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CERTIFICATE OF CALIBRATION

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Signed:  Date of Issue: 26th July 2017

Certificate Number: _____ Page 1 of 2

Customer Name and Address: Scottish Government
Water, Air, Soils and Flooding Division
Environmental Quality Directorate
Scottish Government
Victoria Quay
Edinburgh
EH6 6QQ

Description: Calibration factors for Highland Councils Inverness Queensgate air monitoring station.

Site / Date Test Carried Out	Species	Analyser Serial No.	Zero Response ¹	Uncertainties ppb	Calibration Factor ²	Uncertainties %	Converter eff. (%) ³
Inverness Queensgate 23 rd January 2017	NO _x	2624	2.0	2.5	1.0431	3.5	97.6
	NO		0.4	2.5	1.0610	3.5	

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

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The gaseous ambient analysers listed above have been tested for zero response, calibration factor, linearity and converter efficiency (NO_x analysers only) by documented methods. The factors have been calculated using certified gas standards. The particulate analysers listed above have been tested for sample flow rates and k₀ (where appropriate) by documented methods. Note that the test results are valid on the day of test only, as analyser drift over time cannot be quantified. All results for gaseous species are given in ppb (parts per billion) mole fractions or ppm (parts per million) mole fractions.

¹The zero response is the zero reading on the data logging system of the analyser when audit zero gas was introduced to the analysers under test.

²The calibration factor is the multiplying factor required to scale the reading on the data logging system of the analyser into reported concentration units (ppb for NO, NO_x, SO₂, O₃ and ppm for CO. Where 1 ppm = 1000 ppb). It should be used in conjunction with the zero response. A corrected concentration is calculated using the following equation:

Concentration = F (Output - Zero Response)

Where F = Calibration Factor provided on this certificate
Output = Reading on the data logging system of the analyser
Zero Response = Zero Response provided on this certificate

³Converter eff. is the measured efficiency of the NO₂ to NO converter within the oxides of nitrogen analyser under test.

The calibration results shaded are those that fall out with our scope of accreditation, all other results on this certificate are not UKAS accredited, but have been included for completeness.