METHOD STATEMENT

Determinand:
Alkalinity

Matrix:
Final effluents, Trade effluents, untreated effluents, ground waters, landfill leachates, soil leachates and surface waters.

Principle of Method:
The alkalinity of natural or treated waters is usually due to the presence of bicarbonate, carbonate and hydroxide compounds of calcium, magnesium, sodium and potassium. In natural waters the alkalinity is mostly due to calcium bicarbonate. The total alkalinity is determined by titration of the sample with a strong acid and instrumental detection of end point at pH 4.5. Alkalinity to pH 8.3 can also be determined. Results are reported in mg/l expressed as calcium carbonate ($CaCO_3$).

Sampling and Sample Preparation:
There is no preservative required for alkalinity analysis. Samples should be analysed as soon as possible after receipt. Samples should be allowed to reach room temperature prior to analysis.

Samples are stable for 28 days (In-House Data) from sampling.

Interferences:
The instrumental titration method is free from interference, from strongly coloured or turbid samples, which affect the visual detection of the titration end point using the colorimetric method. Difficulties in instrumental end point detection may be experienced in the presence of organic substances.

Performance of Method:

Range of Application:	2.8-2000mg/l uncorrected result from titrator as $CaCO_3$
Limit of Detection:	2.7829mg/l
Normal reporting level:	2.8mg/l

Instrument	Range mg/l	LOD mg/l	MRL mg/l	Low Standard		High Standard	
				%RSD	Rec%	%RSD	Rec %
Robot 4	2.8-2000	2.2	2.8	2.74	102.06	1.83	99.87

Instrument	Treated effluent		Trade Effluent		Untreated sewage		Land leachate		Surface water	
	%RSD	Rec %	%RSD	Rec %	%RSD	Rec %	%RSD	Rec %	%RSD	Rec %
Robot 4	3.10	94.93	2.23	97.86	2.26	91.05	2.12	93.8	4.68	94.36

Instrument	Groundwater		Prepared Leachate		Recreational Water		Clean process water		Dirty process water	
	%RSD	Rec %	%RSD	Rec %	%RSD	Rec %	%RSD	Rec %	%RSD	Rec %
Robot 4	2.23	99.99	2.31	98.89	3.02	92.74	2.95	92.70	1.38	90.86

Uncertainty of Measurement

The reported uncertainty is an expanded uncertainty calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.

Determinand	Uncertainty of Measurement (%)
Alkalinity	20.81

References:

The Determination of Alkalinity and Acidity in Water. 1981. Methods for the Examination of Waters and Associated Materials. HMSO. ISBN 0117516015.