Field category	Field sub-category	Field name	Units or options	Field description	Additional notes
Identifiers		**STUDY** **SITE** **HARVEST/SAMPLING TIME** **STORAGE** **PLANT PART** **LOCATION WITHIN SITE** **OTHER**			
		FR Reference code		Sample identification code from Forest Research	
		Plant Species		Plant species (Miscanthus/Willow/Poplar/Sitka Spruce)	
		Climate zone		Local climate categorization from GIS climate layer	
		Age (years)		Age (years)of plant or length of last rotation	
		replicate	1-3	Which one of three replicate samples from identical climate and soil conditions	
		GIS soil type		Local soil type from GIS soil layer	
		Actual analysed soil type		Soil type categorization from sample analysis	
		Plant part		Part(s) of plant included in sample (Whole Plant/Stem/Top/Bark/Leaves)	
		Month		Month of sample collection	
		Sample collection location/time		Site from which sample is collected, and time	
	Analysis undertaken	A		Group A analysis: Major fuel properties	
		B		Group B analysis: Ash composition and trace metals in ash	
		C		Group C analysis: Extended trace elements	
		D		Group D analysis: Halides: Fluorine and Bromine	
		E		Group E analysis: Ash fusion temperatures	
		F		Group F analysis: Soil analyses	
		G		Group G analysis: Bulk density	
Major fuel properties - analysis group A	As Received fuel basis	Moisture content	wt%	Moisture content of sample as a percentage of total, fresh sample weight (wet basis)	
		Volatile matter	wt%	Proportion of dry, ash free sample, driven off at 900°C	
		Fixed carbon	wt%	Proportion of dry, ash free sample left after heating to 900°C (volatile matter driven off)	
		Ash	wt%	Non-combustible mineral content of sample	
		GCV	kJ/kg	Gross calorific value	Total energy in sample, assuming water vapour produced is condensed and the energy recovered
		Sulphur	wt%	Percentage of Sulphur in sample, as received	
		Chlorine	wt%	Percentage of Chlorine in sample, as received	
		H	%	Percentage of Hydrogen in sample, as received	
		NCV	kJ/kg	Net clorific value	Energy in sample, assuming water vapour produced is not condensed
	Dry Fuel Basis Analysis	Ash	%	Percentage of non-combustible mineral content in dry sample	
		GCV	kJ/kg	Gross calorific value of dry sample	Total energy in sample, assuming water vapour produced is condensed and the energy recovered
		C	%	Percentage of Carbon in dry sample	
		N	%	Percentage of Nitrogen in dry sample	
		H	%	Percentage of Hydrogen in dry sample	
		S	%	Percentage of Sulphur in dry sample	
		Cl	%	Percentage of Chlorine in dry sample	
	On a 'Dry, Ash-free' basis	Volatile matter	wt%	Proportion of dry, ash free sample, driven off at 900°C	
		GCV	kJ/kg	Gross calorific value	Total energy in sample, assuming water vapour produced is condensed and the energy recovered
		C	%	Percentage of Carbon in dry sample on ash free basis	
		H	%	Percentage of Nitrogen in dry sample on ash free basis	
		N	%	Percentage of Hydrogen in dry sample on ash free basis	
		S	%	Percentage of Sulphur in dry sample on ash free basis	
		Cl	%	Percentage of Chlorine in dry sample on ash free basis	
		O	%	Percentage of Oxygen in dry sample on ash free basis	
Trace elements - analysis group B,C,D	B	Ba	mg/kg dry fuel	Barium content in dry sample	
	B	Be	mg/kg dry fuel	Beryllium content in dry sample	
	B	Cr	mg/kg dry fuel	Chromium content in dry sample	
	B	Co	mg/kg dry fuel	Cobalt content in dry sample	
	B	Cu	mg/kg dry fuel	Copper content in dry sample	
	B	Mo	mg/kg dry fuel	Molybdenum content in dry sample	
	B	Ni	mg/kg dry fuel	Nickel content in dry sample	
	B	V	mg/kg dry fuel	Vanadium content in dry sample	
	B	Zn	mg/kg dry fuel	Zinc content in dry sample	
	C	Sb	mg/kg dry fuel	Antimony content in dry sample	
	C	As	mg/kg dry fuel	Arsenic content in dry sample	
	C	Hg	mg/kg dry fuel	Mercury content in dry sample	
	D	F	mg/kg dry fuel	Fluorine content in dry sample	
	D (Not UKAS)	Br	mg/kg dry fuel	Bromine content in dry sample	
	C	Se	mg/kg dry fuel	Selenium content in dry sample	
	C	Cd	mg/kg dry fuel	Cadmium content in dry sample: GFAAS value if available, otherwise value from ICP	
	C	Pb	mg/kg dry fuel	Lead content in dry sample: GFAAS value if available, otherwise value from ICP	
	B	Al	mg/kg dry fuel	Aluminium content in dry sample; back calculated from ash oxide composition	
	B	Ca	mg/kg dry fuel	Calcium content in dry sample; back calculated from ash oxide composition	
	B	Fe	mg/kg dry fuel	Iron content in dry sample; back calculated from ash oxide composition	
	B	K	mg/kg dry fuel	Potassium content in dry sample; back calculated from ash oxide composition	
	B	Mg	mg/kg dry fuel	Magnesium content in dry sample; back calculated from ash oxide composition	
	B	Mn	mg/kg dry fuel	Manganese content in dry sample; back calculated from ash oxide composition	
	B	Na	mg/kg dry fuel	Sodium content in dry sample; back calculated from ash oxide composition	
	B	P	mg/kg dry fuel	Phosphorous content in dry sample; back calculated from ash oxide composition	
	B	Si	mg/kg dry fuel	Silicon content in dry sample; back calculated from ash oxide composition	
	B	Ti	mg/kg dry fuel	Titanium content in dry sample; back calculated from ash oxide composition	
Major ash oxides - analysis group B		Al2O3	as analysed, %wt in ash	Alumina in ash	
		BaO	as analysed, %wt in ash	Barium oxide in ash	
		CaO	as analysed, %wt in ash	Calcium oxide in ash	
		Fe2O3	as analysed, %wt in ash	Ferric (Iron(III)) oxide in ash	
		K2O	as analysed, %wt in ash	Potassium oxide in ash	
		MgO	as analysed, %wt in ash	Magnesium oxide in ahs	
		Mn3O4	as analysed, %wt in ash	Manganese(II,III) oxide in ash	
		Na2O	as analysed, %wt in ash	Sodium oxide in ash	
		P2O5	as analysed, %wt in ash	Phosphorus (pent-)oxide in ash	
		SO3	as analysed, %wt in ash	Sulphur (tri-)oxide in ash	
		SiO2	as analysed, %wt in ash	Silica (silicon oxide) in ash	
		TiO2	as analysed, %wt in ash	Titanium oxide in ash	
		Al2O3	ash oxides, %wt dry ash normalised for SO3 and Ca expressed as CaCO3	Alumina in ash	
		BaO	ash oxides, %wt dry ash normalised for SO3 and Ca expressed as CaCO3	Barium oxide in ash	
		CaCO3	ash oxides, %wt dry ash normalised for SO3 and Ca expressed as CaCO3	Calcium oxide in ash	
		Fe2O3	ash oxides, %wt dry ash normalised for SO3 and Ca expressed as CaCO3	Ferric (Iron(III)) oxide in ash	
		K2O	ash oxides, %wt dry ash normalised for SO3 and Ca expressed as CaCO3	Potassium oxide in ash	
		MgO	ash oxides, %wt dry ash normalised for SO3 and Ca expressed as CaCO3	Magnesium oxide in ahs	
		Mn3O4	ash oxides, %wt dry ash normalised for SO3 and Ca expressed as CaCO3	Manganese(II,III) oxide in ash	
		Na2O	ash oxides, %wt dry ash normalised for SO3 and Ca expressed as CaCO3	Sodium oxide in ash	
		P2O5	ash oxides, %wt dry ash normalised for SO3 and Ca expressed as CaCO3	Phosphorus (pent-)oxide in ash	
		SiO2	ash oxides, %wt dry ash normalised for SO3 and Ca expressed as CaCO3	Silica (silicon oxide) in ash	
		TiO2	ash oxides, %wt dry ash normalised for SO3 and Ca expressed as CaCO3	Titanium oxide in ash	

			The normalised ash oxides make use of the "as analysed" values, but normalise them as percentages of the measured total ash content on the assumption that Ca is present as CaCO3 rather than CaO, and with S (reported as SO3 in the uncorrected analysis) removed	
		Alkali index	Formula used to predict slagging propensity. Calculated as kg (Na2O+K2O) per GJ (GCV, dry fuel basis). Values above 0.17 indicate a medium slagging propensity, above 0.34 a high slagging propensity	
Ash fusion - analysis group E (sub-contracted)	Reducing conditions	Initial deformation	°C	Temperature at which a cone of ash starts to deform in a reducing atmosphere
		Softening		Temperature at which a cone of ash starts to soften in a reducing atmosphere
		Hemisphere		Temperature at which a cone of ash melts sufficient to form a hemispherical blob in a reducing atmosphere
		Flow		Temperature at which a cone of ash melts, sufficient to start to flow in a reducing atmosphere
	Oxidising conditions	Initial deformation		Temperature at which a cone of ash starts to deform in an oxidising atmosphere
		Softening		Temperature at which a cone of ash starts to soften in an oxidising atmosphere
		Hemisphere		Temperature at which a cone of ash melts sufficient to form a hemispherical blob in an oxidising atmosphere
		Flow	°C	Temperature at which a cone of ash melts, sufficient to start to flow in an oxidising atmosphere
Pellet physical properties		Pellet durability %	%	Mechanical durability of pellets represented by their ability to resist crumbling during mechanical agitation
		Fines content of pellet %	%	Proportion of fine particles (dust) <3.15mm in the pellet sample
		Bulk density	kg/m3	Bulk density of pellets