


Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

| | | |
|--|--|---|
|  <p>UKAS TESTING 4225</p> <p>Accredited to ISO/IEC 17025:2005</p> | <p>Exova Environmental UK Limited (trading as Exova Jones Environmental)</p> <p>Issue No: 072 Issue date: 27 February 2019</p> | |
| | <p>Unit 3 and Unit 6 Deeside Point Zone 3 Deeside Industrial Park Deeside CH5 2UA</p> | <p>Contact: Alan Wilson Tel: +44 (0)1244 833780 Fax: +44 (0)1244 833781 E-Mail: Alan.Wilson@Exova.com Website: www.jones-environmental.com</p> |
| <p>Testing performed at the above address only</p> | | |

DETAIL OF ACCREDITATION

| Materials/Products tested | Type of test/Properties measured/Range of measurement | Standard specifications/ Equipment/Techniques used |
|--|--|--|
| ASBESTOS IN BULK MATERIALS including materials and products suspected of containing asbestos | <p><u>Health and Hygiene</u></p> <p>Identification of: Amosite Chrysotile Crocidolite Fibrous Actinolite Fibrous Anthophyllite Fibrous Tremolite</p> | <p>Documented in-house method TM065 based on HSG 248:February 2005 using stereo microscopy, polarised light microscopy and dispersion staining</p> |
| ASBESTOS IN SOILS (fibre screening and identification) | <p>Asbestos fibre screening and identification of: Amosite Chrysotile Crocidolite Fibrous Actinolite Fibrous Anthophyllite Fibrous Tremolite</p> | <p>Documented in-house methods PM042S and TM065 using stereo microscopy, polarised light microscopy and dispersion staining</p> |
| ASBESTOS IN SOILS (quantification) | <p>Asbestos fibre screening and quantification of: Amosite Chrysotile Crocidolite Fibrous Actinolyte Fibrous Anthophyllite Fibrous Tremolite</p> | <p>Documented in-house methods PM042S and TM131S using gravimetric and phase contrast microscopy. Subsequent identification using TM065.</p> |



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| PETROLEUM and PETROLEUM PRODUCTS | <p><u>Chemical Tests</u></p> <p>C5-C35 fingerprint (qualitative) and banding</p> <p>>C5-6 >C6-8 >C8-10 >C10-12 >C12-16 >C16-21 >C21-35 >C35</p> <p>Aliphatic/aromatic fractionation and subsequent banding:</p> <p>Aliphatic bands: >C5-C6 >C6-C8 >C8-C10 >C10-C12 >C12-C16 >C16-C21 >C21-C35 >C35+</p> <p>Aromatic bands (equivalent carbon EC): >C6-C8 >C8-C10 >C10-C12 >C12-C16 >C16-C21 >C21-C35 >C35+</p> | <p>In-house method TM001P using GC-FID</p> <p>In-house method TM001P using GC-FID (cont'd)</p> |



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| <p>AIR</p> <p>Ambient Air/Soil Vapour</p> | <p>Volatile Organic Compounds:</p> <p>1,1,1-Trichloroethane 1,1,2,2-Tetrachloroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene 1,2,4-Trimethylbenzene 1,2-Dibromoethane 1,2-Dichlorobenzene 1,2-Dichloroethane 1,2-Dichloropropane 1,3,5-Trimethylbenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene Benzene Bromomethane Carbon Tetrachloride Chlorobenzene Chloroethane Chloroform cis-1,2-Dichloroethene cis-1,3-Dichloropropene Ethylbenzene m&p - Xylenes Methylene Chloride o-Xylene Styrene Tetrachloroethene Toluene trans-1,3-Dichloropropene Trichloroethene Trichlorofluoromethane Trichlorotrifluoroethane Vinyl Chloride</p> | <p>In-house test method TM068G using preparation method PM 034, using Summa (Silco-can) canisters, Tedlar Bags, Bottle Vac and GC-MS based on USEPA TO15.</p> |



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| SOILS | <p><u>Chemical Tests</u></p> <p>Elements:</p> <p>Arsenic Barium Cadmium Chromium Cobalt Copper Lead Manganese Mercury Molybdenum Nickel Selenium Zinc</p> <p>Water soluble boron</p> <p>Water Soluble Anions: Chloride Total Oxidised Nitrogen (TON) Sulphate</p> <p>Cyanide - Total</p> <p>MTBE benzene toluene ethylbenzene o-xylene m/p-xylene</p> | <p>In-house method TM030S using PM 015S and PM 077S by ICP-OES</p> <p>In-house method TM074 using PM 032 and PM 077S by ICP-OES</p> <p>In-house method TM038 using PM 020S by discrete analyser</p> <p>In-house method TM089W/S using PM 045S by segmented flow analysis</p> <p>In-house method TM031S using PM 012S using headspace GC-FID</p> |



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| SOILS (cont'd) | <p><u>Chemical Tests (cont'd)</u></p> <p>Gasoline Range Organics (GRO) and banding: >C4-C8 >C8-C12 >C5-C6 >C6-C8 >C8-C10 >C10-C12 Total GRO C4-C12 Total GRO C5-C12</p> <p>Also aliphatic/aromatic fractionation and subsequent banding: Aliphatic: >C5-C6 >C6-C8 Aromatic (equivalent carbon EC) >C6-C8 >C8-C10</p> <p>Extractable petroleum hydrocarbons (EPH) in the range: C8-C40 Diesel range organics (DRO) C25-C40 range organics - lubricating oil</p> <p>Extractable petroleum hydrocarbons (EPH) in the range: >C8-C40, including banding: >C8-C10 >C10-C12 >C12-C16 >C16-C21 >C21-C35</p> <p>>C8-C10 >C10-C20 >C20-C30 >C30-C40</p> <p>>C7-C9 >C10-14 >C15-36</p> | <p>In-house method TM 036S using PM 012S, using headspace GC-FID</p> <p>In-house methods PM005S (orbital shaker) or PM006S (soxhlet extraction) or PM008S (end over end shake) followed by TM005S using GC-FID</p> <p>In house methods PM008S (end over end shake) fractionation by RapidTrace workstation PM016 followed by TM005S using GC-FID</p> |



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| SOILS (cont'd) | <p><u>Chemical Tests (cont'd)</u></p> <p>Extractable petroleum hydrocarbons (EPH) including aliphatic/aromatic fractionation and subsequent banding: Aliphatic: >C8-C10 >C10-C12 >C12-C16 >C16-C21 >C21-C35 >C35-C40</p> <p>Aromatic: >C10-C12 >C12-C16 >C16-C21 >C21-C35</p> <p>Loss on ignition at 450 °C</p> <p>pH</p> <p>Total Sulphate</p> <p>BTEX Compounds benzene toluene ethylbenzene o-xylene m/p-xylene</p> <p>Polychlorinated Biphenyls (PCBs): PCB 28/31 PCB 52 PCB 101 PCB 118 PCB 138 PCB 153 PCB 180 PCB 81 PCB 87</p> | <p>In house methods PM008S (end over end shake) fractionation by RapidTrace workstation PM016 followed by TM005S using GC-FID</p> <p>In-house method TM022S using PM 004S</p> <p>In house method TM073 using PM 011S using Metrohm robotic sample processor</p> <p>In-house method PM029S and PM 077 followed by TM050S using ICP-OES</p> <p>In House method TM152 including Methanol preservation (PM104) followed by Headspace GCMS</p> <p>In-house method TM017S using end over end shaker (PM 008) and GC-MS</p> |



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| SOILS (cont'd) | <u>Chemical Tests (cont'd)</u> Volatile Organic Compounds (cont'd): 1,1-Dichloroethene Dichloromethane Trans-1,2-Dichloroethene 1,1-Dichloroethane Cis-1,2-Dichloroethene Bromochloromethane Chloroform 1,1,1-Trichloroethane 1,1-Dichloropropene Carbontetrachloride 1,2-Dichloroethane Benzene Trichloroethene 1,2-Dichloropropane Dibromomethane Bromodichloromethane Toluene 1,1,2-Trichloroethane Tetrachloroethene 1,3-Dichloropropane Dibromochloromethane 1,2-Dibromoethane Chlorobenzene 1,1,1,2-Tetrachloroethane Ethylbenzene m/p Xylene o Xylene Isopropylbenzene 1,1,2,2 Tetrachloroethane 1,2,3-Trichloropropane Propylbenzene 1,3,5-Trimethylbenzene Tert-Butylbenzene 1,2,4-Trimethylbenzene Sec-Butylbenzene 4-Isopropyltoluene 1,4-Dichlorobenzene 1,3-Dichlorobenzene n-Butylbenzene 1,2-Dichlorobenzene | In-house method TM015S using PM 010S by headspace GC-MS |



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| SOILS (cont'd) Leachate preparation (10:1) (cont'd) | <u>Chemical Tests (cont'd)</u> Metals (cont'd): Iron Lead Magnesium Manganese Mercury Molybdenum Nickel Nitrite Phosphate Phosphorus Potassium Selenium Sodium Sulphate Thallium Vanadium Zinc | PM017S 10:1 leachate preparation based on BS EN 12457 |
| WATERS Potable water (tap, non regulatory), Surface water and groundwater | <u>Chemical Tests</u> Volatile Organic Compounds (VOCs): Chloromethane Chloroethane Trichlorofluoromethane 1,1-Dichloroethene Carbon Disulphide Dichloromethane Trans-1,2-Dichloroethene 1,1 - Dichloroethane Cis-1,2-Dichloroethene Bromochloromethane Chloroform 1,1,1-Trichloroethane 1,1-Dichloropropene Carbontetrachloride 1,2-Dichloroethane Benzene Trichloroethene 1,2-Dichloropropane Dibromomethane Bromodichloromethane Toluene 1,1,2-Trichloroethane | In-house method PM010 and TM015W by headspace GC-MS |



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| WATERS (cont'd) Potable water (tap non regulatory), Surface water and groundwater (cont'd) | <u>Chemical Tests (cont'd)</u> Volatile Organic Compounds (VOCs): (cont'd) Tetrachloroethene 1,3,-Dichloropropane Dibromochloromethane 1,2-Dibromoethane Chlorobenzene 1,1,1,2-Tetrachloroethane Ethylbenzene m/p Xylene o Xylene Bromoform Isopropylbenzene Bromobenzene 1,2,3-Trichloropropane Propylbenzene 2-Chlorotoluene 1,3,5-Trimethylbenzene 4-Chlorotoluene Tert-Butylbenzene 1,2,4-Trimethylbenzene Sec-Butylbenzene 4-Isopropyltoluene 1,3- Dichlorobenzene 1,4-Dichlorobenzene n-Butylbenzene 1,2-Dichlorobenzene MTBE Vinyl Chloride | In-house method PM010 and TM015W by headspace GC-MS |
| Potable water (tap non regulatory), Surface water and groundwater | Volatile Organic Compounds (VOCs): MTBE Chloromethane Vinyl Chloride Bromomethane Chloroethane Trichlorofluoromethane Diethyl Ether 1,1-Dichloroethene Carbon Disulphide Acrylonitrile Trans-1,2-Dichloroethene 1,1 - Dichloroethane Cis-1,2-Dichloroethene | In-house method TM 128 using PM 115W by Purge and Trap GC-MS |



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| <p>WATERS (cont'd)</p> <p>Potable water (tap non regulatory), Surface water and groundwater (cont'd)</p> | <p><u>Chemical Tests (cont'd)</u></p> <p>Volatile Organic Compounds (VOCs) (cont'd):</p> <p>Propionitrile Methyl Acrylate Bromochloromethane Methacrylonitrile 1,1,1-Trichloroethane 1-Chlorobutane 1,1-Dichloropropene Carbontetrachloride 1,2-Dichloroethane Benzene Trichloroethene 1,2-Dichloropropane Dibromomethane Toluene Cis-1,3-Dichloropropene Methyl Methacrylate Trans-1,3-Dichloropropene 1,1,2-Trichloroethane Tetrachloroethene 1,3-Dichloropropane 1,2-Dibromoethane Chlorobenzene 1,1,1,2-Tetrachloroethane Ethylbenzene m/p Xylene o Xylene Bromoform Isopropylbenzene 1,1,2,2 Tetrachloroethane Bromobenzene 1,2,3-Trichloropropane Trans-1,4-dichloro-2-butene 2-Chlorotoluene 1,3,5-Trimethylbenzene 4-Chlorotoluene Tert-butylbenzene 1,2,4-Trimethylbenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2,4-Trichlorobenzene Hexachlorobutadiene Naphthalene 1,2,3-Trichlorobenzene</p> | <p>In-house method TM 128 using PM 115W by Purge and Trap GC-MS</p> |



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| WATERS (cont'd) | <u>Chemical Tests (cont'd)</u> | |
| Surface Water and groundwater | Phenols Cresols Xylenols | In-house method TM026 using PM 067W, using HPLC |
| Surface Water and groundwater | Hexavalent Chromium | In house method TM038 using PM 031W, by an Automated photometric Analyser |
| Surface Water and groundwater | Dissolved Gases: Ethane Ethene Methane | In house method TM025 using GC-TCD-FID |
| Potable water (non-regulatory), surface water and groundwater | Extractable petroleum hydrocarbons (EPH) including banding: >C10-C12 >C12-C16 >C16-C21 >C21-C35 >C35-C40 Total EPH >C10-C40 | In-house method TM005 by GC-FID using stir bar extraction (PM030W) and fractionation by RapidTrace workstation PM016 |
| Potable water (non-regulatory), surface water and groundwater | And including aliphatic/aromatic fractionation and subsequent banding Aliphatic: >C10-C12 >C12-C16 >C16-C21 >C21-C35 >C35-C40 Total Aliphatic (>C10-C40) Aromatic (equivalent carbon EC): >C10-C12 >C12-C16 >C16-C21 >C21-C35 >C35-C40 Total Aromatic (>C10-C40) | |



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| <p>WATERS (cont'd)</p> <p>Potable water (non-regulatory), surface water and groundwater</p> | <p><u>Chemical Tests (cont'd)</u></p> <p>Semi-Volatile Organic Compounds (SVOCs):</p> <p>1,2,4-Trichlorobenzene 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 2,4,5-Trichlorophenol 2,4-Dichlorophenol 2,4-Dinitrotoluene 2-Chloronaphthalene 2-Chlorophenol 2-Methylnaphthalene 2-Methylphenol</p> <p>4-Bromophenyl phenyl ether 4-Chloro-3-methylphenol 4-Chlorophenyl phenyl ether</p> <p>Acenaphthene Acenaphthylene Anthracene Azobenzene Benz[a]anthracene Benzo[b/k]fluoranthene Benzo[ghi]perylene Bis(2-Chloroethyl)ether Bis(2-chloroethoxy)methane Carbazole Chrysene Dibenz[a,h]anthracene Dibenzofuran Diethyl phthalate Di-n-Butyl phthalate Fluoranthene Fluorene Hexachlorobenzene Hexachlorobutadiene Hexachloroethane Isophorone Naphthalene Nitrobenzene N-Nitrodi-n-propylamine Phenanthrene Pyrene</p> | <p>In-house method TM016 using stir bar extraction (PM030W) followed by GC-MS analysis</p> |



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| <p>WATERS (cont'd)</p> <p>Drinking water (non regulatory tap water), Groundwater, Surface Water (river water)</p> <p>(excluding tap water)</p> <p>(excluding tap and river water)</p> <p>Surface water, groundwater and leachate from landfill</p> <p>Surface water, groundwater and leachate from landfill (cont'd)</p> | <p><u>Chemical Tests (cont'd)</u></p> <p>Metals:</p> <p>Aluminium Antimony Arsenic Barium Beryllium Boron Cadmium Chromium Cobalt Copper Iron Lead Manganese Mercury Molybdenum Nickel Phosphorous Selenium Thallium Tin Vanadium Zinc</p> <p>Extractable petroleum hydrocarbons (EPH) in the range: C8-C40</p> <p>Alkalinity</p> <p>pH</p> <p>Electrical Conductivity at 25 °C</p> | <p>In house method TM170W using PM 014W by ICP-MS</p> <p>In-house method TM005 by GC-FID using stir bar extraction (PM030W)</p> <p>In house method TM075 using PM 031W using robotic sample processor</p> <p>In house method TM073 using PM 031W using robotic sample processor</p> <p>In house method TM076 using PM 031W using robotic sample processor</p> |



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| <p>WATERS (cont'd)</p> <p>Surface water, groundwater, Tap water (non-regulatory) and prepared leachate</p> <p>Surface water, groundwater and leachate from landfill</p> | <p><u>Chemical Tests (cont'd)</u></p> <p>Total Organic Carbon Dissoved Organic Carbon Total Inorganic Carbon Dissolved Inorganic Carbon Total Carbon</p> <p>Biochemical Oxygen Demand (BOD)</p> <p>Biochemical Oxygen Demand (BOD)</p> <p>Polycyclic Aromatic Hydrocarbons (PAHs):</p> <p>Naphthalene Acenaphthene Acenaphthylene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Benz(a)anthracene Benzo(b/k)fluoranthene Benzo(a)pyrene Indeno(123,cd)pyrene Dibenzo(ah)anthracene Benzo(ghi)perylene Chrysene</p> | <p>In-house method TM060W by TOC analyser</p> <p>In house method TM058 using DO probe and meter</p> <p>In house method TM058 using Manometric Bottle top sensors</p> <p>In-house method TM004W using stir bar extraction (PM030W) and GC-MS</p> |



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| <p>WATERS (cont'd)</p> <p>Surface water, groundwater, leachate prepared from soils and leachate from landfill</p> | <p><u>Chemical Tests (cont'd)</u></p> <p>Elements:</p> <p>Aluminium Antimony Arsenic Barium Cadmium Calcium Cobalt Chromium Copper Iron Lead Mercury Magnesium Manganese Molybdenum Nickel Phosphorus Potassium Selenium Sodium Thallium Vanadium Zinc</p> <p>Mercury</p> | <p>PM017S 10:1 leachate preparation based on BS EN 12457 In-house method TM 030W using PM 014W using ICP-OES</p> |
| <p>Surface water, groundwater, leachate prepared from soils and leachate from landfill</p> | <p>Ammonium Chloride Nitrate (derived) Nitrite Total Oxidised Nitrogen (TON) Phosphate Sulphate</p> <p>Total Solids Total Dissolved Solids</p> <p>Total Suspended Solids</p> | <p>In house method TM061 using PM 031W using CVAFS</p> <p>PM017S 10:1 leachate preparation based on BS EN 12457</p> <p>In-house method TM038 using PM 031W using discrete analyser</p> <p>In-house method TM020W using PM 031W by Gravimetry</p> <p>In-house method TM037W using PM 031W by Gravimetry</p> |



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| <p>WATERS (cont'd)</p> <p>Tap water (non regulatory) surface water, groundwater, leachate prepared from soils and leachate from landfill</p> <p>Landfill leachate and leachate prepared from soil</p> <p>Surface Water and Ground Water</p> <p>SOILS</p> | <p><u>Chemical Tests (cont'd)</u></p> <p>Cyanide - Total and Free</p> <p>Settled Chemical Oxygen Demand</p> <p>Elements: Boron Beryllium</p> <p>Tert-Amyl methyl ether (TAME) Diisopropylether(DIPE) Ethyl-tert-butyl ether (ETBE)</p> <p><u>Chemical Tests (cont'd)</u></p> <p>Gasoline Range Organics (GRO) and banding: >C4-C8 >C8-C12 >C5-C6 >C6-C8 >C8-C10 >C10-C12 Total GRO C4-C12 Total GRO C5-C12</p> | <p>In-house method TM089W/S using PM 031W by segmented flow analysis</p> <p>In-house method TM057W by spectrophotometry</p> <p>PM017S 10:1 leachate preparation based on BS EN 12457 In-house method TM030W using ICP-OES</p> <p>In-house method TM083 by preparation method PM 039W and using Headspace GCMS</p> <p>Documented In-House Method to meet the requirements of the Environment Agency MCERTS Performance Standard - chemical testing of soil</p> <p>In-house method TM 036S using PM 012S by headspace GC-FID</p> |



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| SOILS (cont'd) | <p><u>Chemical Tests (cont'd)</u></p> <p>Gasoline Range Organics (GRO) and banding: (cont'd)</p> <p>Also aliphatic/aromatic fractionation and subsequent banding: Aliphatic: >C5-C6 >C6-C8 Aromatic (equivalent carbon EC): >C6-C8 >C8-C10</p> <p>Extractable petroleum hydrocarbons (EPH) in the range: C8-C40 Diesel range organics (DRO) C25-C40 range organics - lubricating oil</p> <p>Extractable petroleum hydrocarbons (EPH) in the range: >C8-C40, including banding: >C8-C10 >C10-C12 >C12-C16 >C16-C21 >C21-C35</p> <p>>C8-C10 >C10-C20 >C20-C30 >C30-C40</p> | <p>Documented In-House Method to meet the requirements of the Environment Agency MCERTS Performance Standard - chemical testing of soil (cont'd)</p> <p>In-house method TM 036S using PM 012S by headspace GC-FID (cont'd)</p> <p>In-house methods PM008S (end over end shake) followed by TM005S using GC-FID</p> <p>In house methods PM008S (end over end shake) fractionation by RapidTrace workstation PM016 followed by TM005S using GC-FID</p> |



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Schedule of Accreditation
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United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

Exova Environmental UK Limited
(Trading as Exova Jones Environmental)
Issue No: 072 Issue date: 27 February 2019

Testing performed at main address only

| Materials/Products tested | Type of test/Properties measured/Range of measurement | Standard specifications/ Equipment/Techniques used |
|---------------------------|---|--|
| SOILS (cont'd) | <p><u>Chemical Tests (cont'd)</u></p> <p>Extractable petroleum hydrocarbons (EPH) (cont'd)</p> <p>And including aliphatic/aromatic fractionation and subsequent banding: Aliphatic: >C8-C10 >C10-C12 >C12-C16 >C16-C21 >C21-C35 >C35-C40</p> <p>Polycyclic Aromatic Hydrocarbons (PAHs):</p> <p>Naphthalene Acenaphthene Fluorene Phenanthrene Fluoranthene Chrysene Benzo(b/k)fluoranthene Indeno(123,cd)pyrene</p> <p>Phenols: Phenol m/p-Cresol Xylenols 2,3,5-Trimethylphenol 2-Isopropylphenol</p> | <p>Documented In-House Method to meet the requirements of the Environment Agency MCERTS Performance Standard - chemical testing of soil (cont'd)</p> <p>In house methods PM008S (end over end shake) fractionation by RapidTrace workstation PM016 followed by TM005S using GC-FID (cont'd)</p> <p>In-house method TM004S using end over end shake (PM008S) and GC-MS</p> <p>In-house method TM026 using solvent extraction (PM021S) and HPLC</p> |



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|---------------------------|--|--|
| SOILS (cont'd) | <p><u>Chemical Tests (cont'd)</u></p> <p>Elements: Arsenic Barium Cadmium Chromium Cobalt Copper Lead Manganese Mercury Molybdenum Nickel Selenium Zinc</p> <p>Water soluble boron</p> <p>Water Soluble Anions: Chloride Nitrite Nitrate (derived) Total Oxidised Nitrogen (TON) Sulphate</p> <p>Cyanide - Total</p> | <p>Documented In-House Method to meet the requirements of the Environment Agency MCERTS Performance Standard - chemical testing of soil (cont'd)</p> <p>In-house method TM030S using PM 015S and PM 077S by ICP-OES</p> <p>In-house method TM074 by PM 015S and PM 077S by ICP-OES</p> <p>In-house method TM038 by PM 020S by discrete analyser</p> <p>In-house method TM089W/S by PM 045S by segmented flow analysis</p> |

