) **Night Noise Guidelines for Europe.** Copenhagen WHO

Department for Communities and Local Government (2012) **National Planning Policy Framework.** Crown London

APPENDIX A

Measuring Equipment

Casella Cel-490 sound level meter type 1 laboratory calibrated traceable to UKAS standards serial number 240855 last calibration date November 2016.

Casella Cel-490 sound level meter type 1 laboratory calibrated traceable to UKAS standards serial number 240790 last calibration date April 2016. Used at ML1.

Casella Cel-490 sound level meter type 1 laboratory calibrated traceable to UKAS standards serial number 240855 last calibration date December 2016. Used at ML2.

Casella Cel-490 sound level meter type 1 laboratory calibrated traceable to UKAS standards serial number 230643 last calibration date November 2016. Used at ML3.

Casella Cel 284/2 type 1 field acoustic calibrator serial no. 4/01021674 laboratory calibrated traceable to UKAS standards August 2015.

Kane May Thermostat model KM330 serial: 723858 calibrated 19/05/2015 by Stroma Technology certificate: 723858-150519

Kaindl Electronic model: Windtronic 2 Anemometer.

Weather Conditions

Wind speeds were below 5m/s with no precipitation. Cloud cover ranged from 10% - 90% during the measurement duration. The temperature ranged from 7^{o}C to 24^{o}C during the measurement period. All measurements were conducted during suitable weather conditions.

Measurement Data

Former Council Offices Front (ML1 facing High Street) meter serial no. 240790

Date	**Time**	**LAF**	**LAFmx**	**LAFmn**	**LAeq**
		dB	**dB**	**dB**	**dB**
04/07/2017	17:24:20	66.6	81.9	50.4	62
04/07/2017	18:24:20	58.9	82.4	49	61.9
04/07/2017	19:24:20	64.2	84.8	45.4	60.8
04/07/2017	20:24:20	50.6	85.2	44.8	59.8
04/07/2017	21:24:20	59.1	81.9	44	59.9
04/07/2017	22:24:20	65.7	84.8	42.6	58.7
04/07/2017	23:24:20	60.4	78.3	41.1	53.8
05/07/2017	00:24:20	41.4	71.8	40.7	52

05/07/2017	01:24:20	41.7	65.5	40.6	46.4
05/07/2017	02:24:20	41.7	66.5	40.6	44.9
05/07/2017	03:24:20	42.4	66.2	41	44.1
05/07/2017	04:24:20	42.6	83.6	40.9	50.5
05/07/2017	05:24:20	50	78.6	41.1	52.3
05/07/2017	06:24:20	64.2	89.7	41.4	57
05/07/2017	07:24:20	57.6	86.7	42.5	60.9
05/07/2017	08:24:20	63.1	83.5	44	62.5
05/07/2017	09:24:20	51.6	77.1	47.1	62.2
05/07/2017	10:24:20	60.8	87.2	44.7	61.6
05/07/2017	11:24:20	61.4	104.6	48.2	72
05/07/2017	12:24:20	59.1	81	48.2	62.3
05/07/2017	13:24:20	61.8	78.5	47.3	61.4
05/07/2017	14:24:20	58.2	80.1	46.1	60.4
05/07/2017	15:24:20	59.6	81.9	48.2	61.1
05/07/2017	16:24:20	62.1	84.9	46.7	61.5
05/07/2017	17:24:20	58.7	80.4	48.8	61.1
05/07/2017	18:24:20	61.6	90.9	46.8	63.6
05/07/2017	19:24:20	53.2	81.9	45.4	60.1
05/07/2017	20:24:20	64.1	110.2	46.1	91.7
05/07/2017	21:24:20	59.8	88.8	58.5	63.9
05/07/2017	22:24:20	49.4	83.3	41.9	58.2
05/07/2017	23:24:20	42.2	81	40.8	55.3
06/07/2017	00:24:20	42.3	72.6	40.7	50.8
06/07/2017	01:24:20	51.5	78.1	41.3	56.2
06/07/2017	02:24:20	42.8	78.6	40.8	57.3
06/07/2017	03:24:20	42	82.1	40.7	56.8
06/07/2017	04:24:20	41.7	82.5	40.6	54.5
06/07/2017	05:24:20	49	72	40.7	51.5
06/07/2017	06:24:20	58.4	80.4	41.3	56.4
06/07/2017	07:24:20	58.4	82.7	43.1	60.8
06/07/2017	08:24:20	62.2	80.3	46.9	63.2
06/07/2017	09:24:20	61	80.2	48	62.4
06/07/2017	10:24:20	58.9	86.1	48.8	61.3
06/07/2017	11:24:20	69.2	85.6	50.3	62.4
06/07/2017	12:24:20	61.7	86.9	49.5	62
06/07/2017	13:24:20	70.2	79.9	47.6	61
06/07/2017	14:24:20	68.6	80.2	47.4	61
06/07/2017	15:24:20	55.1	83	46.8	61.1

Table 3: Measurements at ML1. The blue highlight are night time and the green levels are day timehourly noise level logs.

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Former Council Offices Side (ML2 side opposite Hoyland Center with mechanical vents underneath) meter serial no. 240855

Date	Time	LAFmx dB	LAeq dB	LAF10.0 dB	LAF90.0 dB
04/07/2017	15:48:21	78.4	63.1	64.5	61.5
04/07/2017	16:48:21	80.8	63.3	64.5	61.5
04/07/2017	17:48:21	86.2	63.1	64	61
04/07/2017	18:48:21	88.2	62.6	63.5	61
04/07/2017	19:48:21	87.8	62.2	63	61
04/07/2017	20:48:21	82.8	62.2	63	60.5
04/07/2017	21:48:21	72.1	61	61.5	60.5
04/07/2017	22:48:21	73.1	60.9	61	60.5
04/07/2017	23:48:21	65.8	60.6	61	60
05/07/2017	00:48:21	65.7	60.7	61	60.5
05/07/2017	01:48:21	67	60.7	61	60.5
05/07/2017	02:48:21	76.4	60.8	61	60.5
05/07/2017	03:48:21	73.4	60.8	61	60.5
05/07/2017	04:48:21	84.7	61.9	62	60.5
05/07/2017	05:48:21	90.6	64.1	64.5	60.5
05/07/2017	06:48:21	95.8	65.6	65.5	61
05/07/2017	07:48:21	86.9	63.7	65	61
05/07/2017	08:48:21	77.2	63	64.5	61
05/07/2017	09:48:21	102.5	69.2	64.5	61
05/07/2017	10:48:21	88.3	64.5	65.5	61
05/07/2017	11:48:21	76.1	62.8	64	61
05/07/2017	12:48:21	79.7	62.6	64.5	61
05/07/2017	13:48:21	85.4	63.5	65	61
05/07/2017	14:48:21	84.5	63.4	65	61
05/07/2017	15:48:21	77.6	62.8	64.5	61
05/07/2017	16:48:21	95	64.4	64	61
05/07/2017	17:48:21	76.8	62.2	64	60.5
05/07/2017	18:48:21	106.5	89.5	91	61
05/07/2017	19:48:21	98.5	70.6	64	61
05/07/2017	20:48:21	84.4	61.4	62	60.5
05/07/2017	21:48:21	75.1	61.2	61.5	60.5
05/07/2017	22:48:21	75	60.8	61	60
05/07/2017	23:48:21	79.3	61	61.5	60.5
06/07/2017	00:48:21	73	60.8	61	60.5
06/07/2017	01:48:21	81.1	61.5	62.5	60.5
06/07/2017	02:48:21	76.2	61	61.5	60

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06/07/2017	03:48:21	76.4	60.8	61	60
06/07/2017	04:48:21	82.7	61.6	62	60.5
06/07/2017	05:48:21	97.8	68.6	65.5	60.5
06/07/2017	06:48:21	86.6	64.6	65.5	61
06/07/2017	07:48:21	89.3	65.9	67	61.5
06/07/2017	08:48:21	84.8	63.4	64.5	61
06/07/2017	09:48:21	80.8	63.7	65	61.5
06/07/2017	10:48:21	89.5	63.9	64.5	61
06/07/2017	11:48:21	80.3	63	64.5	61
06/07/2017	12:48:21	84.6	63.8	65	61
06/07/2017	13:48:21	81.1	63.6	65	61.5

Table 4: Measurements at ML2. The blue highlight are night time and the green levels are day time hourly noise level logs.

Former Council Offices ML3 Facing market and above the Co-operative food store. Meter serial no. 230643

Date	Time	LAF dB	LAFmx dB	LAFmn dB	LAeq dB
04/07/2017	16:55:54	52.6	79.3	43.7	51.8
04/07/2017	17:55:54	47.6	71.5	40.7	51.1
04/07/2017	18:55:54	47	75.3	39.2	51.4
04/07/2017	19:55:54	49.7	73.7	36.8	50.3
04/07/2017	20:55:54	51.3	77.9	35.4	51.4
04/07/2017	21:55:54	44	75.5	34.5	48.1
04/07/2017	22:55:54	51.9	64.8	31.1	43.9
04/07/2017	23:55:54	31.1	67.6	30	41.3
05/07/2017	00:55:54	32.9	57.5	30.2	36.3
05/07/2017	01:55:54	32.8	61.6	30.4	36.9
05/07/2017	02:55:54	32.3	55.1	30.4	35.5
05/07/2017	03:55:54	41.1	66.5	30.5	39.6
05/07/2017	04:55:54	35.8	65.5	31.4	45.1
05/07/2017	05:55:54	43.3	75.1	31.8	48.5
05/07/2017	06:55:54	48	81.7	37.1	52.7
05/07/2017	07:55:54	53.4	84	41.4	55
05/07/2017	08:55:54	48.2	86.1	40.4	56.7
05/07/2017	09:55:54	51.3	87.8	40.7	57.8
05/07/2017	10:55:54	64.4	78.7	41	59

Table 5: Measurements at ML3. The blue highlight are night time and the green levels are day time hourly noise level logs. LAeq (11 hrs) taken as representative of LAeq (16hrs)

Second set of measurements at ML3 not used because construction workers had placed radio playing loud music next to the sound level meter.

Date	Time	LAF	LAFmx	LAFmn	LAeq
		dB	dB	dB	dB
05/07/2017	16:02:17	46.3	70.9	41.7	51
05/07/2017	17:02:17	53.7	76.7	42.5	51.5
05/07/2017	18:02:17	45.1	74.4	40.6	51.4
05/07/2017	19:02:17	59.8	70	39.3	50.8
05/07/2017	20:02:17	48.9	92.4	39	65
05/07/2017	21:02:17	42.3	78.5	35.6	50.5
05/07/2017	22:02:17	52.1	72	34.7	49
05/07/2017	23:02:17	52.6	67.8	34.1	45.3
06/07/2017	00:02:17	45.2	67.6	31.2	42.7
06/07/2017	01:02:17	41.7	62.8	32.4	40.4
06/07/2017	02:02:17	36.4	68	32.2	45.6
06/07/2017	03:02:17	34.3	67.9	30.9	44.9
06/07/2017	04:02:17	35.2	61.7	31.8	42.1
06/07/2017	05:02:17	43.6	84.7	34.2	48.3
06/07/2017	06:02:17	54.1	79.2	36.9	51.6
06/07/2017	07:02:17	61.4	84.2	44.9	57.8
06/07/2017	08:02:17	57.8	81.6	48.2	59.5
06/07/2017	09:02:17	53.8	79.1	46.9	57.3
06/07/2017	10:02:17	55.6	80.2	47.8	56.9
06/07/2017	11:02:17	54.6	87.4	47.6	57.6
06/07/2017	12:02:17	47.2	79.6	42	52.4
06/07/2017	13:02:17	50.1	85.4	41.8	64.7
06/07/2017	14:02:17	59.3	81.2	46.9	64.3
06/07/2017	15:02:17	67.1	78.1	44.9	64.1

Table 6: Measurements at ML3. Measurements not used because of high levels of noise from worker radio placed next to the sound level meter.

Measurement Data at the rear next to coop loading area

Date	Time	LAFmx	LAeq	LAF10.0	LAF90.0
		dB	dB	dB	dB
30/10/2018	21:16:02	85.5	50	51.5	44.5
30/10/2018	22:16:02	71.2	49.2	52	43.5

30/10/2018	23:16:02	77.6	49.5	53	42.5
31/10/2018	00:16:02	70.3	48.3	52.5	41.5
31/10/2018	01:16:02	69.2	48.2	53	40
31/10/2018	02:16:02	57.7	47.2	52.5	39.5
31/10/2018	03:16:02	59	49.6	54	41
31/10/2018	04:16:02	61.6	53.1	55.5	46
31/10/2018	05:16:02	66.7	53	56	47
31/10/2018	06:16:02	82.8	55.5	56.5	50.5
31/10/2018	07:16:02	87.6	59.8	60.5	54
31/10/2018	08:16:02	71.5	57.1	58.5	55
31/10/2018	09:16:02	83.6	56.2	57.5	53.5
31/10/2018	10:16:02	80.8	55.3	57	52.5
31/10/2018	11:16:02	79.3	55.1	56.5	52.5
31/10/2018	12:16:02	68.8	53.7	55.5	50.5
31/10/2018	13:16:02	75.9	53.8	55	49.5
31/10/2018	14:16:02	75.8	53.4	55	49.5
31/10/2018	15:16:02	72	53.4	55.5	49.5
31/10/2018	16:16:02	81	55.7	56	49.5
31/10/2018	17:16:02	72.9	53.7	55.5	50
31/10/2018	18:16:02	74.8	53.4	55.5	49.5
31/10/2018	19:16:02	79	53.2	54.5	48.5
31/10/2018	20:16:02	68.7	51.4	54.5	47

Table 7: Measurements at the rear of the building opposite the coop loading area measurement location ML4. The data shows a night time LAeq(8 hour) of 51.7dB and an LAFmax of 83dB. LAFmax exceeded 60dB in 6 out of 8 hours of the night. The day time LAeq(16 hour) is 55dB.

Site plan 2: Original full site location.

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Site Plan shows area bounded by: 437300.45, 400477.8 437441.87, 400619.22 (at a scale of 1:1250), OSGridRef: SE3737 54. The representation of a road, track or path is no evidence of a right of way. The representation of features as lines is no evidence of a property boundary.

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