



Element Materials Technology, Unit C6, Emery Court, The Embankment Business Park, Heaton Mersey, Stockport, SK4 3GL
 Your Element Contact: Scott Pilkington (07825 991 537)
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Site Specific Protocol (SSP) Commissioned by
 North West Biomass

Installation Name & Address

North West Biomass
 Kinmel Bay
 Tir Llwyd Industrial Estate
 Rhyl
 North Wales
 LL18 5JA

EPR Permit: PAN-005139

Dates of the Proposed Monitoring Campaign
 23rd April 2021

SSP Reference Number
 EMT-00712

Release Point References		
1 Stela Drying Stack	2 Stela Drying Stack	CHP Biomass Plant Exhaust

Report Written by
Sean Egan, MCERTS Level 2

Report Date & Version
14th April 2021, Version 1

Report Approved by
Sean Egan Team Leader MCERTS Level 2 MM 17 1416 TE1 TE2 TE3 TE4

Signature of Report Approver (Element)


Name of Client
Chris Ashton

I confirm that I have read and understood the sampling protocol contained in this report, that the sampling location complies with the requirements of all relevant UK legislation, and I am happy for the sampling to proceed.

Date of Client Approval

Signature of Client (for SSP Approval)

CONTACT DETAILS, MONITORING DATES & PERSONNEL

This SSP (Site Specific Protocol) will be updated, if required to include feedback from each visit.

Operator Contact Details

Operator Name	North West Biomass
Site Location	Rhyl
Full Installation Address	Kinmel Bay Tir Llwyd Industrial Estate Rhyl North Wales LL18 5JA
EPR Permit	PAN-005139

	Primary Site Contact	Alternative Site Contact
Contact Name	Chris Ashton	Paul Bamford
Telephone Number	-	-
Fax Number	-	-
Mobile Phone Number	07920 289783	01745 777044
Email Address	chris.ashton@blazersfuels.co.uk	paul.bamford@blazersfuels.co.uk

Monitoring Dates

Dates of Previous Campaign	18th - 19th Decemeber 2019
Job No. of Previous Campaign	EST-5381
Planned Dates of Campaign	23rd April 2021

(If the Planned Dates of the Campaign change at late notice, the SSP will not be re-issued. The final test report will detail the actual monitoring dates.)

Analysis Laboratories (with short name reference as referenced in Part 2 of the SSP)

Element Stockport (EET)	ISO17025 Accreditation Number: 4279
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Stack Emissions Monitoring Personnel

where SCM = Site Campaign Manager

	Position	Name	MCERTS Accreditation	MCERTS Number & Expiry Date	Technical Endorsements
SCM	Team Leader	Sean Egan	MCERTS Level 2	MM 17 1416, April 2022	TE1 TE2 TE3 TE4
	Technician	Christopher Whiteley	MCERTS Level 1	MM 19 1543, July 2024	None

Element Site Campaign Manager Contact Details

Name	Mobile Phone Number	Email Address
Sean Egan	07557 172 013	sean.egan@element.com

Further Notes on Stack Emissions Monitoring Personnel

There may be, in exceptional circumstances, a need to change the personnel who will be performing the monitoring. If this was to occur, the sampling team sent to site will hold all the necessary MCERTS Technical Endorsements for the required tests. As this scenario would most likely happen at late notice, the SSP will not be re-issued. The names of the monitoring personnel will be available to the client on the day of sampling (or before if required for inductions / site security / permits to work). The names of the monitoring personnel along with their personal MCERTS accreditation details will also be detailed in the final test report.

DETAILS OF MONITORING: STACK AND LOCATION DETAILS

Release Point Reference	1 Stela Drying Stack
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Sampling Location and Stack Photos



Operating & Process Information	Details
Type of Process	Drying Process
Batch or Continuous Process	Continuous
Feedstock / Fuel Type	Wood Chip / Waste Heat
Load / Throughput / Continuous Rating of Plant	Typical
Expected Velocity, Temperature & Moisture	5.68 m/s 29.6 °C 1.49 % v/v
Details of Abatement System	Bag Filter & Cyclone
Details of any CEMS Installed (including DCS)	None
Process Details Required	Operating conditions to be Provided by Site Contact
Reference Conditions 1	273K, 101.3kPa, without correction for water vapour content.
Reference Conditions 2	N/A

Sampling Location Details	Value	Details
Stack Type / Shape	Circular	Outside - no shelter
Diameter / Dimensions (m)	2.00	
Access	Ladder	
Platform Type and Location	MEWP	
Orientation of Duct	Vertical	
Sample Port Size / Diameter	3" Flange	
Sample Port Depth (cm)	14	
Sample Ports Correctly Located?	Yes	
Number of Sampling Lines Available	2	
Number of Sampling Lines to be Used	2	
Number of Sample Points to be Used (per line)	8	Due to the nature of the restricted access, it will not be possible to sample all of the points on the available lines.
Total Number of Sample Points to be Used	16	Due to the nature of the restricted access, it will not be possible to sample all of the points on the available lines.
EN 15259 / Homogeneity Representative Point/s	-	N/A
Availability of Utilities	Power	110V & 240V
	Lighting	Yes
	Water	No

EA Technical Guidance Note M1 / EN 15259 Platform Requirements	Value
Sufficient working area to manipulate probe and operate the measuring instruments	No
Platform has 2 levels of handrails (approx. 0.5m & 1.0m high)	N/A
Platform has vertical base boards (approx. 0.25m high)	N/A
Platform has chains / self closing gates at top of ladders	N/A
There are no obstructions present which hamper insertion of sampling equipment	Yes
Safe Access Available	Yes
Easy Access Available	Yes

Sampling Platform / Improvement Recommendations:

All platforms should be designed in accordance with the requirements in the Environment Agency's Technical Guidance Note M1 and EN 15259.

Sampling Plane Validation Criteria		
Requirement	Value	Compliant
Lowest Differential Pressure (Pa)	25	Yes
Ratio of Gas Velocities (:1)	1.1	Yes
Maximum Angle of Swirl (°)	0	Yes
No Local Negative Flow	Yes	Yes

DETAILS OF MONITORING: SAMPLING METHOD INFORMATION

Release Point Reference **1 Stela Drying Stack** (continued)

In the "Units" column, ¹ = Reference Conditions 1, ² = Reference Conditions 2

PERIODIC SAMPLING: MANUAL METHODS														
Determinand	Number of Runs Blanks	Units	Emission Limit	Expected Emission	Projected LOD	Standard Reference Method	Element Technical Procedure	Absorption Media / Analysis Technique	Analysis Lab ISO17025 status	Sample Duration (mins)	Sample Flowrate (ACTUAL) (l/min)	Sample Volume (REF) (m³)	Projected MU (%)	Status of Testing
PM ₁₀	1	1	¹ MCERTS	N/A	0.24	37.636	EN 13284-1	CAT-TP-01 / 03	Filter / Gravimetric	EET MCERTS	60	20	0.011	30% MCERTS
PM _{2.5}	1	1	¹ MCERTS	N/A	0.23	28.227	EN 13284-1	CAT-TP-01 / 03	Filter / Gravimetric	EET MCERTS	60	20	0.011	30% MCERTS
Water Vapour	1	0	¹ MCERTS	N/A	1.49	0.100	EN 14790	CAT-TP-05	Gravimetric	EET MCERTS	60	20	N/A	5% MCERTS
Velocity	1	0	¹ MCERTS	N/A	5.68	3.000	EN ISO 16911-1	CAT-TP-41	Pressure & Temp	EET MCERTS	N/A	N/A	N/A	10% MCERTS
Particulate Matter	1	1	¹ MCERTS	50	0.36	0.161	EN 13284-1	CAT-TP-01 / 03	Filter / Gravimetric	EET MCERTS	60	20	1.116	30% MCERTS

Velocity Profile - Source: Previous Testing Campaign

Sampling Line A						
Traverse Point	Depth m	ΔP mmH ₂ O	Temp °C	Wet Density kg/m³	Velocity m/s	Swirl °
STATIC (Units: Pa)		-22.0				
Mean		2.7	29.6	1.142	5.68	
1	0.05	2.6	29.0	1.144	5.53	0.0
2	0.16	2.8	29.0	1.144	5.74	0.0
3	0.29	3.0	29.0	1.144	5.94	0.0
4	0.45	2.8	29.0	1.144	5.74	0.0
5	0.68	2.6	30.0	1.141	5.54	0.0
6	1.32	2.6	30.0	1.141	5.54	0.0
7	1.55	2.8	30.0	1.141	5.75	0.0
8	1.71	2.6	30.0	1.141	5.54	0.0
9	1.84	2.8	30.0	1.141	5.75	0.0
10	1.95	2.8	30.0	1.141	5.75	0.0

Monitoring Objectives / Unusual Occurrences / Comments / Health & Safety / Expected Deviations from Standard Reference Methods

1	Demonstrate compliance with a set of emission limit values (ELVs) as specified in the Site's Permit
2	Due to the restricted access, it may not be possible to sample at all of the sample points on the available sampling lines
3	N/A
4	N/A

DETAILS OF MONITORING: STACK AND LOCATION DETAILS

Release Point Reference	2 Stela Drying Stack
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Sampling Location and Stack Photos



Operating & Process Information	Details
Type of Process	Drying Process
Batch or Continuous Process	Continuous
Feedstock / Fuel Type	Wood Chip / Waste Heat
Load / Throughput / Continuous Rating of Plant	Typical
Expected Velocity, Temperature & Moisture	7.01 m/s 18 °C 3.68 % v/v
Details of Abatement System	Bag Filter & Cyclone
Details of any CEMS Installed (including DCS)	None
Process Details Required	Operating conditions to be Provided by Site Contact
Reference Conditions 1	273K, 101.3kPa, without correction for water vapour content.
Reference Conditions 2	N/A

Sampling Location Details	Value	Details
Stack Type / Shape	Circular	Outside - no shelter
Diameter / Dimensions (m)	0.88	
Access	Ladder	
Platform Type and Location	MEWP	
Orientation of Duct	Vertical	
Sample Port Size / Diameter	3" Flange	
Sample Port Depth (cm)	14	
Sample Ports Correctly Located?	Yes	
Number of Sampling Lines Available	2	
Number of Sampling Lines to be Used	2	
Number of Sample Points to be Used (per line)	8	Due to the nature of the restricted access, it will not be possible to sample all of the points on the available lines.
Total Number of Sample Points to be Used	16	Due to the nature of the restricted access, it will not be possible to sample all of the points on the available lines.
EN 15259 / Homogeneity Representative Point/s	-	N/A
Availability of Utilities	Power	110V & 240V
	Lighting	Yes
	Water	No

EA Technical Guidance Note M1 / EN 15259 Platform Requirements	Value
Sufficient working area to manipulate probe and operate the measuring instruments	No
Platform has 2 levels of handrails (approx. 0.5m & 1.0m high)	N/A
Platform has vertical base boards (approx. 0.25m high)	N/A
Platform has chains / self closing gates at top of ladders	N/A
There are no obstructions present which hamper insertion of sampling equipment	Yes
Safe Access Available	Yes
Easy Access Available	Yes

Sampling Platform / Improvement Recommendations:

All platforms should be designed in accordance with the requirements in the Environment Agency's Technical Guidance Note M1 and EN 15259.

Sampling Plane Validation Criteria		
Requirement	Value	Compliant
Lowest Differential Pressure (Pa)	12	Yes
Ratio of Gas Velocities (:1)	1.5	Yes
Maximum Angle of Swirl (°)	12	Yes
No Local Negative Flow	Yes	Yes

DETAILS OF MONITORING: SAMPLING METHOD INFORMATION

Release Point Reference **2 Stela Drying Stack** (continued)

In the "Units" column, ¹ = Reference Conditions 1, ² = Reference Conditions 2

PERIODIC SAMPLING: MANUAL METHODS														
Determinand	Number of Runs Blanks	Units	Emission Limit	Expected Emission	Projected LOD	Standard Reference Method	Element Technical Procedure	Absorption Media / Analysis Technique	Analysis Lab ISO17025 status	Sample Duration (mins)	Sample Flowrate (ACTUAL) (l/min)	Sample Volume (REF) (m³)	Projected MU (%)	Status of Testing
PM ₁₀	1	1	¹ MCERTS	N/A	0.23	#VALUE!	EN 13284-1	CAT-TP-01 / 03	Filter / Gravimetric	EET MCERTS	60	20	#VALUE!	30% MCERTS
PM _{2.5}	1	1	¹ MCERTS	N/A	0.22	#VALUE!	EN 13284-1	CAT-TP-01 / 03	Filter / Gravimetric	EET MCERTS	60	20	#VALUE!	30% MCERTS
Water Vapour	1	0	¹ MCERTS	N/A	3.68	0.100	EN 14790	CAT-TP-05	Gravimetric	EET MCERTS	60	20	N/A	5% MCERTS
Velocity	1	0	¹ MCERTS	N/A	7.01	3.000	EN ISO 16911-1	CAT-TP-41	Pressure & Temp	EET MCERTS	N/A	N/A	N/A	10% MCERTS
Particulate Matter	1	1	¹ MCERTS	50	0.47	0.158	EN 13284-1	CAT-TP-01 / 03	Filter / Gravimetric	EET MCERTS	60	20	1.141	30% MCERTS

Velocity Profile - Source: Previous Testing Campaign

Sampling Line A						
Traverse Point	Depth m	ΔP mmH ₂ O	Temp °C	Wet Density kg/m³	Velocity m/s	Swirl °
STATIC (Units: Pa)		-30.0				
Mean		4.3	18.0	1.178	7.01	
1	0.05	4.4	18.0	1.178	7.09	0.0
2	0.16	4.6	18.0	1.178	7.25	0.0
3	0.29	4.6	18.0	1.178	7.25	0.0
4	0.45	4.6	18.0	1.178	7.25	0.0
5	0.68	4.4	18.0	1.178	7.09	0.0
6	1.32	4.2	18.0	1.178	6.93	0.0
7	1.55	4.0	18.0	1.178	6.76	0.0
8	1.71	4.2	18.0	1.178	6.93	0.0
9	1.84	4.0	18.0	1.178	6.76	0.0
10	1.95	4.0	18.0	1.178	6.76	0.0

Monitoring Objectives / Unusual Occurrences / Comments / Health & Safety / Expected Deviations from Standard Reference Methods

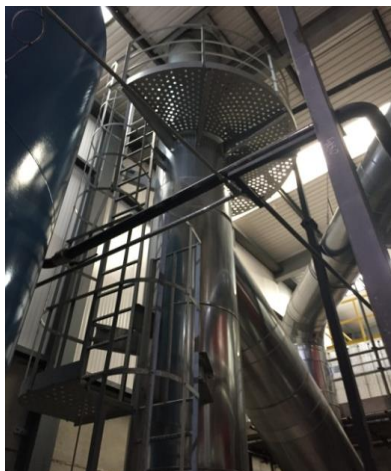
1	Demonstrate compliance with a set of emission limit values (ELVs) as specified in the Site's Permit
2	N/A
3	N/A
4	N/A

DETAILS OF MONITORING: STACK AND LOCATION DETAILS

Release Point Reference

CHP Biomass Plant Exhaust

Sampling Location and Stack Photos



Operating & Process Information	Details
Type of Process	CHP
Batch or Continuous Process	Continuous
Feedstock / Fuel Type	Wood Chip Pallets
Load / Throughput / Continuous Rating of Plant	1 Tonne / Hour
Expected Velocity, Temperature & Moisture	10.3 m/s 150 °C 5.9 % v/v
Details of Abatement System	Bag Filter and Cyclone
Details of any CEMS Installed (including DCS)	None
Process Details Required	Operating conditions to be Provided by Site Contact
Reference Conditions 1	273K, 101.3kPa, dry gas, 11% oxygen.
Reference Conditions 2	N/A

Sampling Location Details	Value	Details
Stack Type / Shape	Circular	Inside Plant building
Diameter / Dimensions (m)	0.88	
Access	Ladder	
Platform Type and Location	Permanent	
Orientation of Duct	Vertical	
Sample Port Size / Diameter	5" Flange	
Sample Port Depth (cm)	34	
Sample Ports Correctly Located?	Yes	
Number of Sampling Lines Available	2	
Number of Sampling Lines to be Used	2	
Number of Sample Points to be Used (per line)	2	
Total Number of Sample Points to be Used	4	
EN 15259 / Homogeneity Representative Point/s	-	
		N/A
Availability of Utilities	Power	110V & 240V
	Lighting	Yes
	Water	No

EA Technical Guidance Note M1 / EN 15259 Platform Requirements	Value
Sufficient working area to manipulate probe and operate the measuring instruments	Yes
Platform has 2 levels of handrails (approx. 0.5m & 1.0m high)	Yes
Platform has vertical base boards (approx. 0.25m high)	Yes
Platform has chains / self closing gates at top of ladders	Yes
There are no obstructions present which hamper insertion of sampling equipment	Yes
Safe Access Available	Yes
Easy Access Available	Yes

Sampling Platform / Improvement Recommendations:

The sampling location meets all the requirements specified in EA Guidance Note M1 and EN 15259, and therefore there are no improvement recommendations.

Sampling Plane Validation Criteria		
Requirement	Value	Compliant
Lowest Differential Pressure (Pa)	51	Yes
Ratio of Gas Velocities (:1)	1.1	Yes
Maximum Angle of Swirl (°)	4	Yes
No Local Negative Flow	Yes	Yes

DETAILS OF MONITORING: SAMPLING METHOD INFORMATION

Release Point Reference **CHP Biomass Plant Exhaust** (continued)

In the "Units" column, ¹ = Reference Conditions 1, ² = Reference Conditions 2

PERIODIC SAMPLING: MANUAL METHODS														
Determinand	Number of Runs Blanks	Units	Emission Limit	Expected Emission	Projected LOD	Standard Reference Method	Element Technical Procedure	Absorption Media / Analysis Technique	Analysis Lab ISO17025 status	Sample Duration (mins)	Sample Flowrate (ACTUAL) (l/min)	Sample Volume (REF) (m³)	Projected MU (%)	Status of Testing
PM ₁₀	1 1	¹ MCERTS	N/A	TBC	0.586	EN ISO 23210	CAT-TP-18 / 03	Cascade Impactor	EET MCERTS	60	20	0.682	30%	MCERTS
PM _{2.5}	1 1	¹ MCERTS	N/A	TBC	0.440	EN ISO 23210	CAT-TP-18 / 03	Cascade Impactor	EET MCERTS	60	20	0.682	30%	MCERTS
Water Vapour	1 0	¹ MCERTS	N/A	2.33	0.100	EN 14790	CAT-TP-05	Gravimetric	EET MCERTS	60	20	N/A	5%	MCERTS
Velocity	1 0	¹ MCERTS	N/A	9.38	3.000	EN ISO 16911-1	CAT-TP-41	Pressure & Temp	EET MCERTS	N/A	N/A	N/A	10%	MCERTS
Particulate Matter	1 1	¹ MCERTS	50	TBC	0.180	EN 13284-1	CAT-TP-01 / 03	Filter / Gravimetric	EET MCERTS	60	20	1.000	30%	MCERTS

PERIODIC SAMPLING: INSTRUMENTAL METHODS														
Determinand	Number of Runs	Units	Emission Limit	Expected Emission	Projected LOD	Standard Reference Method	Element Technical Procedure	Equipment Used	Measurement Technique	Sample Duration (mins) Logging Interval (s)	Span / Check Gas Type & Conc.	Range During Testing	Projected MU (%)	Status of Testing
Oxides of Nitrogen	1	¹ mg/m³	475	200.0	0.40	EN 14792	CAT-TP-21	Horiba PG-250	Chemiluminescence	60 60	400 / NO ppm	500 ppm	10%	MCERTS
Carbon Monoxide	1	¹ mg/m³	225	33.0	0.50	EN 15058	CAT-TP-21	Horiba PG-250	NDIR	60 60	80 ppm	500 ppm	5%	MCERTS
Oxygen	1	¹ % v/v	N/A	14.9	0.10	EN 14789	CAT-TP-21	Horiba PG-250	Zirconia Cell	60 60	21% v/v	25% v/v	5%	MCERTS
Total VOCs	1	¹ mg/m³	30	3.9	0.17	EN 12619:2013	CAT-TP-20	Sick 3006	FID	60 60	80 / C3H8 ppm	100 ppm	5%	MCERTS

Velocity Profile - Source: Previous Testing Campaign

Sampling Line A							Sampling Line B				
Traverse Point	Depth m	ΔP Pa	Temp °C	Wet Density kg/m³	Velocity m/s	Swirl °	ΔP Pa	Temp °C	Wet Density kg/m³	Velocity m/s	Swirl °
STATIC (Units: Pa)		-14.0					-14.0				
Mean		53.5	127.5	0.888	9.09		60.5	128.0	0.887	9.68	
1	0.13	56.0	128.0	0.887	9.31	4.0	59.0	128.0	0.887	9.56	4.0
2	0.75	51.0	127.0	0.889	8.87	2.0	62.0	128.0	0.887	9.80	2.0

Monitoring Objectives / Unusual Occurrences / Comments / Health & Safety / Expected Deviations from Standard Reference Methods

1	Demonstrate compliance with a set of emission limit values (ELVs) as specified in the Site's Permit
2	N/A
3	N/A
4	N/A

DEVIATIONS FROM THE SSP THAT MAY HAVE OCCURED ON SITE DURING THE SAMPLING CAMPAIGN

Make a note of any deviations from this SSP below:

(Deviations may include: modification to a sampling duration, removal of a test, change to the number of sampling runs etc.)

At the end of the sampling campaign, the Team Leader must select one of the statements below and complete the required boxes:

- (1) I certify that all testing performed for this sampling campaign followed the testing programme as detailed in this SSP, and no deviations (unless specified in the original SSP and approved by the client) were required.

<input type="checkbox"/> (tick)	Signature of Team Leader	Date of Signature

- (2) It was necessary to deviate from the testing programme as detailed in this SSP. All deviations are listed above. The client was informed of the deviations and was happy for the testing to proceed / continue on this basis.

(A client signature MUST be obtained for Contract Review purposes)

<input type="checkbox"/> (tick)	Signature of Team Leader	Date of Signature	Signature of Client	Date of Signature