SCHEDULE 9 – ACCEPTANCE TESTS (EXCLUDES TRANSFER LOADING STATION)

CONTENTS

The Readiness Tests and Acceptance Tests described in this Schedule 9 shall be deemed to be completed when each of the component tests described herein have been passed. For the avoidance of doubt, snagging items **will not** prevent the completion of the tests.

"**Snagging**", for the purposes of this Schedule 9, is defined as minor defects, deficiencies, or omissions of a snagging nature which do not prevent safe operation of the ITSAD Facility. Outstanding minor items that prevent the delivery of waste will not be included as snagging.

References to the "**Contract**" in this Schedule 9 are to the project agreement of which this Schedule 9 forms a part.

1 SITE (BOLTON ROAD) TESTS

1.1 Readiness Tests

The following Readiness Tests shall be carried out for the ITS Facility and the AD Facility. The Readiness Test Certificate will be issued upon the later of the passing of the Readiness Tests in respect of the ITS Facility and the passing of the Readiness Tests in respect of the AD Facility.

1.2 Readiness Test - ITS Facility

Works in respect of the ITS Facility which shall for the purpose of this Schedule 9 be deemed to include all of the associated infrastructure, buildings, equipment and structures at the Site (Bolton Road) including the ITS Facility shall be complete when:

1.2.1 all Works are complete and have been constructed in accordance with the final Design Data as set out in Schedule 8 (Design) and Schedule 2 (Works Delivery Plan), in each case of the Contract; and

1.2.2 all external fencing, gates, security equipment, vehicular and pedestrian access are complete as described in section 8 of Schedule 2 (Works Delivery Plan) of the Contract; and

1.2.3 all building services, drains, fire and security related equipment comply with the relevant sections of Schedule 2 (Works Delivery Plan) of the Contract in all material respects; and

1.2.4 all buildings and the Site (Bolton Road) are clean and tidy and all debris and rubbish associated with the construction works have been removed; and

1.2.5 all mechanical and electrical installation work is complete and the ITS Facility and equipment are safe for use; and

1.2.6 all Necessary Consents are in place; and

1.2.7 draft operational and maintenance documentation has been confirmed as available for inspection; and

1.2.8 welfare and amenities available for use by operator staff are operational; and

1.2.9 sufficient, trained and competent staff are available in order to be able to operate the ITS Facility safely in accordance with health and safety Legislation and relevant Necessary Consents; and

1.2.10 the ITS Facility has three (3) functioning and calibrated weighbridges approved by a weights and measures inspector as fit for use in accordance with section 11 of the Weights and Measures Act 1985; and

1.2.11 all health and safety systems as required by the Required Insurances or by law are operational; and

1.2.12 safety information and all relevant signage required by law and to safely manage the commissioning tests is in place and appropriately visible; and

1.2.13 emergency lighting is installed, operable and compliant with BS5266; and

1.2.14 fire suppression systems and fire fighting equipment as required by the Required Insurances or by law are installed and operational; and

1.2.15 sufficient and appropriate mobile plant is available at the ITS Facility for the ITS Facility to function; and

In the event that the Contractor passes all of the above tests, the ITS Facility shall be deemed ready to accept waste.

1.3 Readiness Test - AD Facility

Works in respect of the AD Facility shall be complete when:

1.3.1 the AD Facility is complete and has been constructed in accordance with the final Design Data as set out in Schedule 8 (Design) and Schedule 2 (Works Delivery Plan), in each case of the Contract; and

1.3.2 the AD Facility is clean and tidy and all debris and rubbish associated with the construction works have been removed; and

1.3.3 all mechanical and electrical installation work is complete and the AD Facility and equipment are safe for use; and

1.3.4 all Necessary Consents are in place; and

1.3.5 draft operational and maintenance documentation has been confirmed as available for inspection; and

1.3.6 sufficient, trained and competent staff are available in order to be able to operate the AD Facility safely in accordance with health and safety Legislation and relevant Necessary Consents; and

1.3.7 all health and safety systems as required by the Required Insurances or by law are operational; and

1.3.8 safety information and all relevant signage required by law and to safely manage the commissioning tests is in place and appropriately visible; and

1.3.9 emergency lighting is installed, operable and compliant with BS5266; and

1.3.10 fire suppression systems and fire fighting equipment as required by the Required Insurances or by law are installed and operational; and

1.3.11 sufficient and appropriate mobile plant is available at the AD Facility for the AD Facility to function; and

1.3.12 a HACCP (provisional) is in place as required and such HACCP (provisional) has been accepted by the Animal Health Department.

In the event that the Contractor passes all of the above tests, the AD Facility shall be deemed ready to accept waste.

2 ACCEPTANCE TESTS

2.1 The following Acceptance Tests shall be carried out for the ITS Facility and the AD Facility. The Acceptance Test Certificate will be issued upon the later of the passing of the Acceptance Tests in respect of the ITS Facility and the passing of the Acceptance Tests in respect of the AD Facility.

2.2 The Acceptance Tests shall determine whether the ITSAD Facility is capable of accepting and processing waste. The ITSAD Facility (which shall for the purpose of this Schedule 9 (Acceptance Tests), be deemed to include all of the associated infrastructure, buildings, equipment and structures at the Site (Bolton Road) including the ITS Facility and the AD Facility shall be considered to have passed the Acceptance Tests when:

2.2.1 all emissions monitoring and control equipment as required under the Environmental Permit has been commissioned and are operational and have passed the tests in accordance with Tables 1 and 3 (below) of this Schedule 9. The exception to this is the gas engine, which will require consistent gas volumes to be generated through the dry anaerobic digestion process in order to function. This is unlikely to occur within the acceptance testing timeframe; and

2.2.2 all ventilation, odour and dust suppression systems as set out in Schedule 2 (Works Delivery Plan) and Schedule 3 (Service Delivery Plan), in each case, of the Contract, or otherwise required by Necessary Consents are functional and have passed the tests in accordance with Tables 1 and 3 of this Schedule 9; and

2.2.3 the draft health and safety file is available for inspection; and

2.2.4 draft operating and maintenance instructions are provided for all plant and building equipment; and

2.2.5 draft plant and building drawings recording detailed engineering aspects of the final installation are available for inspection.

2.3 Due to the dependence of the AD Facility on the biological fines that are produced by the ITS Facility, Acceptance Tests involving the AD Facility will not take place until at least fourteen (14) Days after initial receipt of waste to the ITS Facility.

3 ITS FACILITY PROCESS PERFORMANCE TESTS

3.1 Process performance tests will be carried out over twenty eight (28) consecutive Days and will consist of those tests detailed in Table 1 ITS Facility Performance Tests.

3.2 During the period up to and including the process performance test, the Contractor will ensure that the ITSAD Facility is operated and maintained in accordance with the Operating Manuals provided for the ITSAD Facility under the Contract. If the Councils deliver waste to the ITSAD Facility during the process performance test which does not conform with the Waste Acceptance Protocol, the consequential impact of the delivery will be disregarded for the purposes of the process performance test.

4 PROCESS PERFORMANCE TEST PROCEDURES

4.1 The purpose of the performance test is to demonstrate that the ITSAD Facility is achieving the desired performance requirements. Where individual tests have successfully achieved the required criteria, there will be no further requirement for such tests to be repeated. Notwithstanding the foregoing sentence, if repeating one test requires another test also to be repeated because they are technically associated then both tests will be repeated.

4.2 If waste is not available in the quantity required by the ITS Facility, or the waste received and fed to the ITS Facility does not comply with the Waste Acceptance Protocol, or the ITS Facility is not operated in accordance with the Operating Manuals, any guarantee parameters so affected will be adjusted accordingly.

4.3 The individual performance tests are specified in Table 1 ITS Facility Performance Tests and Table 3 AD Facility Performance Tests:

4.4 Table 1 ITS Facility Performance Tests

Test Name	Requirement	Test Description
Turnaround Time		The ITS Facility shall be able, over a two (2) week testing period (within the process performance test period), to weigh, record, discharge, re-weigh (and issue appropriate weighbridge tickets) in relation to all Contract Waste to be treated at the ITS Facility delivered during Normal Opening Hours in line with a turnaround time not exceeding fifteen (15) minutes (for RCVs

Test Name	Requirement	Test Description
		(as defined below) capable of discharging their load automatically in accordance with paragraph 6.11 of the Output Specification from the time taken from the Authorised Vehicle being weighed in at the weighbridge to the Authorised Vehicle being weighed empty once the Authorised Vehicle has deposited the load in the tipping area for at least ninety per cent (90%) of Authorised Vehicles delivering Contract Waste. The Contractor shall not take into account any vehicles that are delayed as a result of breakdown failure or any other failure caused by the Councils as a result of actions of their employees or persons acting on their behalf.
ITS Facility throughput	Greater than or equal to equivalent 250,000 t/annum or (125,000 t/ annum per line)	Throughput will be determined using the total weight of all inputs of Contract Waste per Day. On commencement of the throughput test, the waste reception pit shall be completely cleared of waste as far as is practical. The ITS Facility will run two consecutive fourteen (14) Day cycles. The first cycle shall prove that the ITS Facility can accept up to 250,000 tonnes of Contract Waste per annum with the second cycle proving that the ITS Facility can treat the first cycle of Contract Waste and within such period be able to accept a second cycle of 250,000 tonnes of Contract Waste per annum equivalent. The success of the throughput test assumes that the equivalent of 4,800 tonnes per week (spread evenly over 5.5 Days) of Contract Waste can be delivered to the ITS Facility by the Councils during each Day of testing. Failure of the Councils to deliver at least the equivalent of 4,800 tonnes of Contract Waste per week (spread evenly over 5.5 Days) that can be directly tipped or transferred to the ITS Facility shall not deem the test to be invalid for that Day.

Test Name	Requirement	Test Description
		The throughput test shall be carried out in accordance with the following requirements: (a) Each Authorised Vehicle delivering waste to the ITS Facility shall be weighed in and out to ensure that the gross and tare weights are correctly measured to give an accurate net weight. (b) At the end of each working Day, the reception pits are to be cleared of waste as far as is reasonably practical with the waste passed forward for processing through the ITS Facility. Photographs should be taken of the pits at the end of each working Day to prove that this requirement has been met. (c) At the end of each working Day, a daily tonnage column should be filled in recording the amount of Contract Waste delivered to that Site. A copy of the transfer notes for that Day should be attached to the daily tonnage form. A copy of the photographs taken should also be attached. (d) At the end of the four (4) week period, twenty eight (28) daily tonnage sheets, along with copies of the respective transfer notes and photographs should be made available to the Councils by way of monitoring compliance with the requirements of the throughput test.
ITS Facility acceptance (maximum tonnage)	Less than or equal to equivalent 265,000 t/annum	ITS Facility acceptance will be determined using the total weight of all inputs of Contract Waste per Day. The success of the ITS Facility acceptance (maximum tonnage) test assumes that the equivalent of 5,096 tonnes per week (spread evenly over 5.5 Days) of Contract Waste can be delivered to the ITS Facility by the Councils during each Day of

Test Name	Requirement	Test Description
		testing. The test will be passed if it can be demonstrated that the Facility can process the 4,800 tonnes of waste required in the facility throughput test and transfer the remaining 296 tonnes to a third party site. Failure of the Councils to deliver at least the equivalent of 5,096 tonnes of Contract Waste per week (spread evenly over 5.5 Days) that can be directly tipped or transferred to the ITS Facility shall not deem the test to be invalid for that Day. The ITS Facility acceptance (maximum tonnage) test shall be carried out in accordance with the following requirements: (a) Each Authorised Vehicle delivering waste to the ITS Facility shall be weighed in and out to ensure that the gross and tare weights are correctly measured to give an accurate net weight. (b) At the end of each working Day, a daily tonnage column should be filled in recording the amount of Contract Waste delivered to that Site. A copy of the transfer notes for that Day should be attached to the daily tonnage form. A copy of the photographs taken should also be attached. At the end of the four (4) week period, twenty eight (28) daily tonnage sheets, along with copies of the respective transfer notes and photographs should be made available to the Councils by way of monitoring compliance with the requirements of the ITS Facility acceptance (maximum tonnage) test.
Vehicle Acceptance Test	ITS Facility must also be able to accept up to eight (8) Authorised Vehicles (RCVs) per hour, eight (8)	In order to confirm the availability of the ITS Facility to handle Contract Waste and operate the weighbridges on that basis, the ITS Facility must be able to accept up to eight (8) Authorised Vehicles per hour and eight (8) street sweeping/litter vehicles per Day. A failure by the Councils to deliver a sufficient number of vehicles to the Contractor will not render this test void and the

<table>
<tr><th>Test Name</th><th>Requirement</th><th>Test Description</th></tr>
<tr><td></td><td>street sweeping/litter vehicles per Day</td><td>test will continue as if the Councils had delivered eight (8) Authorised Vehicles per hour or eight (8) street sweeping/litter vehicles per Day (as applicable).

Measured, in the case of RCVs, over one (1) hour commencing upon the weighing in of the 1st vehicle (of a required eight (8)). Test to be conducted three (3) times per week for four (4) weeks.</td></tr>
<tr><td>ITS Facility availability</td><td></td><td>"Facility Availability" means the availability of the reception area (including doors, cranes and shredders) and the biodrying hall and the refinement area of the ITS Facility.

Facility Availability will be determined by recording the number of hours that the process component (listed in the table below) actually operates against its planned running time. Results will be recorded in daily log sheets completed for each of the twenty eight (28) Days of the aforementioned throughput tests. The process component will be deemed to have achieved the required availability if the actual running hours are greater than ninety per cent (90%) of the planned running hours.

<table>
<tr><th>Process component</th><th>90% target running hours</th></tr>
<tr><td>Waste reception
• cranes
• shredders</td><td>16 hours per Day *5.5 Days *4 weeks *90% = 316 hours</td></tr>
<tr><td>Biodrying hall
• cranes
• fans</td><td>24 hours per Day *5.5 Days *4 weeks * 90% = 475 hours</td></tr>
<tr><td>Refinement</td><td>16 hours per Day *5.5 Days *4 weeks *90%</td></tr>
</table>
</td></tr>
</table>

Test Name	Requirement	Test Description
		• Insert component list = 316 hours For the purposes of calculating Facility Availability, stoppages caused by the breakdown of a single biodrying fan or a gantry crane shall not be considered as part of the calculation provided the said fan or gantry crane is put back into service within twenty four (24) hours.
Biodrying performance (moisture loss)	In accordance with Table 2 Biodrying Performance Expectations	Processing performance will be measured using a twenty eight (28) Day mass balance test. Daily input waste moisture samples will be taken for each of the first (1st) fourteen (14) Days of the test and compared to the total weight of outputs removed from the ITS Facility from Day fifteen (15) to Day twenty eight (28). A mass balance calculation will be used to derive the quantum of moisture lost. The sampling and testing methodology for determining ITS System biodrying performance (moisture loss) is outlined below: **1 Sampling Methodology** The sampling procedures are based on Chapter 7 of, "Guidance on monitoring of MBT and other treatment processes for the landfill allowance schemes (LATS and LAS) for England and Wales", Environment Agency October 2009. 1.1 **General Sampling Procedure** The general sampling procedure is in accordance with Section 7.2 of the Guidance. Grab samples will be taken at intervals throughout the Day. The number and size of these will be specific to the material and tests required. These will be combined to form a primary sample, representative of a single Day. The primary sample will then, by systematic sampling, be used to produce an appropriate laboratory sample, according to

Test Name	Requirement	Test Description
		Table 7.1 (of the Guidance), for testing in accordance with a standard laboratory method. 1.2 Municipal Solid Waste (Shredded) Sampling Location: Shredded waste pit Date and time: Every test Day, from test Day 1 to 14 inclusive, from selected loads through out the Day. No of grab samples: 10 Size of grab sample: 300kg Size of lab sample: 100kg Biodrying performance will be compared to the values set out in Table 2 Biodrying Performance Expectations, i.e total in less total out equals moisture loss compared to Table 2. If the moisture level of the incoming waste is higher than the highest value specified in Table 2 (i.e. >41%) then the maximum moisture reduction level expected will be 25% for the purposes of this test. If the moisture level of the incoming waste is lower than the lowest value specified in Table 2 (i.e. 28%) the expected moisture reduction level will be proportionally reduced.
Odour (Bio filters)	Meets 800OUm^3 air purity criteria	Three (3) samples taken from the biofilters during test period. Test will be passed if 2 of the 3 samples are measured at less than 800OU/m^3.
Dust emissions from bag house filters	Meets air purity criteria set by the Environmental Permit	The ITS Facility shall be required to demonstrate, during the performance test, that the treated biodrying air and treated refining system air complies with the air purity criteria set by the Environmental Permit (or any other level as agreed with the Environment Agency) are achieved at the surface of the biofilter,

Test Name	Requirement	Test Description
		and tested using the relevant British Standard.
SRF Quality	Meets SRF specification laid out in the SRF Offtake Contract	The SRF will be tested to ensure compliance with the SRF Specification as detailed in Schedule 1 of Schedule 39 (SRF Offtake Contract).
Overcapacity test for primary shredder		ITS Facility will be provided with 10% additional Contract Waste for a period of three (3) Days to ensure that it can treat the additional volumes to account for seasonal variations primarily linked to bank holidays and also to provide a buffer for the second line.
Recycling performance	Achieve 11% of input if material is available as metal plastic or glass	Test will compare input tonnage to weight of output products, comparing Days one (1) to five (5) with Days fifteen (15) to nineteen (19) respectively. Adjustments for input moisture will be factored into the calculation based on the moisture sample data collected as part of the biodrying performance test described above. Tests passed on a gross overall Recycling performance basis not on individual streams.

1.3 Table 2 Biodrying Performance Expectations

Contract Waste moisture (input) %	Weight loss (output) %
38.0-41.0	≥25
35.0-37.9	≥24
34.0-34.9	≥23
33.0-33.9	≥22
32.0-32.9	≥20.5
29.0-31.9	≥16.6
28.0-28.9	≥16.0

5 AD PROCESS PERFORMANCE

The individual performance tests are specified in Table 3 AD Facility Performance Tests:

5.3 **Table 3 AD Facility Performance Tests**

Test Name	Requirement	Test Description
Facility throughput	Greater than or equal to 90% of 18,000 t/ annum	Over a fourteen (14) Day (five (5) working Days out of seven (7)) period the AD Facility will accept from the ITS Facility 69.23 tonnes per Day of organic fines. If ninety per cent (90%) of these fines are received into the reception area, and then on to the fermentation tunnels in accordance with normal

Test Name	Requirement	Test Description
		operating procedure, the test is passed.
Facility availability	Greater than or equal to 90%,	The AD Facility availability test shall measure the availability of the AD Facility to process waste over the performance test duration. The AD Facility shall be considered as a complete unit. The AD Facility will be considered to be available provided it is capable of processing the waste at the daily design throughput, irrespective of any individual equipment failures. If there are any periods where waste is not available to be treated, these shall be deemed as periods of availability at the maximum design throughput. If during the test, there are periods when the AD Facility is only available at a throughput below the daily design throughput, the availability of the AD Facility during such periods will be correspondingly reduced in direct relation to the shortfall in throughput. The AD Facility availability test will be deemed to be passed if the availability is equal to or greater than ninety per cent (90%) (six hundred and five (605) hours over twenty eight (28) Days). A detailed log shall be kept during the test, recording reasons for and stoppages at the AD Facility.
Odour	1000 OU/m3	The test will measure compliance with the odour requirements of the AD Facility. The Contractor will take at least three (3) samples for olfactometric testing from the outlet of the odour control facility during the performance test. The test will be deemed to have been passed if the measured results are interpreted to be consistent with the test requirement by reference to standard EN 13725:2003 using the

Test Name	Requirement	Test Description
		standard recommended confidence limits.
Screening throughput	Throughput of 96.15 tonnes per Day	Fifty eight (58) Days after acceptance of biological fines to the AD Facility, the screening test will measure the throughput of the screening plant. Two (2) separate screening tests will be carried out. If a throughput of 96.15 tonnes per Day is achieved then the test will be passed. If the test is failed then the screen will be recalibrated and the test repeated.
Temperature sanitisation test	Temperature of 70^0C for 1 hour	The test will measure the temperature of material at four (4) points and will be passed if, at each measurement point, a temperature of no less than 70^0C is maintained for no less than (one) 1 hour. Tested in accordance with SVS.

6 COMPOST OUTPUT CHARACTERISTICS

The individual performance tests are specified in Table 4 - Compost Output Characteristics Table:

6.1 Table 4 - Compost Output Characteristics Tests

Test Name	Requirement	Test Description
Organic Matter	>10% dry matter	The compost will be taken to a third party laboratory to test for the proportion of organic matter in the material.
CO_2 Stability	<20 mg of CO_2 per gram of volatile solids per Day	The compost material will be tested in a laboratory for its CO_2 stability.
E.Coli	<1500 colony forming units per gram dry	The compost material will be tested in a laboratory

	matter	for its E.Coli content.
Salmonella	0	The compost material will be tested in a laboratory to ensure the material does not contain any Salmonella.
Glass >2mm	<4% by weight	The compost material will be tested in a laboratory for glass content.
Plastic >2mm	<4% by weight	The compost material will be tested in a laboratory for plastic content.

The performance tests specified in Table 4 will be deemed to be passed if the average value of nine (9) individual samples taken meets, or is better than, the requirements set out in Table 4. Such tests will be performed in accordance with Good Industry Practice.

APPENDIX 1– Acceptance Test Process

1 ITS Facility Performance Tests

1.1 Turnaround Time

1.2 Test Description

This test relates to the Turnaround Time for waste delivery vehicles. Data will be collected to verify that the ITS Facility can cope with the number of vehicles that will deliver waste to the Site (Bolton Road) on a daily basis. The ITS Facility is required to weigh, record, discharge, re-weigh (and issue appropriate tickets) in relation to all Contract Waste to be treated there. Turnaround Time is measured from entry weighbridge to exit weighbridge.

1.3 Data Collection

Details of all incoming and outgoing waste delivery vehicles are recorded at the weighbridges. This data includes the vehicle registration number, and times of weigh-in and weigh-out of each vehicle.

1.4 Required Performance Standard

Paragraph 6.11 of the Output Specification states the following:

The Contractor shall ensure that Contract Waste brought to a Facility in Authorised Vehicles is deposited without undue delay and that Authorised Vehicles are able to leave the Facility without undue delay. The Turnaround Time for Refuse Collection Vehicles shall be a maximum of fifteen (15) minutes. The Turnaround Time for non Refuse Collection Vehicles shall be a maximum of twenty-five (25) minutes. For the purposes of this paragraph, "Turnaround Time" means the time taken from the Authorised Vehicle being weighed in at the weighbridge to the Authorised Vehicle being weighed empty once the Authorised Vehicle has deposited the load in the tipping area.

In this Schedule 9, "**RCV**" means a Refuse Collection Vehicle.

The distinction between RCV and non-RCV is important. The ITS Facility has been designed to achieve fifteen (15) minute Turnaround Time for those rigid vehicles capable of automatically discharging their load. A 25 minute Turnaround Time will apply to Non-RCVs, i.e. those vehicles which are articulated or incapable of

automatically discharging their loads. Non-RCVs will include all articulated bulker vehicles.

1.5 Test Methodology

Vehicle turnaround tests will take place over a two (2) week period during the process performance test period. Authorised Vehicles carrying Contract Waste to be treated at the ITS Facility arriving at the Site (Bolton Road) during Normal Opening Hours will be weighed at the weighbridge, deposit their load in the tipping area, and re-weighed upon departure. The Authorised Vehicle's details will be recorded on the system, along with the load delivered and times of arrival and departure. From these details the Turnaround Time of each Authorised Vehicle will be collected and analysed to ensure it complies with those limits set out in paragraph 6.11 of the Output Specification.

1.6 Success Criteria

The test will be passed if a minimum of ninety per cent (90%) of Authorised Vehicles achieve a Turnaround Time within the limits set out in paragraph 6.11 of the Output Specification.

The Contractor shall not take into account any Authorised Vehicles that are delayed as a result of breakdown failure or any other failure caused by the Councils as a result of actions of their employees or persons acting on their behalf.

1.7 Data Used

1.7.1 The following information is required in order to determine whether the test was passed:

(a) weighbridge records.

2 Facility Throughput

2.1 Test Description

The throughput capacity of the ITS Facility will be demonstrated by a performance test to verify that the ITS Facility can cope with the quantity of waste specified in the Contract, without suffering any malfunction or blockage, for a period of twenty eight (28) Days. "Throughput" refers to the tonnage of material that can be consistently processed by the ITS Facility on a daily basis.

Two parameters govern the throughput tonnage of waste material to be processed, namely:

2.1.1 a maximum annual input of 250,000 tonnes to the biodrying halls; and

2.1.2 a maximum design waste input to the reception pits of 4,810 tonnes/week, spread evenly over 5.5 Days.

2.2 Data Collection

Daily records of waste transferred to the biodrying hall are to be collected. A daily record of the material moved to the refinement area and emergency bypass doors will be established over the twenty eight (28) Day performance testing period.

2.3 Required Performance Standard

The ITS Facility must be able to receive and process a maximum of 250,000 tonnes of Contract Waste per annum, split between two (2) processing lines of 125,000 tonnes per line per Year.

2.4 Test Methodology

Throughput will be determined using the total weight of all inputs of Contract Waste per Day, delivered during the process performance test period.

Authorised Vehicles shall deliver waste to the ITS Facility. The Councils shall deliver 4,810 tonnes of waste per week, spread evenly across a 5.5 Day period. Each Authorised Vehicle delivering waste to the ITS Facility shall be weighed on entering and exiting the ITS Facility to ensure that gross and tare weights are correctly measured and to give an accurate net weight.

Waste will be deposited in the tipping hall, from where it will be transferred into the ITS Facility in accordance with the suppliers instructions.

The ITS Facility will run two (2) consecutive fourteen (14) Day cycles. The first cycle shall prove that the ITS Facility can accept 250,000 tonnes of Contract Waste per annum. The second cycle shall prove that the ITS Facility can treat the first cycle of Contract Waste and within such period be able to accept a second cycle of 250,000 tonnes of Contract Waste per annum equivalent.

At the end of each working Day, a daily tonnage column should be filled in recording the amount of Contract Waste delivered to that site. A copy of the transfer notes for that Day should be attached to the daily tonnage form. A copy of any photographs taken should also be attached.

At the end of each seven (7) Day period, the waste reception pit shall be completely cleared of waste to ensure that the waste material is being successfully transferred for processing through the ITS Facility. Photographs should be taken of the pits at the end of this period to prove that this requirement has been met.

At the end of the four (4) week period, twenty eight (28) daily tonnage sheets, along with copies of the respective transfer notes and photographs should be made available to the Councils as a measure of meeting the requirements of the throughput test.

2.5 Success Criteria

The test will be passed if a minimum of 4,810 tonnes of Contract Waste are passed into the ITS Facility within a seven (7) consecutive Day period and for each of the following 21 Days. This encompasses an overall period of four (4) consecutive weeks in which 19,240 tonnes are passed into the ITS Facility.

The success of the throughput test assumes that 4,810 tonnes per week of Contract Waste will be delivered to the Site (Bolton Road) by the Councils, spread evenly over 5.5 Days within a seven (7) Day period, for the duration of the testing. Failure of the Councils to deliver this quantity of Contract Waste shall not deem the test to be invalid for that Day.

2.6 Data Used

The following information is required in order to determine whether the ITS Facility has passed the throughput capacity performance test:

2.6.1 a daily record of weighbridge data for incoming MSW over the test period;

2.6.2 a daily record of tonnage passed into the ITS Facility from load sensors on the grab cranes; and

2.6.3 a weekly (seven (7) Days) record of the condition of the waste reception pit i.e. quantity of material remaining in it at the end of such seven (7) Day period, including photographs.

3 Vehicle Acceptance Test

3.1 Test Description

This test will be carried out to ensure that the ITS Facility can accept the required number of Authorised Vehicles to deposit Contract Waste in a fixed time period.

3.2 Data Collection

Details of all incoming and outgoing waste delivery vehicles are recorded at the weighbridges. This data includes the vehicle registration number, and times of weigh-in and weigh-out of each vehicle.

3.3 Required Performance Standard

The ITS Facility must be able to accept up to eight (8) Authorised Vehicles (RCVs) per hour and eight (8) street sweeping/litter vehicles per Day.

In addition, the ability of Authorised Vehicles to be able to tip simultaneously needs to be proved, as described in paragraph 6.12 of the Output Specification:

"The Contractor shall provide no less that three (3) simultaneous vehicle discharge points at least adequate to prevent undue delays to waste collection and transfer vehicles and to take account of the peak time delivery patterns."

3.4 Test Methodology

In order to confirm the availability of the ITS Facility to handle Contract Waste and operate the weighbridges on that basis, the ITS Facility must be able to accept up to eight (8) Authorised Vehicles per hour, and eight (8) street sweeping/litter vehicles per Day.

This will be tested by counting the number of RCVs passing across the weighbridges on an hourly basis, and counting the number of street sweeping/litter vehicles passing across the weighbridges in a Day.

The test will be measured, in the case of RCVs, over one (1) hour commencing upon the weighing in of the first (1^{st}) vehicle. The test will take place three (3) times per week for four (4) weeks. The same methodology will be followed for the street sweeping/litter vehicles, but over a period of one (1) working Day.

Three vehicles will be instructed to discharge their loads into the tipping area simultaneously to prove that the ITS Facility is capable of multiple deliveries.

3.5 Success Criteria

The test will be passed if a minimum of eight (8) RCVs are accepted onto the Site (Bolton Road), within a one (1) hour period, to be repeated three times (3x) per week for four (4) weeks. In addition a minimum of eight (8) street sweeping/litter vehicles must be accepted onto site within a single Day, repeated three times (3x) per week for four (4) weeks.

A failure by the Councils to deliver a sufficient number of vehicles to the Contractor will not render this test void and the test will continue as if the Councils had delivered eight (8) vehicles per hour or per Day (as applicable).

3.6 Data Used

The following information is required in order to determine whether the required number of vehicles can access the ITS Facility within the given timescale:

3.6.1 A daily record of weighbridge data for incoming vehicles over the test period.

4 Facility Availability

4.1 Test Description

"**Facility Availability**" refers to the availability of the reception area (including doors, cranes and shredders), the biodrying hall and the refinement area of the ITS Facility. This will be calculated (as a percentage) through the recording of downtime of any elements of the ITS Facility process over the four (4) week process performance test period.

4.2 Data Collection

Data will be recorded on daily log sheets, which will be collated at the end of the four week testing period.

4.3 Required Performance Standard

The required performance standards are listed in the table below:

4.3.1 **Table 5 - Process Component Performance Standards**

Process component	90% target running hours
Waste reception • cranes • shredders	16 hours per Day: 5.5 Days x 4 weeks x 90% = 317 hours
Biodrying Hall • cranes • fans	24 hours per Day: 5.5 Days x 4 weeks x 90% = 475 hours
Refinement • trommel Screens • overband magnets • eddy-current separators • near infra-red separators • heavy/light separators • compactors • baler • conveyors	16 hours per Day: 5.5 Days x 4 weeks x 90% = 317 hours

4.4 Test Methodology

Facility Availability will be determined by recording the number of hours that the process components (listed in Table 5 above) actually operates against its planned running time.

ITS Facility operators will be responsible for logging the time at which any process component fails, and the time that it is brought back into full service. The condition of

the process equipment may be monitored either by sight, or from data displayed on the process control system.

Results will be recorded in daily log sheets completed for each of the twenty eight (28) Days of the aforementioned throughput tests.

4.5 Success Criteria

The test will be passed if the actual running hours of the ITS Facility are greater than or equal to ninety per cent (90%) of the planned running hours, as described in Table 5 above.

For the purposes of calculating Facility Availability, stoppages caused by the breakdown of a single biodrying fan or a gantry crane shall not be considered, provided the said fan is returned to service within twenty four (24) hours.

5 Biodrying Performance

5.1 Test Description

The weight loss performance test will be carried out to determine how much weight the waste loses during the biodrying process, effectively indicating the moisture loss. This will be measured using a twenty eight (28) Day mass balance test.

This test will involve gathering the crane data for all of the waste that is taken from the shredder pit to the biodrying hall and summing it for a cycle to yield the total waste into biodrying. The sum of the data from the crane taking waste from biodrying to the refinement area will also be calculated for a cycle (total waste out). The total waste out will then be divided by the total waste into biodrying, giving the percentage weight loss due to biodrying.

5.2 Data Collection

Data will be taken from the load cells built into the overhead cranes, in order to calculate the total weight of material moved.

5.3 Required Performance Standard

The following table indicates the expected moisture loss, depending on the moisture content of the input waste.

5.3.1 **Table 6 - Expected Moisture Loss**

Contract Waste moisture (input) %	Weight loss (output) %
38.0-41.0	≥25
35.0-37.9	≥24
34.0-34.9	≥23
33.0-33.9	≥22
32.0-32.9	≥20.5
29.0-31.9	≥16.6
28.0-28.9	≥16.0

5.4 Test Methodology

The first step of the process is to determine the moisture content of the incoming waste. The amount of moisture in the waste coming into the ITS Facility dictates how much moisture loss (and therefore weight loss) is possible. A sample of Contract Waste will be taken from the primary shredder pit immediately after the incoming waste is shredded, at different times every Day for the first fourteen (14) Days of the test. The lab sample will be analysed for moisture (% by weight) and from the result the average moisture content of the MSW will be calculated. The percentage moisture will be used to define the required weight loss in order to pass the performance test as shown in Table 6 above.

The input biodrying cycle begins when the first waste material is placed in the biodrying hall (Position B on the Fig 1 Long Elevation of Biodrying Hall (below)) and ends when the final waste material is placed in the biodrying hall to fill it (Position C).

The output biodrying cycle begins with the first crane movement taking the waste from the front of the hall to the refinement section (from Position A) and ends when the last crane movement clears the biodrying hall completely (from Position D). As biodrying cycles take fourteen (14) Days, the input and output cycles overlap in time.

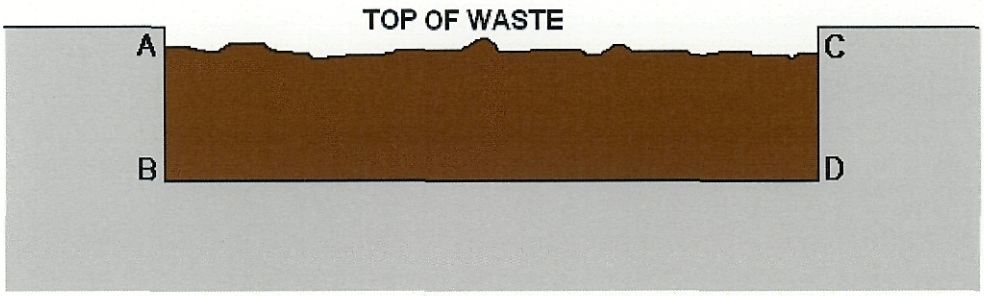

Figure 1 Long Elevation of Biodrying Hall

During the twenty eight (28) Day duration of the test, crane records kept to ensure that the weight of material being moved into and out of the biodrying hall is logged. At the end of the twenty eight (28) Day cycle, the weight of material input and output to and from the biodrying hall will be summed to give the total weight of waste in, and total weight of waste out over the twenty eight (28) Day period.

The percentage weight loss will then be calculated by dividing the total weight of the biodried material taken from the biodrying hall to the refinement area over the twenty eight (28) Day period by the total weight of MSW received.

5.5 Success Criteria

The biodrying performance test will be passed if the percentage moisture loss from the waste over a twenty eight (28) Day period falls within the percentage allowable as given in Table 6 above, for the average moisture content of the material received.

If the moisture level of the incoming waste is higher than the highest value specified in Table 2 (i.e. > forty one per cent (41%)) then the maximum moisture reduction level expected will be twenty five per cent (25%) for the purposes of this test. If the moisture level of the incoming waste is lower than the lowest value specified in Table 2 (i.e. twenty eight per cent (28%)) the expected moisture reduction level expected will be proportionally reduced.

5.6 Data Used

The following information will be used to determine whether the biodrying system has passed the weight loss performance test:

5.6.1 crane mission data for all waste moved to the refinement section during the output unloading cycle;

5.6.2 crane calibration records;

5.6.3 weighbridge calibration certificate;

5.6.4 a minimum of one (1) daily treated sample of the incoming MSW; and

5.6.5 laboratory determination of the percentage moisture content of the incoming MSW.

6 Odour Treatment

6.1 Test Description

In order to ensure the biofilters are operating to the required standard, odour emission tests will be carried out on both biofilters. Odour samples will be collected from three (3) defined positions on both biofilter beds. These samples will be sent to a UKAS accredited laboratory, to analyse the samples using dynamic olfactometry (BS EN 13725:2003). Laboratory results will be evaluated to establish if the biofilters are performing within the pre-defined odour levels.

6.2 Data Collection

Odour samples will be collected directly from the biofilter bed, and sent to a laboratory for analysis.

6.3 Required Performance Standard

Biofilters are hard to set a short-term performance target for, as the performance of the biofilter will improve Month on Month as the micro-organisms living in the filter media become more established and thus absorb more of the odorous elements of the air.

The odour level during the acceptance testing phase should be no higher than 800 OU/m^3. This will reduce as time goes on, levelling out at around 350 OU/m^3 after a period of Months.

6.4 Test Methodology

The odour sampling technique will be carried out in accordance with the sampling procedures described in BS EN 13725:2003 – Air quality – Determination of Odour Concentration by Dynamic Olfactometry.

Odour sampling of the biofilter will be undertaken according to the following method:

6.4.1 The surface of the biofilter will be sub-divided into $1m^2$ grids.

6.4.2 One column (e.g. A to J) will then be randomly selected followed by three subsequent rows in that column. For example, A10, A40, A80. These will then define the sampling points.

6.4.3 Each odour sample will be collected by covering an area of approximately three square meters ($3m^2$), using an odour free plastic sheet.

6.4.4 The covered area will be left for a minimum of three (3) minutes to be allowed to free vent via an outlet port installed in the plastic sheet, thus enabling the required number of air changes to take place.

6.4.5 The outlet port will then be closed allowing the plastic sheeting to inflate, producing a suitable head space of approximately 200mm from which the odour samples can be taken.

6.4.6 A sample of the air in the headspace beneath the sheet will be collected into a clean nalophane bag or "Tedlar" bag using the lung principal of odour collection.

6.4.7 Three (3) samples will be collected from the filter bed (total of three (3) nalophane bags), each of these samples being made up of air drawn from the chosen locations on the bed surface.

6.4.8 For each set of three (3) samples taken at a time, a sample of the mixed inlet air will be taken simultaneously to provide a check against the air being drawn into the biofilter.

6.5 Success Criteria

As mentioned above, it is hard to set meaningful success criteria for a biofilter in such a short timeframe such as that set aside for process equipment performance tests.

The system will have passed the test if, at the end of the twenty eight (28) Day process equipment performance test, the odour levels are less than or equal to 800 OU/m^3. The test programme will continue on a monthly basis, to monitor odour levels and ensure they continue to drop in line with expectations.

6.6 Data Used

To ensure odour levels are within expected levels, the following data is required:

6.6.1 odour samples from biofilter; and

6.6.2 odour samples of air entering biofilter from the ITS Facility.

7 Dust Emissions

7.1 Test Description

The bag house filter emissions shall be tested to ensure that emissions fall below the limit specified in the Contract. This limit is specified to set a minimum standard for particle presence in the air around the ITS Facility.

7.2 Data Collection

Data will be collected using samples drawn from the air de-dusting outlet duct work.

7.3 Required Performance Standard

In order for the ITS Facility to pass the bag house filter emission (dust) performance test the dust emissions must be < 10 mg/Sm^3.

7.4 Test Methodology

Particulate matter will be sampled on a four point sampling grid, in duplicate, over a minimum of twelve (12) to sixty (60) minute periods, according to BS EN 13284-1 and Technical Guidance Note M1 (issued by the Environment Agency on 6 January 2010). The particulate matter will be pre-weighed onto 25mm or 37mm GF/A glass fibre filters housed in an inline filter holder, which will be attached to an unheated stainless steel probe that is inserted into the duct.

A known volume of stack gas will be extracted iso-kinetically by means of a high flow pump and drawn across the filter. After passing over the filter, the sampled gas will be

drawn through a condensation trap, a desiccant, a flow meter and a dry volume gas meter.

The samples will be sealed in a filter holder prior to being reconditioned and re-weighed in the laboratory. The increase in the mass of the filter will be determined gravimetrically, along with the moisture content of the desiccant (used throughout the period of the test), the acetone washes from the sampling probe and filter housing. The results are used to calculate the particulate concentration in the gas.

7.5 Success Criteria

The de-dusting system will have passed the test if the particulate concentration in the air stream from the de-dusting system is found to be less than 10 mg/Sm^3.

It should be noted that for the emissions of dust, given the low levels which can be guaranteed and the presence of additional external sources, instead of evaluating potential contribution to existing dust levels at site boundary it is appropriate to indicate emissions at source.

7.6 Data Used

The following information is required in order to determine whether the ITS Facility de-dusting system has passed the bag house filter emission (dust) performance test:

7.6.1 flow measurement;

7.6.2 sampling of emissions; and

7.6.3 analysis of dust.

8 SRF Quality

8.1 Test Description

8.1.1 The SRF will be tested to ensure compliance with the SRF Specification as detailed in Schedule 1 of Schedule 39 (SRF Offtake Contract).

Parameter	**Ranges or upper limits (on an "as received basis")**
Net calorific value	10 to 16.5MJ/kg

Sulphur content	<0.7% w/w
Chlorine content	<1.0% w/w
Moisture content	10 to 25.0% w/w
Bulk density (loose/ uncompacted)	100 to 400Kg/m^3
Particle size	Solid in pieces with diameter between 1mm and 300mm in any two (2) dimensions
Ash	<25.0% w/w

8.2 Data Collection

8.2.1 The SRF shall be representatively sampled in compliance with DD/CEN/TS/15442 Solid Recovered Fuels – Methods for Sampling as proposed for the normal operating sampling procedures.

8.2.2 Measurement and analysis of all samples shall be undertaken by an appropriate, reputable and where relevant, accredited laboratory.

8.3 SRF Sampling

8.3.1 For each consecutive lot a composite sample shall be produced. As per DD/CEN/TS/15442, a lot means a minimum of 600 tonnes and a maximum of 1,500 tonnes of SRF in accordance with the FMS Plan agreed by the parties to the SRF Offtake Contract for the purpose of obtaining a representative sample of SRF for analysis. For each lot twenty four (24) increments (which can be defined as the quantity of SRF collected by use of a drop flow within the refinement section of the ITS Facility in accordance with the fuel measurement and sampling plan prepared pursuant to Schedule 39 (SRF Offtake Contract) "**Increments**" or "**Increment**") shall be collected at random over the period of production of the lot. These Increments shall be combined to form a single composite sample. In order to ensure representative sampling every particle in each lot must have an equal probability of being included in the sample. Minimum Increment and sample sizes shall be determined in accordance with DD/CEN/TS/15442. The composite sample shall then be sent to an appropriate accredited laboratory for the analysis of each of the parameters set out in Table 2 below.

8.4 Minimum Sample Size

8.4.1 Minimum sample size shall be determined in accordance with Annex D of DD/CEN/TS/15442 and shall be large enough to have enough particles to obtain a representative sample from the lot being sampled. The minimum sample size shall be calculated as follows:

$$m_{\mathrm{m}} = \frac{\pi}{6} \times {d_{95}}^{3} \times s \times \hat{\lambda} \times g \times \frac{(1-p)}{(C_v)^2 \times p}$$

Where;

m_{m} is the mass of the minimum sample size, in grams as received;

d_{95} is the nominal top size of a particle (a mass fraction of 95% of the particles are smaller than d_{95}), in mm;

s is the shape factor, in mm^3/mm^3 and calculated as per DD/CEN/TS/15442 or using the default value of 0.05;

$ë$ is the average particle density of the particles in the solid recovered fuel, in g/mm^3 as received (assumed to be default value of 0.001 as per DD/CEN/TS/15442);

g is the correction factor for distribution in the particle size; calculated as per DD/CEN/TS/15442 (expected to be 0.25 based on d_{05} of 12.5 mm);

p is the fraction of the particles with a specific characteristic, assumed to be 0.1 as per DD/CEN/TS/15442;

C_{v} is the coefficient of variation, assumed to be 0.1 as per DD/CEN/TS/15442.

Based on the above calculation and the expected properties of the SRF to be produced at the ITS Facility, the minimum sample size would be 92 kg.

8.5 Minimum Increment Size

8.5.1 Increments shall be collected from a drop flow, as per the provisions of paragraph 8.3.1.

8.6 Drop Flow

8.6.1 Minimum Increment size when sampling from a drop flow will be calculated as per DD/CEN/TS/15442. The minimum Increment size will be calculated so as to ensure that the minimum sample size can be achieved when all twenty four (24) Increments are combined to form the composite sample. As per paragraph 8.4, the minimum Increment size would be 92/24 = 3.8 kg.

8.6.2 The size of the Increment shall be calculated as per the following calculation:

$m_i = \emptyset_d \times t_m$

Where:

m_i is the mass of the Increment size, in kg;

$\emptyset_d$ is the drop speed, in kg/s (expected to be ~8 kg/s);

t_m is the sampling time, in s

Based on the expected minimum sample size, there would be a requirement to collect a sample from the drop flow for a minimum of 0.5 seconds. For the purposes of ease of sampling and to ensure that enough material is obtained with each sampling event, Increments will be collected from the drop flow for a period of one (1) second.

8.7 Sampling Plan

8.7.1 The SRF output shall be measured for every lot (between 600 and 1,500 tonnes) of SRF produced.

8.7.2 Using a 1,500 tonne lot as the basis for the following worked example at an output rate of twenty eight (28) tonnes per hour, operating for seventeen (17) hours per Day, the sample must be taken every five (5) working Days:

8.7.3 The sample will be split into Increments collected in twenty four (24) equal time periods. Therefore one Increment must be collected every 2.2 hours.

8.7.4 Increments shall be collected by use of a drop flow within the refinement section of the ITS Facility prior to the SRF presses. Increments will be collected in an appropriately sized, empty container placed in the path of the drop flow for the period of time calculated above one (1) second. Following

the allocated sampling time calculated above the container shall be removed from the path of the drop flow and the flow from the collection point will be stopped.

8.7.5 Increments shall be weighed to ensure a minimum Increment size of four (4) kg. Details of Increment weight, date and time of collection shall be recorded in a sample log.

8.7.6 Increments will then be transferred to an appropriate, tightly sealed container and stored in a cool, dry area in accordance with the storage of samples paragraph below. Increments shall not be exposed to sunlight and Increments shall not be stored in a transparent container. Increments shall be labelled in accordance with the labelling code set out below.

8.7.7 Once all twenty four (24) Increments have been collected a composite sample shall be prepared with a minimum combined weight of ninety two (92) kg. Increments will be combined in accordance with the provisions of paragraph "Production of a composite sample from Individual Increments" outlined below.

8.7.8 Each composite sample shall be placed in a suitable container for transportation to the laboratory for testing in accordance with the next paragraph i.e. 4x 220 litre container (HDP). The container should be air-tight and must not contain any chlorinated compounds such as PVC.

8.7.9 Each composite sample shall be dispatched to an appropriate laboratory within one (1) Business Day of the production of the composite sample for the preparation and measurement of test samples as per CEN/TS 15443 and CEN/TS 15413.

Table 1 Initial estimate of time block for taking each Increment

Site	Annual SRF Production (tonnes)	Throughput	Time block for taking each Increment

Bolton Road ITS	120,000	~28 tonnes/hour	Every 2.2 hours production

8.8 Labelling

8.8.1 Labelling of samples must comply with the following principles set out in this paragraph.

Labelling of Increments

8.8.2 Individual Increments must be labelled so as to specify the time and date of collection, the lot number and the Increment number. For example I12L4-130815-16:43. The I12L4 indicates that this is Increment 12 of lot 4 (lot 1 would be the first full lot taken at the start of that particular Contract Year. The remaining portion of the label -130815-16:43 indicates that the Increment was taken on the 13/08/15 at 16:43.

Labelling of Samples

8.8.3 Each composite sample should be labelled so as to indicate the site it was taken from, the lot number, the date it was composited (that is the date the final Increment was taken and the composite sample was produced) and the type of material sampled. For example **BR-L1-130815-SRF** indicates that the sample was taken from BR, represents lot 1 of the relevant Contract Year, was collected on 13/08/15, and is a sample of SRF.

8.9 Storage of Samples

8.9.1 As per CEN/TS 15442, Increments should be kept in tightly sealed containers or packaging and stored in a cool, dry room. Samples should not be exposed to sunlight and packaging should not be transparent.

8.9.2 In order to ensure the integrity of the sample is maintained, Increments and samples must be stored as follows:

8.9.3 Increments shall be collected in accordance with paragraph 8.7 above;

8.9.4 following collection, each Increment shall be packaged in tightly sealed packaging;

8.9.5 the packaged Increment shall then be labelled in accordance with paragraph 8.8 above; and

8.9.6 the labelled Increment shall be stored in a cool and dry place. In order to prevent loss or damage to any of the Increments or samples, the storage area must be kept secure at all times when access is not required with access granted to authorised personnel only.

8.10 Production of a Composite Sample from Individual Increments

8.10.1 The composite sample produced from the twenty four (24) Increments shall be produced using as follows:

8.10.2 each of the packaged twenty four (24) Increments shall be audited to ensure all Increments are present. Should any Increment be missing, this should be noted and the site manager should be contacted. A composite sample may then be produced from the present Increments;

8.10.3 a suitably sized, clean tarpaulin (polyethylene) will be laid out on the floor in an enclosed area, free of drafts and potential contamination;

8.10.4 once all Increments of the lot to be measured have been accounted for, the packaging for each Increment shall be split and the Increment shall be emptied onto the tarpaulin for mixing;

8.10.5 the composite sample shall be mixed thoroughly with the use of a clean and suitable shovel. Mixing should continue for at least five (5) minutes in order to ensure each of the Increments is thoroughly mixed within the composite sample;

8.10.6 the mixed composite sample shall then be spread out evenly and divided into four equal quarters;

8.10.7 each of the four (4) quarters shall be transferred into separate appropriately sized containers (4x 220 litre drums);

8.10.8 two (2) of the four (4) quarters shall be chosen at random as the overall composite sample to be tested (the "**Measurement Sample**");

8.10.9 the Measurement Sample shall then be weighed to ensure that the minimum composite sample size of ninety two (92) kg has been achieved;

8.10.10 the Measurement Sample shall then be dispatched to an appropriate independent laboratory, within one (1) Business Day of the production of the composite sample for mixing and preparation of representative test samples as per CEN/TS 15443 and CEN/TS 15413;

8.10.11 the remaining two (2) quarters of the overall composite sample (the "**Storage Sample**") shall be stored in accordance with the storage of samples paragraph 8.7 above. Each Storage Sample shall be retained at the ITS Facility for at least four (4) Months as a contingency in the event that any Measurement Sample is lost or damaged or should any dispute arise surrounding the validity of the laboratory's results.

8.11 Analysis of Samples

8.11.1 Composite samples should be sent to an appropriate laboratory for preparation of test samples from the Measurement Sample or Storage Sample as appropriate. Laboratory and test samples should be prepared from the Measurement Sample or Storage Sample, as appropriate, in accordance with CEN/TS 15413 and CEN/TS 15443.

8.12 Laboratory Report

8.12.1 A test report shall be prepared by an accredited laboratory performing and managing the analysis in the form of a table which includes reference to the test methodology used. For example, reference should be made to CEN/TS 15400 in the case of calorific value.

8.12.2 Units expressed in the report should be the same as those used in Schedule 1 of Schedule 39 (SRF Offtake Contract).

8.12.3 The test report should be received within twenty (20) Business Days of receipt of the relevant Measurement Sample or Storage Sample as appropriate.

8.13 Required Performance Standard

8.13.1 Calculation for the purposes of determining compliance with the SRF Specification set out in Schedule 1 of Schedule 39 (SRF Offtake Contract) shall be in accordance with the frequency of measurement and calculation column of Schedule 1 of Schedule 39 (SRF Offtake Contract) as outlined in Table 2 **Frequency of calculation** below.

Table 2 Frequency of calculation

Parameter	**Frequency of measurement and calculation**	**Number of lots to calculate compliance**
Net calorific value (lower heating value)	Monthly	Average of a minimum of 4 and a maximum of 15 consecutive lots
Sulphur content	Monthly	Average of a minimum of 4 and a maximum of 15 consecutive lots
Chlorine content	Monthly	Average of a minimum of 4 and a maximum of 15 consecutive lots
Moisture content	Monthly	Average of a minimum of 4 and a maximum of 15 consecutive lots
Bulk density (loose/ uncompacted)	Monthly	Average of a minimum of 4 and a maximum of 15

		consecutive lots
Particle size	Monthly	Average of a minimum of 4 and a maximum of 15 consecutive lots
Ash	Monthly	Average of a minimum of 4 and a maximum of 15 consecutive lots
other acceptable trace elements eg metals	Monthly	Average of a minimum of 4 and a maximum of 15 consecutive lots

8.14 Analysis of SRF Samples

8.14.1 Calorific value shall be measured in accordance with the appropriate standards (being, at the date of this Contract, EN 15400).

8.14.2 Sulphur and chlorine should be measured in accordance with the appropriate standards (being, at the date of this Contract, EN 15408).

8.14.3 Moisture content shall be measured in accordance with the appropriate standards (being, at the date of this Contract, CEN/TS 15414 1/2/3).

8.14.4 Bulk density (loose / uncompacted) 100 to 400 Kg/m^3

8.14.5 Particle size, solid in pieces with diameter between 1mm and 300mm in any two dimensions.

8.14.6 Ash content shall be measured in accordance with the appropriate standards (being, at the date of this Contract, EN 15403).

9 Overcapacity Test for Primary Shredder

9.1 Test Description

The ITS Facility will be provided with ten per cent (10%) additional waste for a period of three (3) Days to ensure that it can treat the additional volumes to account for seasonal variations primarily linked to bank holidays and also to provide a buffer for the second line.

9.2 Data Collection

Data will be collected by operators monitoring the throughput of the shredder and the volume of waste passing through it.

9.3 Required Performance Standard

The shredder must be capable of processing its normal maximum throughput, plus ten per cent (10%) additional capacity. This equates to 5,291 tonnes per week. Spread evenly over a 5.5 Day period, this means the shredder must be capable of processing nine hundred and sixty two (962) tonnes per Day, for three (3) consecutive Days.

9.4 Test Methodology

Waste will be buffered in the MSW reception pit until there is sufficient MSW for the purposes of the trial period. This will be loaded into the shredder at an appropriate rate, to ensure all material is shredded within the given time period.

Load cells in the overhead crane will monitor the waste loaded into the shredder to ensure the required throughput has been achieved.

9.5 Success Criteria

The shredder overcapacity test will be passed if the shredder has been proven to shred the additional waste volume set out above.

9.6 Data Used

The following data will be used to carry out the test:

9.6.1 records from the overhead crane load cells.

10 Recycling Performance

10.1 Test Description

Test will compare input tonnage against weight of output products, comparing Days one (1) to five (5) with Days fifteen (15) to nineteen (19) respectively. Adjustments for input moisture will be factored into the calculation based on the moisture sample data collected as part of the biodrying performance test described above.

10.2 Data Collection

Data will be collected primarily using the weighbridges at the entrance to the Site (Bolton Road) to weigh vehicles carrying output recyclates as they leave.

10.3 Required Performance Standard

The test will be passed on a gross overall recycling performance basis, not on individual streams. The ITS Facility must separate a minimum of eleven per cent (11%) of metals, plastics and heavies (predominantly glass).

10.4 Test Methodology

The weight of MSW being loaded into the ITS Facility will be recorded by load cells on the overhead cranes which feed the shredder.

The metals, plastics and heavy fraction separated from the waste in the refinement plant is deposited into hook lift skips. These skips will be weighed empty on the weighbridge when they are brought to the Site (Bolton Road). When the skip is full, it will be weighed again on the weighbridge to establish the weight of the recyclates inside.

This process will be repeated throughout the twenty eight (28) Day process performance test period.

At the end of the test period the total weight of recyclates removed from the Site (Bolton Road) will be divided by the total weight of MSW delivered to the ITS Facility to calculate the percentage of recylates recovered from the waste.

10.5 Success Criteria

The test will be passed if the percentage of recyclates recovered from the waste by the ITS Facility is equal to or in excess of the target figure stated above eleven per cent (11%).

10.6 Data Used

The following data will be used to carry out the test:

10.6.1 records from the overhead crane load cells; and

10.6.2 weighbridge records for recyclates removed from the Site (Bolton Road).

11 AD Facility Performance Tests

11.1 Facility Throughput

11.2 Test Description

The throughput capacity of the AD Facility will be demonstrated by a performance test to verify that the AD Facility can cope with the quantity of material specified in the Contract, without suffering any malfunction or blockage, for a period of fourteen (14) Days. 'Throughput' refers to the tonnage of material that can be received and processed by the AD Facility on a daily basis.

11.3 Data Collection

Daily records of material transferred to the AD Facility shall be collected over the fourteen (14) Day test period.

11.4 Required Performance Standard

The AD Facility must be able to receive and process greater than or equal to ninety per cent (90%) of 18,000 tonnes of organic fines from the biodrying hall refinement plant per annum.

11.5 Test Methodology

Throughput to the AD Facility will be recorded as it passes from the biodrying refinement hall into the AD Facility. These records will be checked against the performance requirements set out in the paragraph above.

Material received from the biodrying refinement area will be deposited into the AD Facility reception area. This will take place for four (4) Days of deliveries. At the end of the fourth Day, the material will be transferred by shovel loader to one of the fermentation tunnels. Deliveries will continue for another four (4) Days to the reception area. At the end of this period, the material previously loaded into the fermentation tunnel will be unloaded onto the floor of the biogas hall. Then the material from the reception area will be mixed with the material from the fermentation tunnel, one bucket of each at a time, as it is reloaded into the fermentation tunnel. The result will be a full fermentation tunnel made up of a mixture of newly received material and four (4) Day fermented material.

This process will continue until the throughput test is passed, and to start the AD Facility cycle.

11.6 Success Criteria

The test will be passed if a minimum of 62.3 (18,000/52 weeks/5 Days x 90% availability) tonnes of organic fines are received into the reception area, and then transferred on to the fermentation tunnels.

11.7 Data Used

The following information is required in order to determine whether the AD Facility has passed the throughput capacity performance test:

11.7.1 a daily record of throughput data for organic fines passed into the AD Facility from the biodrying refinement hall.

12 Facility Availability

12.1 Test Description

"**Facility Availability**" refers to the availability of the AD Facility to process waste over the process performance test duration. The AD Facility will be considered as a complete unit.

12.2 Data Collection

Data will be recorded on daily log sheets, which will be collated at the end of the process performance test period.

12.3 Required Performance Standard

The AD Facility will be considered to be available provided it is capable of processing the waste at the daily design throughput, irrespective of any individual equipment failures. The availability of the AD Facility must be greater than or equal to ninety per cent (90%) over the process performance test period.

12.4 Test Methodology

Facility Availability will be determined by recording the number of hours that the process actually operates against its planned running time.

AD Facility operators will be responsible for logging the time that any process component fails, and the time that it is brought back into full service. The condition of the process equipment may be monitored either by sight, or from data displayed on the process control system.

Results will be recorded in daily log sheets completed for each Day of the process performance test period.

12.5 Success Criteria

The AD Facility availability test will be passed if the availability is equal to or greater than ninety per cent (90%) for the duration of the test.

The AD Facility will be considered to be available provided it is capable of processing the waste at the daily design throughput, irrespective of any individual equipment failures. If there are any periods where waste is not available to be treated, these shall be deemed as periods of availability at the maximum design throughput. If during the test, there are periods when the AD Facility is only available at a throughput below the daily design throughput, the availability of the AD Facility during such periods will be correspondingly reduced in direct relation to the shortfall in throughput.

12.6 Data Used

Data will be taken from daily log sheets kept by operators.

13 Odour Treatment

13.1 Test Description

In order to ensure the biofilter is operating to the required standard, odour emission tests will be carried out on the biofilters. Odour samples will be collected from a sampling point on the outlet ductwork, and sent to a UKAS accredited laboratory, to analyse the samples using dynamic olfactometry (BS EN 13725:2003). Laboratory results will be evaluated to establish if the biofilter is performing within the pre-defined odour levels.

13.2 Data Collection

Odour samples will be collected directly from the a sampling point permanently mounted on the biofilter outlet ductwork, and sent to a laboratory for analysis.

13.3 Required Performance Standard

Biofilters are hard to set a short-term performance target for, as the performance of the biofilter will improve Month on Month as the micro-organisms living in the filter media become more established and thus absorb more of the odorous elements of the air.

The target odour level during the acceptance testing phase is less than or equal to 1000 OU/m^3. This will reduce as time goes on.

13.4 Test Methodology

The odour sampling technique will be carried out in accordance with the sampling procedures described in BS EN 13725:2003 – Air quality – Determination of Odour Concentration by Dynamic Olfactometry.

Odour sampling of the biofilter will be undertaken according to the following method:

13.4.1 A clean nalophane bag or "Tedlar" bag will be connected to the sampling point on the biofilter outlet ductwork, and odorous air drawn into the bag using the lung principal of odour collection.

13.4.2 Three (3) samples will be collected from the sampling point on the ductwork (total of three (3) nalophane bags).

13.4.3 For each set of three (3) samples taken at a time, a sample of the mixed inlet air to the biofilter will be taken simultaneously to provide a check against the air being drawn into the biofilter.

13.5 Success Criteria

The system will have passed the test if at the end of the process performance test, the odour levels are less than or equal to 1,000 OU/m^3. The test programme will continue on a monthly basis, to monitor odour levels and ensure they continue to drop in line with expectations.

13.6 Data Used

To ensure odour levels are within expected levels, the following data is required:

13.6.1 odour samples from bio-filter; and

13.6.2 odour sample of air entering biofilter from the AD Facility.

13.7 Screening Throughput

13.8 Test Description

Fifty-eight (58) Days after acceptance of biological fines to the AD Facility, the screening test will measure the throughput of the screening plant. Two separate screening tests will be carried out, involving passing the fermented and composted material through the screen and recording its throughput. If the test is failed then the screen will be recalibrated and the test repeated.

13.9 Data Collection

Data will be collected from a set of load cells recording how much material is being passed into the screen, and recording the time taken for the screen to process this material.

13.10 Required Performance Standard

A throughput of ninety six (96) tonnes per Day is required through the screen in order to process the material held in the composting chambers.

13.11 Test Methodology

The material is transferred from the composting chambers to the screen by front end loader. The load picked up by the front end loader will be weighed using load cells built into the bucket of the front end loader. In the event that the front end loader is not equipped with load cells, a set of drive-on load cells may be hired in for the test process. The front end loader would drive onto these empty to obtain a tare weight, and then again with the bucket full to establish the weight of the material in the bucket.

The weight of each bucket load of material being loaded into the screen will be recorded, and the time at which it is deposited into the screen noted down. This will be totalled at the end of the Day to establish the daily throughput of the screen.

This test will be repeated twice to ensure the results are comparable.

13.12 Success Criteria

The screen must process a minimum of ninety six (96) tonnes of composted material per Day in order for the test to be passed.

13.13 Data Used

Data from the load cells either in the front end loader bucket or floor mounted load cells shall be used to calculate the throughput tonnage.

14 Temperature Sanitisation Test

14.1 Test Description

Animal By-Products Regulations (ABPR) require that any waste which could have animal by-products within it is held at a temperature of seventy degrees Celsius (70°C) for one hour to ensure it is sterile. This must be proven with test data indicating that the temperature has been met or exceeded for the required time period.

14.2 Data Collection

Temperature data will be collected from temperature probes inserted into the waste pile at different locations.

14.3 Required Performance Standard

The test will measure the temperature of the material at four (4) points will be passed if, at each temperature measuring point, a temperature of no less than seventy degrees Celsius (70^0C) is maintained for no less than one (1) hour.

14.4 Test Methodology

Once the compost chamber has been filled with material, four probes will be inserted into the pile in different locations, with at least one probe within 0.5 meters of the edge of the chamber. The probes will be wired into a data monitoring device, which will display and log the temperature readings inside the waste material.

These probes will be monitored during the period at which the material is kept in the compost chamber. When the chamber is due to be emptied the probes will be removed.

14.5 Success Criteria

The probes will be connected to a data logging device which will provide a time-temperature graph for the duration of the test. If this graph indicates that all four (4) probes have monitored the material having been at or above a temperature of seventy degrees Celsius (70°C) for a minimum or one (1) hour, then the test is passed.

14.6 Data Used

Data required to complete this test is as follows:

14.6.1 temperature probes; and

14.6.2 data logging hardware and software.

15 Compost Output Characteristics

15.1 Test Description

A suite of laboratory tests will be carried out to determine a number of key characteristics and components of the compost material. This will ensure that the AD Facility is operating correctly, and that the material meets the specification for offtake to a third party.

15.2 Data Collection

Samples will be taken of the compost material as soon as it leaves the pasteurisation phase of the process. These will be taken to an independent laboratory for testing of the required characteristics.

15.3 Required Performance Standard

The required performance tests are set out in Table 4 of this Schedule 9.

15.4 Test Methodology

After the pasteurisation process has been completed, three samples of five (5) kilograms each will be taken from different locations in the pile. These samples will be placed in sealed bags and refrigerated until they are transported to the laboratory. The laboratory will carry out the necessary tests to establish the parameters defined in Table 4 of this Schedule 9.

This process will be repeated for three (3) separate batches of material as they are unloaded from the pasteurisation chamber. Thus a total of nine (9) samples will be tested, to ensure the results are reliable. This test will be carried out during the acceptance testing phase of the AD Facility to ensure the AD Facility is operating correctly.

It may also be repeated throughout the life of the contract to ensure the compost continues to meet requirements.

15.5 Success Criteria

The test will be passed if the characteristics of the compost material (based on the average of the nine test (9) results) meet or are better than the targets set out in Table 4 of this Schedule 9.

15.6 Data Used

The following data will be used to carry out the test:

15.6.1 compost samples from the AD Facility.