METHOD STATEMENT

Determinand:
Preparation and digestion for subsequent analysis of metals by ICP-OES and ICP-MS.

Matrix:
Sample Type: Raw, Potable, Surface and Ground waters

Principle of Method:
Prior to the analysis of a samples on the ICP-OES or ICP-MS, the sample must be acidified with nitric acid and then digested at a temperature of 80 ± 5°C for a minimum of 6 hours.
Potable water samples, either raw samples or samples in distribution can contain particulate metals / metal oxides. These may come from the water distribution main, domestic plumbing, or natural sources. To determine the total levels of metals in a sample, the sample is acidified and heated so that any metal / metal oxide particulate matter dissolves and a total metals result is obtained. To determine the dissolved metals (filtered metals) in the sample, the samples should be filtered through a 0.45 µm filter prior to acidification to remove any particulate matter.

Sampling and Sample Preparation:
Samples are normally collected in polyethylene bottles.
On receipt at the laboratory the samples are acidified with concentrated nitric acid such that the final concentration of acid is ~1% V/V (e.g. 1 ± 0.10 cm3 of acid to each 100 ± 10 cm3 of sample). Following acidification, the samples should be digested in the oven provided at 80°C ± 5 °C for a minimum of 6 hours and allowed to cool prior to analysis
The samples should be filtered (if required and they have not already been filtered on site), acidified and digested on receipt at the laboratory. Samples should be analysed within 1 month of sampling.

Interferences
Not applicable to this method

Performance of Method:

Range of Application:
Not applicable to this method

Limit of Quantification:
Not applicable to this method

Recoveries of Compounds, Bias and Uncertainty of measurement:
Not applicable to this method

References:
In-house Method WPC12- Dissolved and total metals in raw, potable, surface and groundwaters by ICP-OES
In-house Method WPC15 - Dissolved and total metals in raw, potable, surface and groundwaters by ICP-MS
In-house Method WPC49- Dissolved (Filtered) and total metals in raw, potable, surface and groundwaters by AGILENT 720 ICP-OES