# CERTIFICATE OF CALIBRATION

0653

**Date of Issue: 03 January 2024**

**Certificate Number: UCRT24/1014**

Calibrated at & Certificate issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems



[redacted]

| | |
|---|---|
| Customer | TNEI<br>7th Floor West One<br>Forth Banks<br>Newcastle Upon Tyne<br>NE1 3PA |
| Order No. | 5001 |
| Description | Sound Level Meter / Pre-amp / Microphone / Associated Calibrator |

Identification

| *Manufacturer* | *Instrument* | *Type* | *Serial No. / Version* |
|---|---|---|---|
| Rion | Sound Level Meter | NL-52 | 00643024 |
| Rion | Firmware | | 2.0 |
| Rion | Pre Amplifier | NH-25 | 43052 |
| Rion | Microphone | UC-59 | 06804 |
| Rion | Calibrator | NC-75 | 34334830 |
| | Calibrator adaptor type if applicable | | NC-75-022 |

| | |
|---|---|
| Performance Class | 1 |
| Test Procedure | TP 2.SLM 61672-3 TPS-49 |

*Procedures from IEC 61672-3:2006 were used to perform the periodic tests.*

Type Approved to IEC 61672-1:2002 YES Approval Number 21.21 / 13.02

*If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2003*

| | | | |
|---|---|---|---|
| Date Received | 22 December 2023 | ANV Job No. | UKAS23/12871 |
| Date Calibrated | 03 January 2024 | | |

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2:2003, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2002, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2002.

Previous Certificate

| *Dated* | *Certificate No.* | *Laboratory* |
|---|---|---|
| 23 November 2023 | 214284 | NSAI National Metrology Lab. |

# CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 0653

**Certificate Number**
**UCRT24/1014**



Sound Level Meter Instruction manual and data used to adjust the sound levels indicated.

| | | | |
|---|---|---|---|
| SLM instruction manual title | Sound Level Meter NL-42 / NL-52 | | |
| SLM instruction manual ref / issue | 11-03 | | |
| SLM instruction manual source | Manufacturer | | |
| Internet download date if applicable | N/A | | |
| Case corrections available | Yes | | |
| Uncertainties of case corrections | Yes | | |
| Source of case data | Manufacturer | | |
| Wind screen corrections available | Yes | | |
| Uncertainties of wind screen corrections | Yes | | |
| Source of wind screen data | Manufacturer | | |
| Mic pressure to free field corrections | Yes | | |
| Uncertainties of Mic to F.F. corrections | Yes | | |
| Source of Mic to F.F. corrections | Manufacturer | | |
| Total expanded uncertainties within the requirements of IEC 61672-1:2002 | Yes | | |
| Specified or equivalent Calibrator | Specified | | |
| Customer or Lab Calibrator | Lab Calibrator | | |
| Calibrator adaptor type if applicable | NC-75-022 | | |
| Calibrator cal. date | 18 December 2023 | | |
| Calibrator cert. number | UCRT23/2596 | | |
| Calibrator cal cert issued by | 0653 | | |
| Calibrator SPL @ STP | 94.01 | dB | Calibration reference sound pressure level |
| Calibrator frequency | 1000.00 | Hz | Calibration check frequency |
| Reference level range | 25 - 130 | dB | |

Accessories used or corrected for during calibration - None
Note - if a pre-amp extension cable is listed then it was used between the SLM and the pre-amp.

| Environmental conditions during tests | Start | End | | | |
|---|---|---|---|---|---|
| Temperature | 22.68 | 23.06 | ± | 0.30 | °C |
| Humidity | 45.1 | 53.7 | ± | 3.00 | %RH |
| Ambient Pressure | 97.79 | 97.77 | ± | 0.03 | kPa |

Response to associated Calibrator at the environmental conditions above.

| | | | | | |
|---|---|---|---|---|---|
| Initial indicated level | 94.1 | dB | Adjusted indicated level | 94.0 | dB |
| The uncertainty of the associated calibrator supplied with the sound level meter ± | | | | 0.10 | dB |

Self Generated Noise — This test is currently not performed by this Lab.

| | | | |
|---|---|---|---|
| Microphone installed (if requested by customer) = Less Than | N/A | dB | A Weighting |
| Uncertainty of the microphone installed self generated noise ± | N/A | dB | |

Microphone replaced with electrical input device - UR = Under Range indicated

| Weighting | A | | | C | | | Z | | |
|---|---|---|---|---|---|---|---|---|---|
| | 11.1 | dB | UR | 15.5 | dB | UR | 20.8 | dB | UR |
| Uncertainty of the electrical self generated noise ± | | | | | | | 0.12 | dB | |

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

For the test of the frequency weightings as per paragraph 12. of IEC 61672-3:2006 the actual microphone free field response was used.

The acoustical frequency tests of a frequency weighting as per paragraph 11 of IEC 61672-3:2006 were carried out using an electrostatic actuator.

..... END .....

Calibrated by: [redacted]

R 1

Additional Comments The results on this certificate only relate to the items calibrated as identified above.
None

# CERTIFICATE OF CALIBRATION

0653

**Date of Issue: 05 August 2024**

**Certificate Number: UCRT24/2059**

Calibrated at & Certificate issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems



Approved Signatory [redacted]

| | |
|---|---|
| Customer | TNEI<br>7th Floor West One<br>Forth Banks<br>Newcastle Upon Tyne<br>NE1 3PA |
| Order No. | 5001 |
| Description | Sound Level Meter / Pre-amp / Microphone / Associated Calibrator |

Identification

| *Manufacturer* | *Instrument* | *Type* | *Serial No. / Version* |
|---|---|---|---|
| Rion | Sound Level Meter | NL-52 | 00520923 |
| Rion | Firmware | | 2.1 |
| Rion | Pre Amplifier | NH-25 | 11770 |
| Rion | Microphone | UC-59 | 21320 |
| Rion | Calibrator | NC-75 | 34334830 |
| | Calibrator adaptor type if applicable | | NC-75-022 |

Performance Class 1

Test Procedure TP 10. SLM 61672-3:2013

*Procedures from IEC 61672-3:2013 were used to perform the periodic tests.*

Type Approved to IEC 61672-1:2013 Yes

*If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2013*

Date Received 02 August 2024 ANV Job No. UKAS24/08565

Date Calibrated 05 August 2024

The sound level meter submitted for testing has successfully completed the periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. As evidence was publicly available, from an independent testing organisation responsible for approving the results of pattern-evaluation tests performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 specifications of IEC 61672-1:2013.

| Previous Certificate | *Dated* | *Certificate No.* | *Laboratory* |
|---|---|---|---|
| | Initial Calibration | | |

# CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 0653

**Certificate Number** UCRT24/2059



Sound Level Meter Instruction manual and data used to adjust the sound levels indicated.

| | | | | |
|---|---|---|---|---|
| SLM instruction manual title | NL-52/NL-42 Description for IEC 61672-1 | | | |
| SLM instruction manual ref / issue | No. 56034 21-03 | Source | Rion | |
| Date provided or internet download date | 19 March 2021 | | | |

| | Case Corrections | Wind Shield Corrections | Mic Pressure to Free Field Corrections |
|---|---|---|---|
| Uncertainties provided | Yes | Yes | Yes |

| | | | |
|---|---|---|---|
| Total expanded uncertainties within the requirements of IEC 61672-1:2013 | YES | | |
| Specified or equivalent Calibrator | Specified | | |
| Customer or Lab Calibrator | Lab Calibrator | | |
| Calibrator adaptor type if applicable | NC-75-022 | | |
| Calibrator cal. date | 10 July 2024 | | |
| Calibrator cert. number | UCRT24/1958 | | |
| Calibrator cal cert issued by Lab | 0653 | | |
| Calibrator SPL @ STP | 94.00 | dB | Calibration reference sound pressure level |
| Calibrator frequency | 1000.00 | Hz | Calibration check frequency |
| Reference level range | Single | dB | |

Accessories used or corrected for during calibration - Extension Cable & Wind Shield WS-15

Note - The Extension Cable was used between the SLM and the pre-amp for this calibration.

| Environmental conditions during tests | Start | End | |
|---|---|---|---|
| Temperature | 24.48 | 24.36 | ± 0.30 °C |
| Humidity | 62.2 | 59.0 | ± 3.00 %RH |
| Ambient Pressure | 100.04 | 100.02 | ± 0.03 kPa |

| Indication at the Calibration Check Frequency | | | | |
|---|---|---|---|---|
| Initial indicated level | 94.1 | dB | Adjusted indicated level | 94.0 dB |
| Uncertainty of calibrator used for Indication at the Calibration Check Frequency ± | | | | 0.10 dB |

Self Generated Noise

Microphone installed - Less Than 20.7 dB A Weighting

Microphone replaced with electrical input device - UR = Under Range indicated

| Weighting | A | | | C | | | Z | | |
|---|---|---|---|---|---|---|---|---|---|
| | 13.8 | dB | UR | 19.6 | dB | UR | 25.6 | dB | UR |

Self Generated Noise reported for information only and not used to assess conformance to a requirement

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Additional Comments The results on this certificate only relate to the items calibrated as identified above.

None

END

R 3

Calibrated by: [redacted]

# CERTIFICATE OF CALIBRATION

**Date of Issue: 22 August 2024** **Certificate Number: TCRT24/1658**

Issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems



[redacted]

Customer
TNEI Services Ltd
7th Floor
West One
Forth Banks
Newcastle Upon Tyne
NE13PA

Order No. 5001

Description Sound Level Meter / Pre-amp / Microphone / Associated Calibrator

Identification

| *Manufacturer* | *Instrument* | *Type* | *Serial No. / Version* |
|---|---|---|---|
| Rion | Sound Level Meter | NL-52 | 00721000 |
| Rion | Firmware | | 2.1 |
| Rion | Pre Amplifier | NH-25 | 22106 |
| Rion | Microphone | UC-59 | 21938 |
| Rion | Calibrator | NC-74 | 34762316 |
| | Calibrator adaptor type if applicable | | NC-74-002 |

Performance Class 1

Test Procedure TP 10. SLM 61672-3:2013
*Procedures from IEC 61672-3:2013 were used to perform the periodic tests.*

Type Approved to IEC 61672-1:2013 Yes
*If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2013*

Date Received 21 August 2024 ANV Job No. TRAC24/08373

Date Calibrated 22 August 2024

The sound level meter submitted for testing has successfully completed the periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. As evidence was publicly available, from an independent testing organisation responsible for approving the results of pattern-evaluation tests performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 specifications of IEC 61672-1:2013.

| Previous Certificate | *Dated* | *Certificate No.* | *Laboratory* |
|---|---|---|---|
| | Initial Calibration | | |

# CERTIFICATE OF CALIBRATION

**Certificate Number**
**TCRT24/1658**



Sound Level Meter Instruction manual and data used to adjust the sound levels indicated.

| | | | |
|---|---|---|---|
| SLM instruction manual title | NL-52/NL-42 Description for IEC 61672-1 | | |
| SLM instruction manual ref / issue | No. 56034 21-03 | Source | Rion |
| Date provided or internet download date | 19 March 2021 | | |

| | Case Corrections | Wind Shield Corrections | Mic Pressure to Free Field Corrections |
|---|---|---|---|
| Uncertainties provided | Yes | Yes | Yes |

| | |
|---|---|
| Total expanded uncertainties within the requirements of IEC 61672-1:2013 | YES |

| | | | |
|---|---|---|---|
| Specified or equivalent Calibrator | Specified | | |
| Customer or Lab Calibrator | Customers Calibrator | | |
| Calibrator adaptor type if applicable | NC-74-002 | | |
| Calibrator cal. date | 14 February 2024 | | |
| Calibrator cert. number | UCRT24/1237 | | |
| Calibrator cal cert issued by Lab | ANV Measurement Systems | | |
| Calibrator SPL @ STP | 94.03 | dB | Calibration reference sound pressure level |
| Calibrator frequency | 1002.41 | Hz | Calibration check frequency |
| Reference level range | Single | dB | |

Accessories used or corrected for during calibration - Extension Cable & Wind Shield WS-15
Note - The Extension Cable was used between the SLM and the pre-amp for this calibration.

| Environmental conditions during tests | Start | End | |
|---|---|---|---|
| Temperature | 22.98 | 22.72 | ± 0.30 °C |
| Humidity | 52.4 | 56.3 | ± 3.00 %RH |
| Ambient Pressure | 99.47 | 99.46 | ± 0.03 kPa |

| Indication at the Calibration Check Frequency | | | |
|---|---|---|---|
| Initial indicated level | 94.3 dB | Adjusted indicated level | 94.0 dB |
| Uncertainty of calibrator used for Indication at the Calibration Check Frequency ± | | 0.10 | dB |

Self Generated Noise

Microphone installed - Less Than 19.7 dB A Weighting

Microphone replaced with electrical input device - UR = Under Range indicated

| Weighting | A | | | C | | | Z | | |
|---|---|---|---|---|---|---|---|---|---|
| | 10.4 | dB | UR | 15.8 | dB | UR | 22.8 | dB | UR |

Self Generated Noise reported for information only and not used to assess conformance to a requirement

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with the Guide to the Expression of Uncertainty in Measurement published by ISO.

Additional Comments

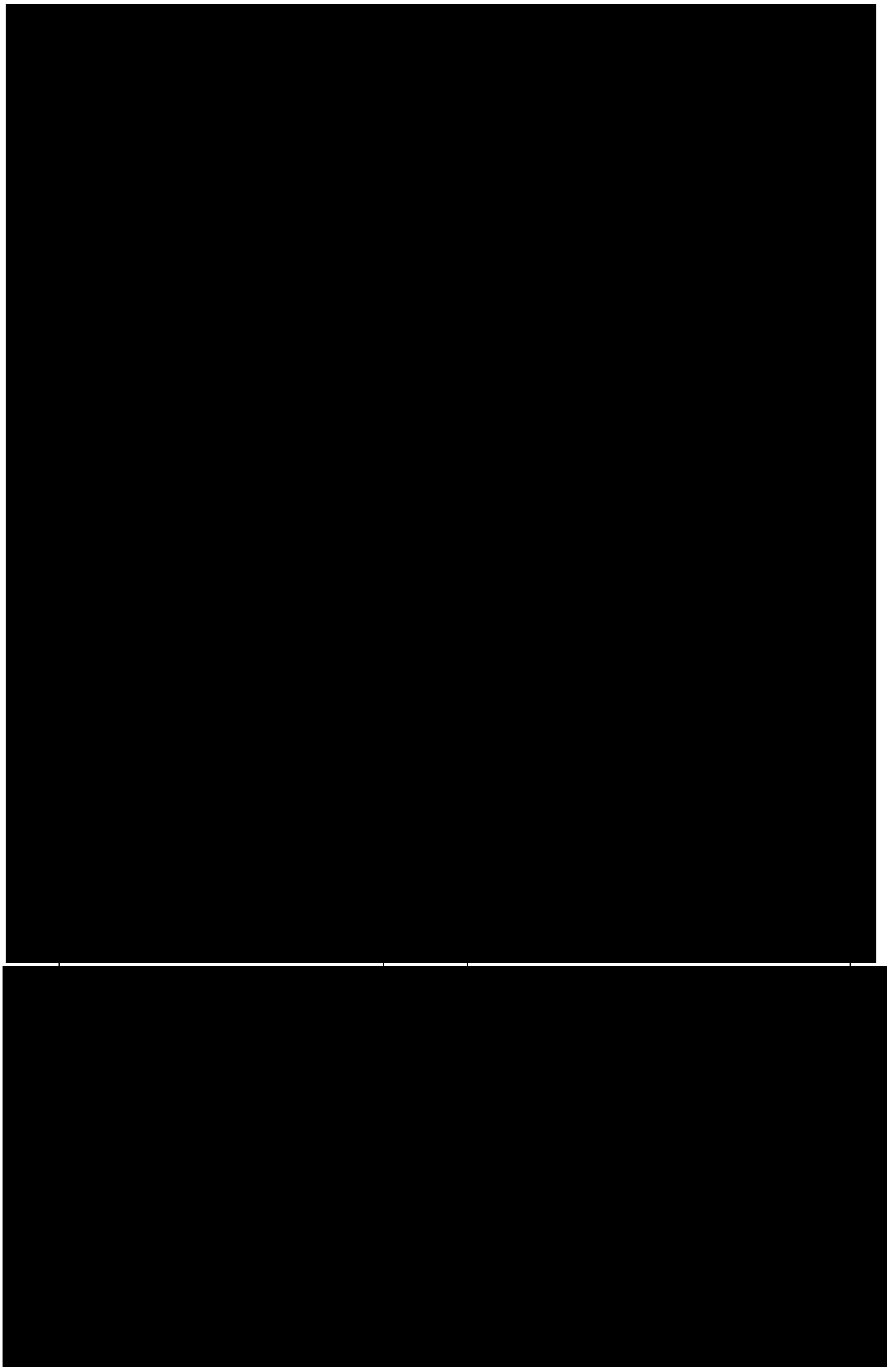
None

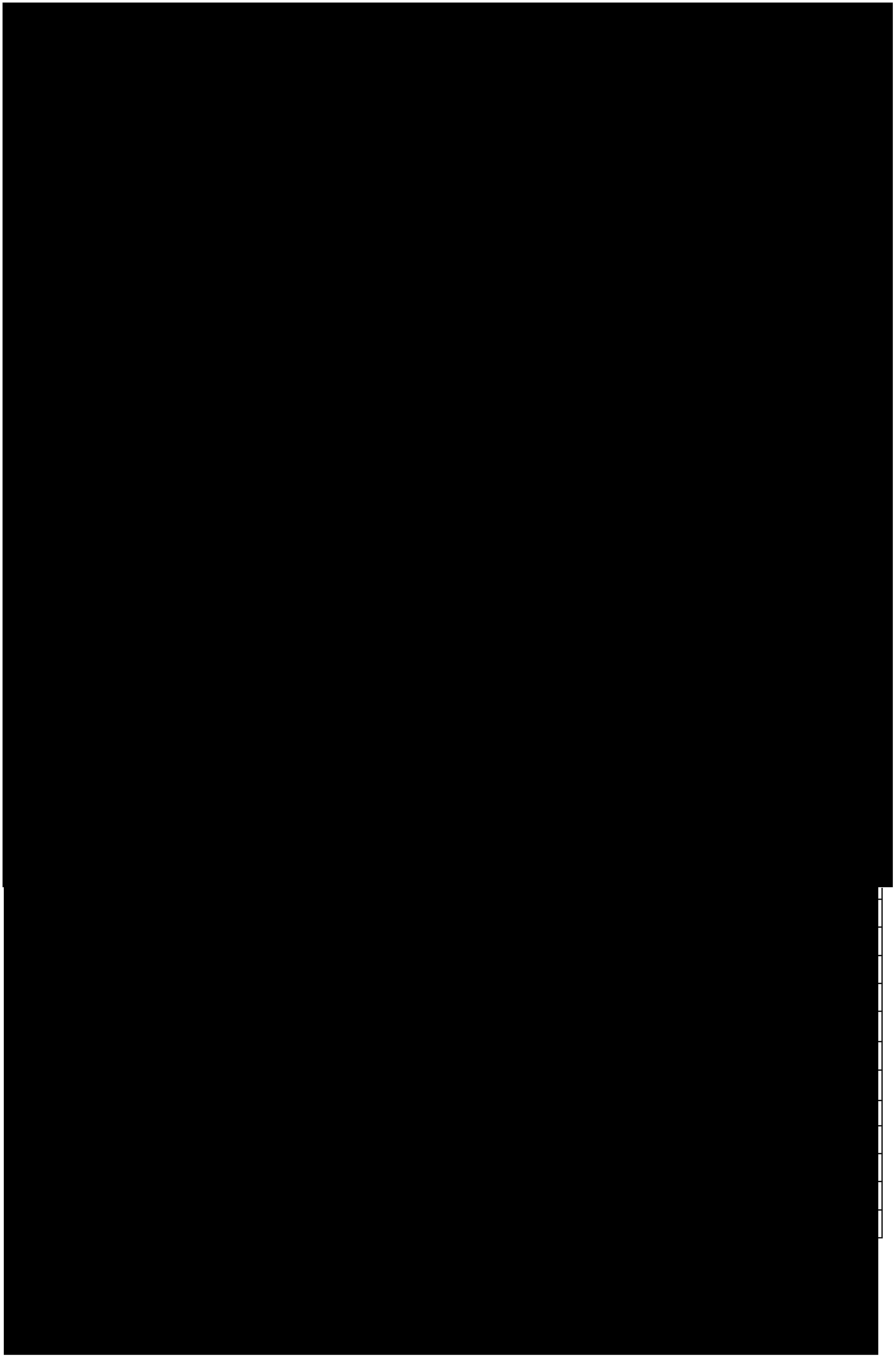
..... END .....

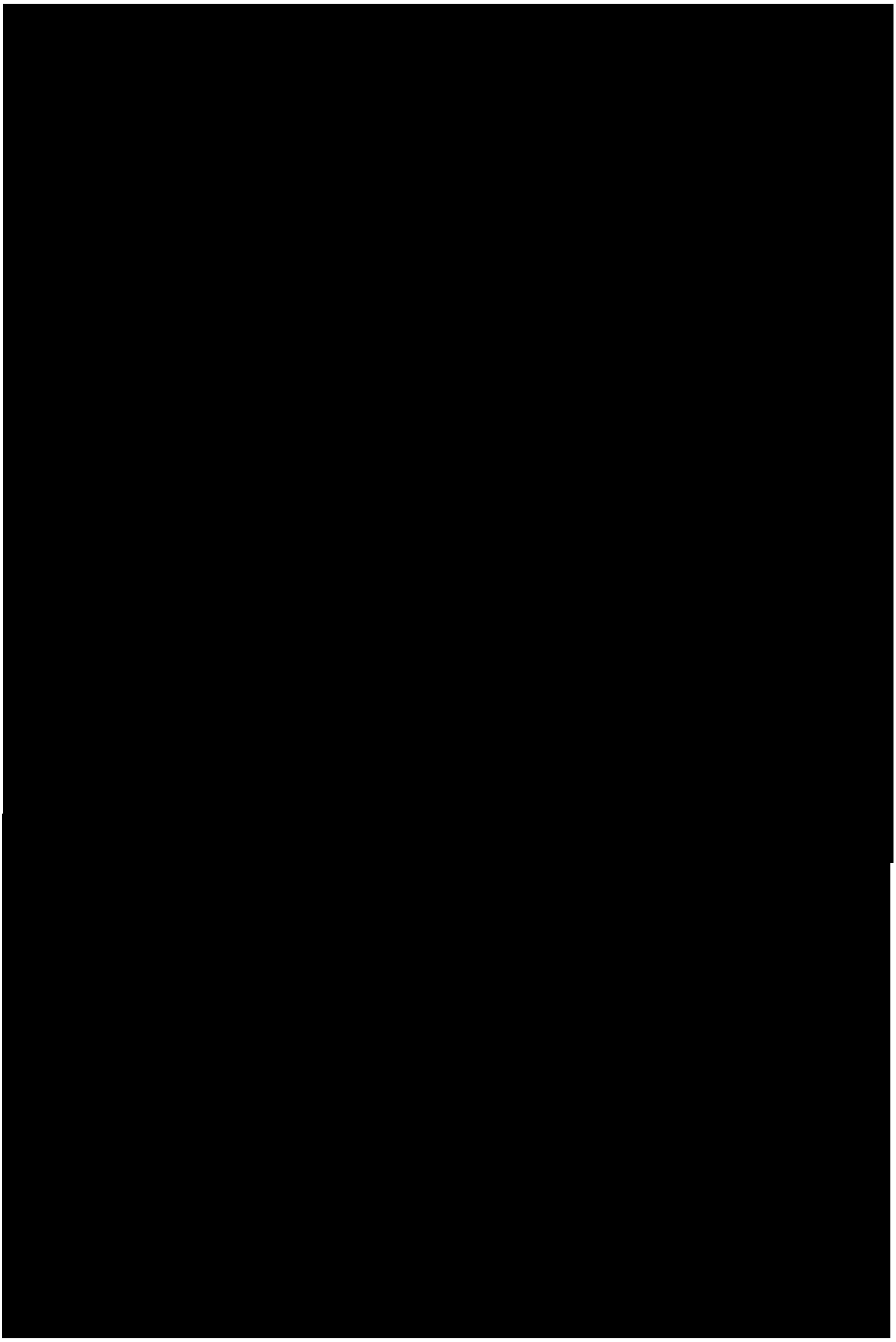
Calibrated by: [redacted]

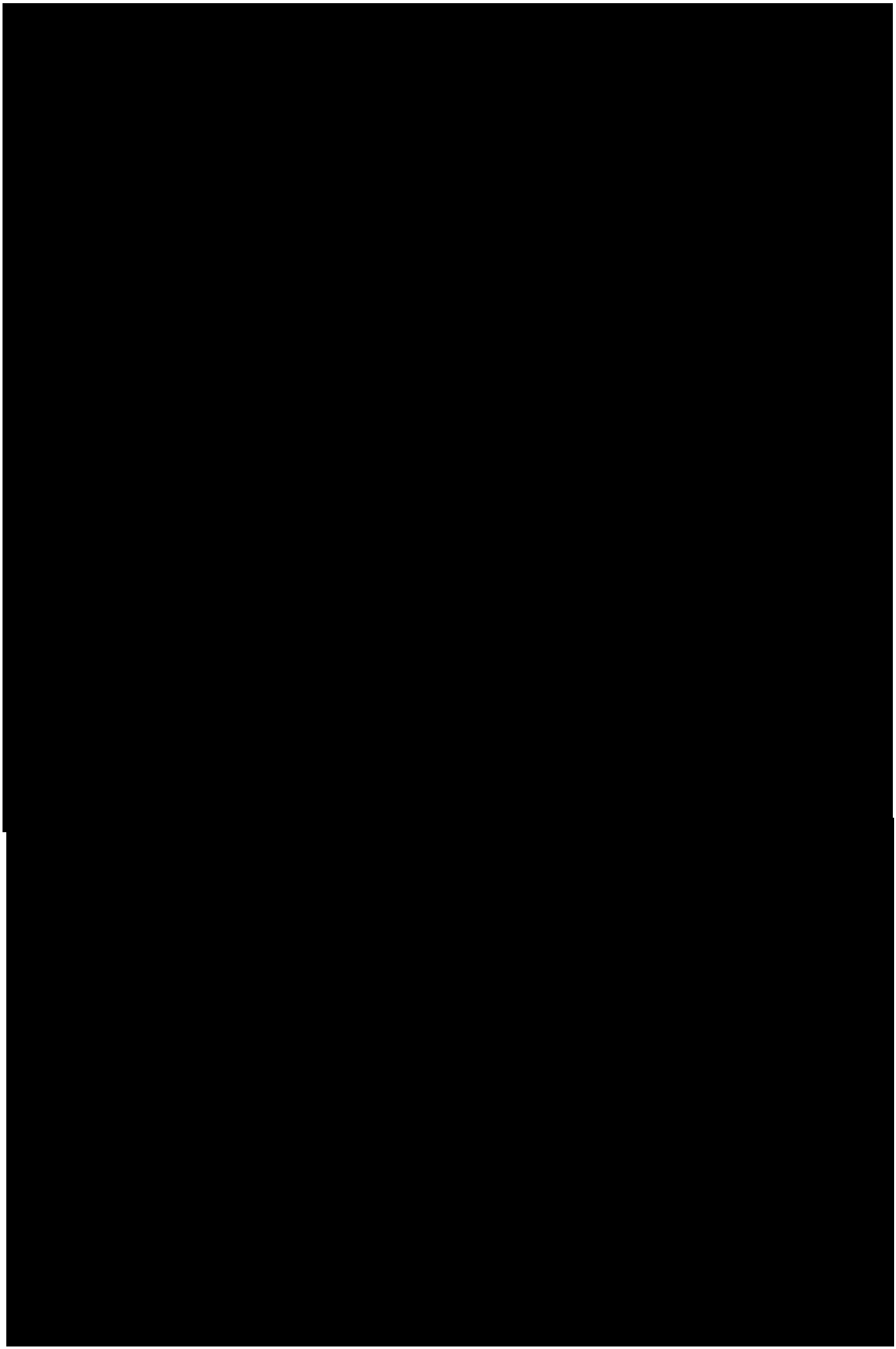
R 2

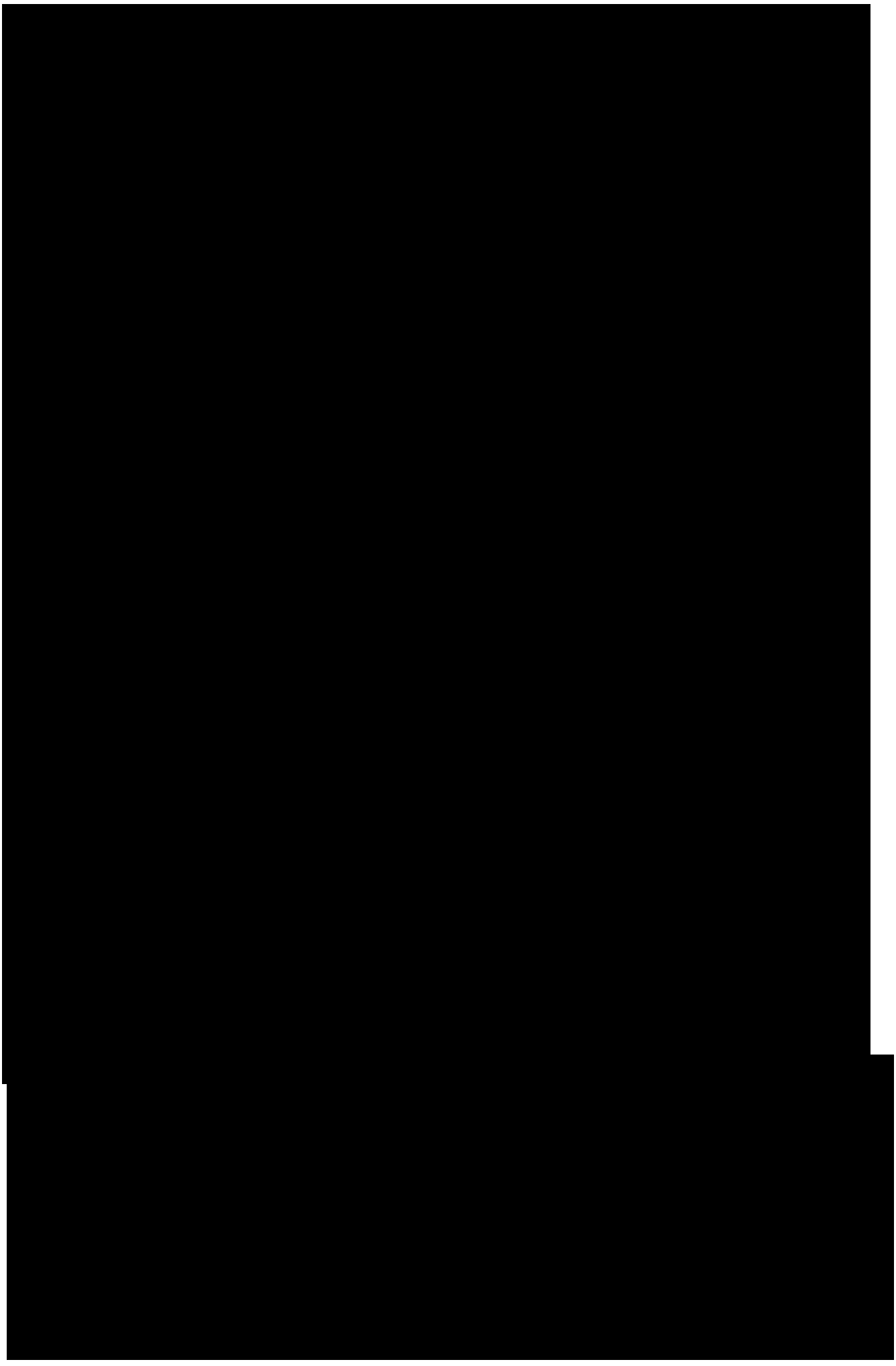
# Appendix E – Noise Modelling Data

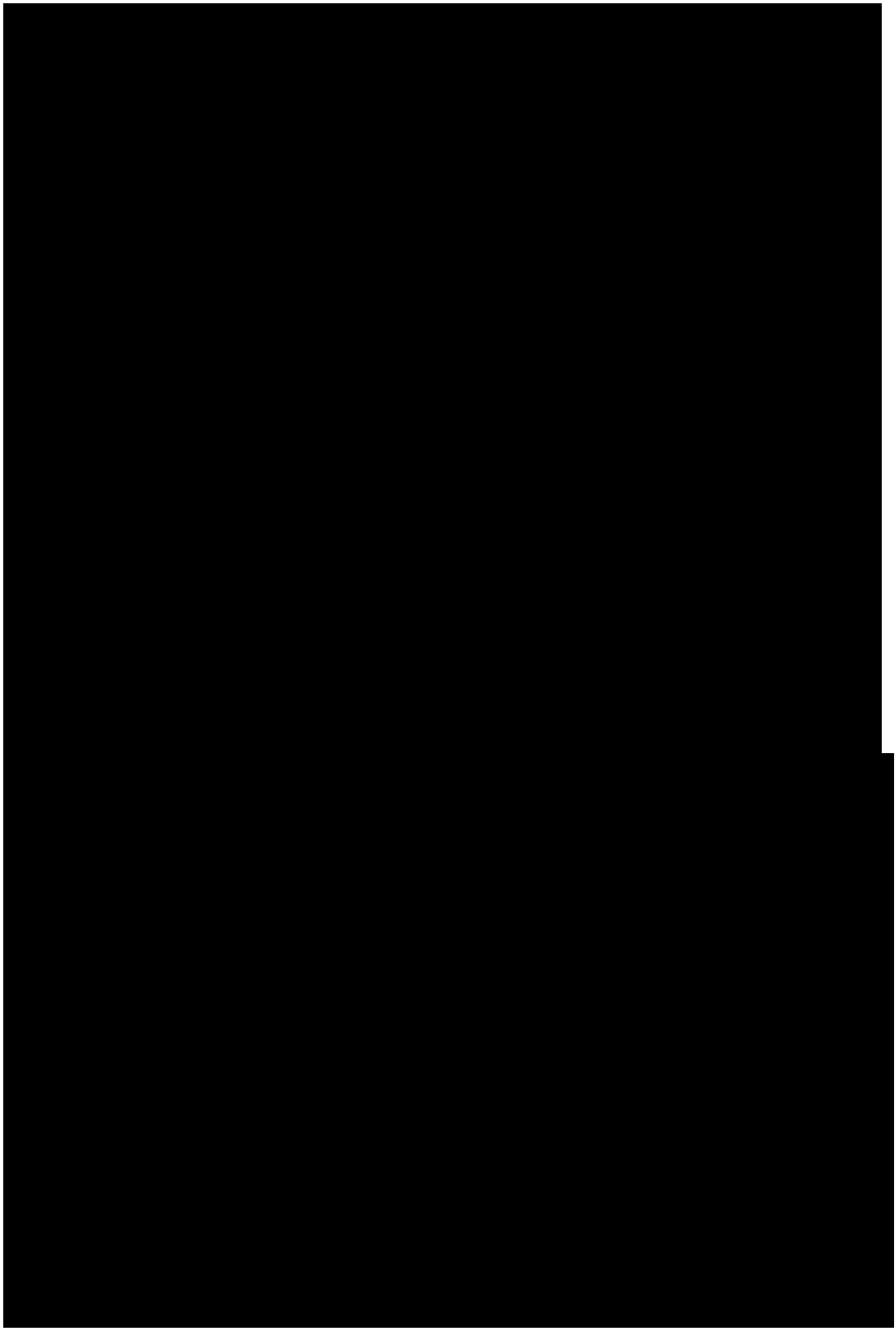




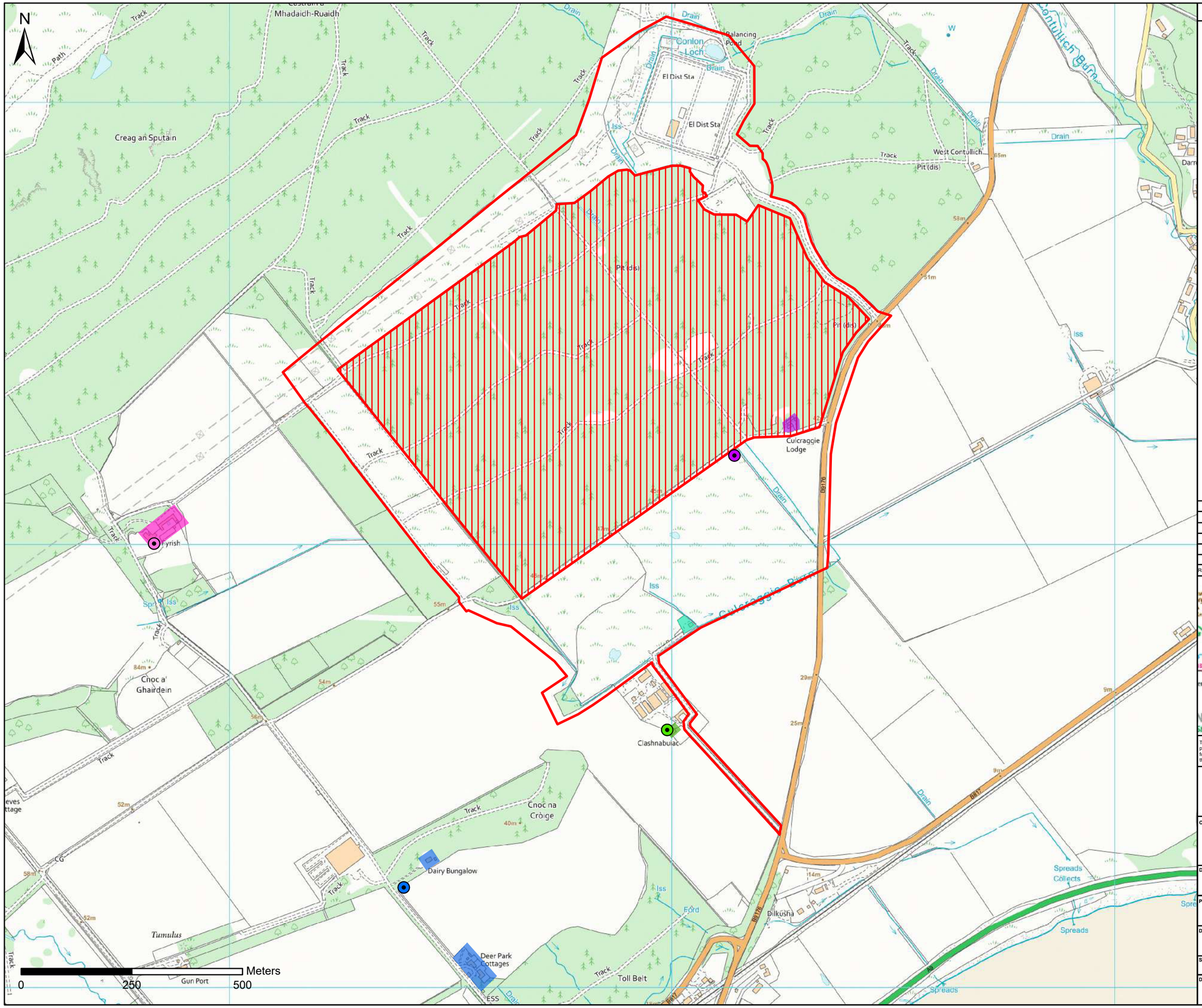








# Appendix F – Figures

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## LEGEND

- Site Boundary
- Area Excluded from Site Boundary

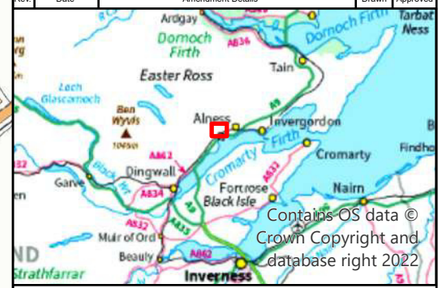
**Noise Monitoring Locations (NMLs)**

- NML01
- NML02
- NML03
- NML04

**Nearest Identified Noise Sensitive Receptors (NSRs)**

- NSRs Represented by NML01
- NSRs Represented by NML02
- NSRs Represented by NML03
- NSRs Represented by NML04
- NSR Not Included Within Assessment

| Rev. | Date | Amendment Details | Drawn | Approved |
|---|---|---|---|---|
| 0 | 13/02/2025 | FOR PLANNING | KB | EW |






tnei

**Client**

FIELD

**Drawing Status:**

FOR INFORMATION

**Project Title:**

FYRISH BESS

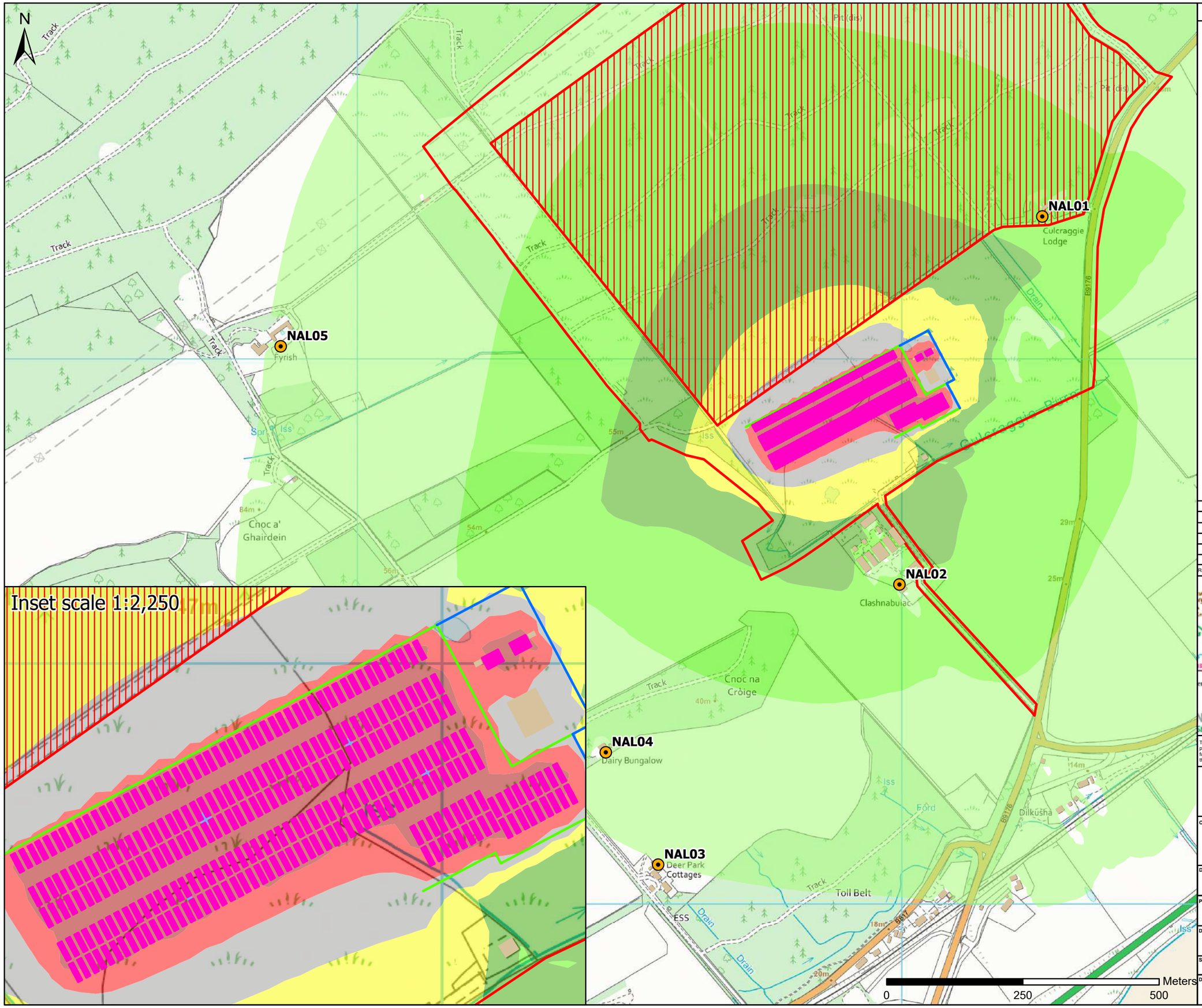
**Drawing Title:**

FIGURE 01 - NOISE STUDY AREA

| Scale: | Original Size: | Spatial Reference: |
|---|---|---|
| 1:8,000 | A3 | British National Grid |

**Drawing Number:**

16819-004




## LEGEND

- Site Boundary
- Area Excluded from Site Boundary
- Noise Assessment Locations (NALs)
- Modelled Noise Sources
- Modelled Buildings
- Modelled Acoustic Fence (5 m)
- Modelled Acoustic Fence (4 m)

**Predicted Noise Levels (dBA)**

| | |
|---|---|
| 25 - 30 | 45 - 50 |
| 30 - 35 | 50 - 55 |
| 35 - 40 | 55 - 60 |
| 40 - 45 | 60 - 65 |

Noise contours modelled in accordance with ISO 9613 Part 2:2024 at a height of 4 m and displayed on a 10 m by 10 m grid.

All noise sources assumed to be operating concurrently.

All levels shown as dB LAeq(t).

| Rev. | Date | Amendment Details | Drawn | Approved |
|---|---|---|---|---|
| 0 | 12/02/2025 | FOR PLANNING | KB | EW |




tnei

Client: FIELD

Drawing Status: FOR INFORMATION

Project Title: FYRISH BESS

Drawing Title: FIGURE 02 - NOISE CONTOUR PLOT

| Scale: | Original Size: | Spatial Reference: |
|---|---|---|
| 1:6,500 | A3 | British National Grid |

Drawing Number: 16819-005

# Appendix G – One-Third Octave Band Predicted Levels (dBZ)

| Noise Assessment Location (NAL) | External Predicted Noise Levels, dB(Z) | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 25 | 31.5 | 40 | 50 | 63 | 80 | 100 | 125 | 160 | 200 | 250 | 315 | 400 | 500 | 630 | 800 | 1000 | 1250 | 1600 | 2000 | 2500 | 3150 | 4000 | 5000 | 6300 | 8000 | 10000 |
| NAL01 – Culcraggie Lodge | 37 | 34 | 33 | 36 | 31 | 28 | 26 | 26 | 29 | 31 | 24 | 28 | 29 | 28 | 26 | 25 | - | - | - | - | - | - | - | - | - | - | - |
| NAL02 – Clashnabuiac | 40 | 36 | 35 | 37 | 32 | 29 | 27 | 26 | 28 | 30 | 24 | 28 | 27 | 26 | 24 | 22 | 20 | 18 | 16 | - | - | - | - | - | - | - | - |
| NAL03 – Deer Park Cottages | 34 | 30 | 29 | 31 | 27 | 24 | 19 | 18 | 20 | 23 | 17 | 21 | 21 | 20 | 18 | 17 | 15 | 13 | - | - | - | - | - | - | - | - | - |
| NAL04 – Dairy Bungalow | 35 | 31 | 30 | 32 | 28 | 25 | 21 | 20 | 22 | 25 | 18 | 22 | 23 | 22 | 20 | 19 | 17 | 15 | 13 | 10 | 6 | - | - | - | - | - | - |
| NAL05 – Fyrish | 32 | 29 | 28 | 30 | 26 | 23 | 19 | 19 | 21 | 24 | 17 | 21 | 21 | 21 | 19 | 17 | 15 | 13 | 11 | 7 | 2 | - | - | - | - | - | - |

**Where a dash (-) is presented, predicted values were negligibly low (0 dB or below), and as such were not included within the table.**