

## APPENDIX 10.1

### Noise Units and Sound Power Level

#### Noise

Noise is the term often used to describe unwanted sound, i.e. sound that annoys, interferes with activities or damages hearing. It is also used to describe a combination of sounds which vary randomly with time and which cover a wide range of frequencies. The following section describes some of the parameters that are used to quantify noise.

#### Decibels dB

Noise levels are measured in decibels. The decibel is the logarithmic ratio of the sound pressure to a reference pressure ( $2 \times 10^{-5}$  Pascals). The decibel scale gives a reasonable approximation to the human perception of relative loudness. In terms of human hearing, audible sounds range from the threshold of hearing (0 dB) to the threshold of pain (140 dB).

#### A-weighted decibels dB(A)

The 'A'-weighting filter emulates human hearing response for low levels of sound. The filter network is incorporated electronically into sound level meters. Sound pressure levels measured using an 'A'-weighting filter have units of dB(A) which is a single figure value to represent the overall noise level for the entire frequency range. A change of 3 dB(A) is the smallest change in noise level that is perceptible under normal listening conditions. A change of 10 dB(A) corresponds to a doubling or halving of loudness of the sound. The background noise level in a quiet bedroom may be around 20 to 30 dB(A); normal speech conversation around 60 dB(A) at 1 metre; noise from a very busy road around 70 to 80 dB(A) at 10 metres; the level near a pneumatic drill around 100 dB(A).

#### Façade and Free field Noise Level

Façade noise measurements are those undertaken near to reflective surfaces such as walls, usually at a distance of 1 metre from the surface. Façade noise levels at 1 metre from a reflective surface are normally around 3 dB greater than those obtained under free field conditions for ground based noise sources. Free field noise measurements are those undertaken away (greater than 3.5 metres) from any reflective surfaces other than the ground.

#### Equivalent Continuous Sound Pressure Level $L_{Aeq,T}$

The 'A'-weighted equivalent continuous sound pressure level  $L_{Aeq,T}$ , is a notional steady level which has the same acoustic energy as the actual fluctuating noise over the same time period T. The  $L_{Aeq,T}$  unit is dominated by higher noise levels, for example, the  $L_{Aeq,T}$  average of two equal time periods at, for example, 70 dB(A) and 50 dB(A) is not 60 dB(A) but 67 dB(A). The  $L_{Aeq,T}$  unit was commended by the Noise Advisory Council and is the chosen unit of BS 5228 for Construction and Open Site Noise; MPS 2 for Minerals Extraction Sites; PPG 24 Planning and Noise, BS 4142 for Rating Industrial Noise and BS 7445 for the Description and Measurement of Environmental Noise.

#### Maximum Sound Pressure Level $L_{Amax,T}$

The  $L_{Amax}$  value describes the overall maximum A-weighted sound pressure level over the measurement interval, using a time weighting of one second (slow or S) or 125 ms (fast or F). The time weighting determines how quickly the meter follows a rapidly changing level. For the same noise source and measurement interval, the  $L_{Amax,F}$  value would be the same as or greater than the  $L_{Amax,S}$  value.

#### Statistical Parameters $L_N$

In order to cover the time variability aspects, noise can be analysed into various statistical parameters, i.e. the sound level which is exceeded for N% of the time. The most commonly used are the  $L_{A10,T}$  and the  $L_{A90,T}$ .

$L_{A10,T}$  is the 'A'-weighted level exceeded for 10% of the time interval T and is often used to describe road traffic noise. It gives an indication of the upper level of a fluctuating noise signal. For high volumes of continuous traffic, the  $L_{A10,T}$  unit is typically 2–3 dB(A) above the  $L_{Aeq,T}$  value over the same period.

$L_{A90,T}$  is the 'A'-weighted level exceeded for 90% of the time interval T, and is often used to describe the underlying background noise level. It is defined in British Standard 4142: 1997 as the background noise unit and is used for establishing the reference against which industrial noises are assessed.

#### Sound Power Level

In defining a source in terms of its Sound Pressure Level in dB(A) units, it is necessary to define also the measurement distance from the source as well as the directional characteristics of the source and the

characteristics of the area in which the source was measured. For noise calculation purposes, it is much more convenient to assess the output power of the source that is independent of external influences. This single figure can then be used to evaluate the noise level at any distance in any definable circumstances elsewhere.

When noise measurements are made, the Sound Power Level is calculated from the measured Sound Pressure Level and a knowledge of the distance and spatial characteristics of the area of the measurement. It is expressed in units LWA, with the suffix A indicating that the A weighting filter has been included. It is then possible to predict the resulting Sound Pressure Level in dB(A) at any other definable location from the single figure. As a guide, the level in dB(A) terms will be approximately 28 dB below the Sound Power Level in LWA terms at 10 metres from a typical source. At 20 metres, the level would be a further 6 dB(A) lower.

# Appendix 10 Noise & Vibration

## APPENDIX 10.2

### Instrumentation, Calibration and Survey Details

#### Dates and Details of Survey and Survey Personnel

Date of Survey	Survey Personnel	Details of Noise Survey Measurements
Thursday 18 September 2008	Matthew Sweet	Daytime samples near IWWMF site
Thursday 25 September 2008	Matthew Sweet	Daytime samples near IWWMF site & two meters installed
Friday 26 September 2008	Matthew Sweet	Daytime samples near IWWMF site
Monday 29 September 2008	Matthew Sweet	Daytime samples near IWWMF site & two meters collected
Thursday 25 to 26 September 2008	Matthew Sweet	Night-time samples near IWWMF site

#### Instrumentation used – Sound Level Meter and Calibrator & Serial Numbers

Date of Survey	Instrumentation	Serial Number
Thursday 18 September 2008 – Daytime	Norsonic Type 116 Bruel & Kjaer Type 4230	21628 584690
Thursday 25 September 2008 – Daytime	Norsonic Type 140 Norsonic Type 1225	1403136 31992
Friday 26 September 2008 – Daytime	Norsonic Type 140 Norsonic Type 1225	1403136 31992
Monday 29 September 2008 – Daytime	Norsonic Type 140 Norsonic Type 1225	1403136 31992
Thursday 25 to 26 September 2008 Night-time	Norsonic Type 140 Norsonic Type 1225	1403136 31992
Thursday 25 to 29 September 2008 Continuous monitoring at Wingmoor Lodge	Norsonic Type 116 Bruel & Kjaer Type 4230	17119 584707
Thursday 25 to 29 September 2008 Continuous monitoring at Lower Farm	Norsonic Type 116 Bruel & Kjaer Type 4230	17118 1558653

#### Calibration

The sensitivity of the meters was verified on site immediately before and after the sample and longer term measurements. The measured calibration levels were as follows:

Date of Survey	Start Calibration	End Calibration
Thursday 18 September 2008 – Daytime	94.1 dB(A)	93.9 dB(A)
Thursday 25 September 2008 – Daytime	113.9 dB(A)	113.9 dB(A)
Friday 26 September 2008 – Daytime	114.1 dB(A)	113.9 dB(A)
Monday 29 September 2008 – Daytime	114.0 dB(A)	113.9 dB(A)
Thursday 25 to 26 September 2008 Night-time	114.0 dB(A)	114.2 dB(A)
Thursday 25 to 29 September 2008 Continuous monitoring at Wingmoor Lodge	93.8 dB(A)	93.8 dB(A)
Thursday 25 to 29 September 2008 Continuous monitoring at Lower Farm	94.0 dB(A)	94.1 dB(A)

The meters and calibrators are tested monthly against two Laboratory Standard Bruel and Kjaer Pistonphones type 4220 (s/n 375806 and 196953) and a Norsonic Calibrator type 1253 (s/n 22906) all with UKAS approved laboratory certificates of calibration.

#### Survey Details

The microphones were at a height of between 1.2 and 1.5 metres above local ground level, with a windshield used throughout. Attended measurements of 15-minute duration were taken at the selected locations from the start times indicated in Appendix 8.3. The longer term measurements were of consecutive hourly duration. The noise measurement locations are indicated on a plan in Appendix 8.10.

#### Date and Location of Survey

Wednesday 08 October 2008 (daytime)  
Grundon Waste Management Wingmoor Farm IWWMF Site

#### Survey Personnel

Paul Cockcroft

#### Instrumentation used (Serial Number)

Norsonic Sound Level Meter type 140 (s/n 1403136)  
Norsonic Calibrator type 1225 (s/n 31992)

#### Calibration

The sensitivity of the meter was verified on site immediately before and after the sample plant noise measurements. The measured calibration levels were 114.0 dB(A) and 113.8 dB(A) respectively.

The meter and calibrator are tested monthly against two Laboratory Standard Bruel and Kjaer Pistonphones type 4220 (s/n 375806 and 196953) and a Norsonic Calibrator type 1253 (s/n 22906) all with UKAS approved laboratory certificates of calibration.

#### Survey Details

The microphone was at a height of between 1.2 and 1.5 metres above local ground level, with a windshield used throughout. Attended measurements were taken at twenty two locations around the IWWMF site between the times indicated in Appendix 8.3.

## APPENDIX 10.3

### Noise Measurements

Thursday 18 September 2008 – Daytime

Dry, clear & sunny, 18°C, 2 m/s north easterly breeze

Pos	Location	Time	LA10,T	LA90,T	LAeq,T	Comments
1	Home Farm	10:35-10:50	43	37	43	Distant road traffic to east, birdsong, site activity visible but barely audible with occasional broadband reversing alarm, 2 trains, activity in stables.
2	Lower Farm	11:10-11:25	46	41	44	Road traffic to east, site activity visible with engine noise audible, birdsong, distant train movement.
3	Stoke Road	11:45-12:00	71	47	66	Road traffic on Stoke Orchard Road, plant noise from industrial estate.
4	Haydon	12:05-12:20	62	47	59	Road traffic on Stoke Orchard Road, temporary traffic lights and road works but with no machine noise, activity at Grundons commercial site.
5	Pussy Willows	12:30-12:45	61	42	57	Road traffic, birdsong, aircraft.
6	Court Farm	12:55-13:10	57	36	53	Road traffic dominant, birdsong.
7	Wingmoor Lodge	13:20-13:35	58	39	55	Road traffic dominant, birdsong, model airplane.
1	Home Farm	13:45-14:00	50	36	47	Distant road traffic, 2 trains including horn, birdsong, aircraft, shotgun firing to west.
2	Lower Farm	14:15-14:30	49	43	46	Road traffic to east, train noise to southwest, birdsong, tractor in nearby field, aircraft, shooting noise to west.
3	Stoke Road	14:40-14:55	71	49	66	Road traffic dominant, birdsong, some activity at industrial estate, shooting noise to west.
4	Haydon	15:00-15:15	61	45	58	Road traffic on Stoke Orchard Road, activity at Grundon commercial site, roadworks finished and traffic lights removed.
5	Pussy Willows	15:20-15:35	62	46	58	Road traffic dominant, birdsong, aircraft, train passing.
6	Court Farm	15:40-15:55	58	42	55	Road traffic, birdsong, train passing and sounding horn, dog barking at farm.
7	Wingmoor Lodge	16:00-16:15	59	43	55	Road traffic, some plant noise to west and site plant noise to south.

### Noise Measurements

Thursday 25 September 2008 – Daytime

Dry, cloudy, 16°C, 2 m/s north easterly breeze

Pos	Location	Time	LA10,T	LA90,T	LAeq,T	Comments
7	Wingmoor Lodge	11:40-11:55	62	41	58	Road traffic, model plane flying in field to north, birdsong, breeze in trees.
1	Home Farm	12:10-12:25	48	37	46	Distant road traffic, birdsong, site activity audible with engine noise and reversing alarms noted, also noise to east with reversing alarms, 3 trains & 1 freight train, tractor in field to west.
2	Lower Farm	12:55-13:10	47	41	46	Road traffic, tractor activity, birdsong, activity on Grundon site, engine noise and reversing alarms.
3	Stoke Road	13:50-14:05	72	49	68	Road traffic dominant with notable HGV movement, plant noise from industrial estate during lulls in traffic.
4	Haydon	14:10-14:25	61	44	58	Road traffic, breeze in trees, some impulsive noise from Grundons site and shooting range to west but only noticed during lulls in traffic, birdsong, industrial estate activity.
6	Court Farm	14:35-14:50	56	42	53	Road traffic, aircraft, shooting from range to south, breeze in trees, lawn mowing nearby.
1	Home Farm	15:00-15:15	48	42	47	Distant road traffic, shooting from range to north west, site activity audible with engine noise and reversing alarms, farm machine operation to east, aircraft, 2 passenger trains and 1 freight train, low flying large RAF planes.
2	Lower Farm	15:25-15:40	48	44	47	Road traffic in distance, breeze in bushes, site activity audible in distance.
3	Stoke Road	15:45-16:00	72	50	68	Road traffic dominant, birdsong.
4	Haydon	16:05-16:20	61	48	58	Road traffic dominant, breeze in trees, aircraft, some plant activity from Grundons commercial site and industrial estate to east.
5	Pussy Willows	16:25-16:40	62	44	58	Road traffic dominant, birdsong, passing train.
6	Court Farm	16:50-17:05	59	42	55	Road traffic, gentle breeze in trees.
7	Wingmoor Lodge	17:10-17:25	64	47	60	Road traffic dominant, some birdsong, breeze in trees, aircraft.

## Noise Measurements

Friday 26 September 2008 – Daytime

Dry, 17°C, very light <1m/s northerly / variable wind

Pos	Location	Time	LA10,T	LA90,T	LAeq,T	Comments
1	Home Farm	09:15-09:30	50	43	50	Distant road traffic to east, birdsong, Grundon site activity audible in distance, reversing alarms, 2 train passes, aircraft, horse in field.
2	Lower Farm	09:50-10:05	50	43	50	Some activity in nearby barn with occasional impulsive noise, Grundon site activity audible with reversing alarms, continuous road traffic to east, aircraft.
3	Stoke Road	10:10-10:25	72	49	68	Road traffic dominant including notable HGV movements, birdsong, plant from industrial estate during lulls in traffic.
4	Haydon	10:30-10:45	62	46	59	Road traffic dominant, some plant noise at Grundon site, also some plant noise from industrial estate to east.
7	Wingmoor Lodge	11:05-11:20	62	41	58	Road traffic, birdsong, breeze in trees, during traffic lulls Grundon site audible in distance with engine noise noted.
8	Pussy Willows - Log Cabin	11:40-11:55	54	49	52	Low frequency noise noticeable from direction of Grundon site, reversing alarms and engine noise, train pass to west, breeze in trees.
6	Court Farm	12:00-12:15	59	44	56	Grundon activity audible with caterpillar track and engine noise noted, low frequency noise not perceptible, occasional aircraft movements breeze in trees, train

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## Noise Measurements

Monday 29 September 2008 – Daytime

Dry, bright, 16°C, westerly breeze ~ 2m/s

Pos	Location	Time	LA10,T	LA90,T	LAeq,T	Comments
1	Home Farm	11:25-11:40	48	40	46	Activity from landfill site to west (not Grundon site) with engine noise and reversing alarm, light aircraft, some gardening activity at neighbours property, breeze in trees and bushes, birdsong, 1 train pass.
2	Lower Farm	11:55-12:10	49	39	46	Mobile plant activity from Grundon site, engine noise and reversing alarms, breeze in trees, some activity in nearby barn, helicopter.
3	Stoke Road	12:15-12:30	74	52	69	Road traffic dominant, breeze in trees, activity from direction of Grundon commercial site during lulls in traffic.
4	Haydon	12:35-12:50	63	47	59	Road traffic dominant, some plant activity from Grundon commercial site during lulls in traffic.
7	Wingmoor Lodge	13:00-13:15	63	45	60	Road traffic dominant, breeze in trees, birdsong.
8	Pussy Willows Log Cabin	13:20-13:35	51	43	49	Road traffic in distance, aircraft, breeze in trees, no low frequency noise as noted previously, geese in nearby field.
5	Pussy Willows	13:40-13:55	61	44	57	Road traffic, some plant noise to west during traffic lulls, breeze in trees, 2 train passes on nearby line.
6	Court Farm	14:00-14:15	59	45	56	Road traffic, noted plant noise from Grundon site during lulls in traffic, distant low frequency noise.
1	Home Farm	14:30-14:45	47	41	52	Mobile plant noise from west with broadband reversing alarms and engine noise, birdsong, breeze in trees, freight train.
3	Stoke Road	14:55-15:10	72	53	68	Road traffic, plant noise from Grundon commercial site, activity at industrial estate.
4	Haydon	15:15-15:30	63	48	59	Road traffic, breeze in trees and bushes, aircraft, some activity at Grundon commercial site, caterpillar tracks and reversing alarms.

## Noise Measurements

Monday 29 September 2008 – Daytime  
 Dry, bright, 16°C, westerly breeze ~ 2m/s

Pos	Location	Time	L <sub>A10,T</sub>	L <sub>A90,T</sub>	L <sub>Aeq,T</sub>	Comments
8	Pussy Willows Log Cabin	15:35-15:50	52	47	51	Road traffic, breeze in trees, Grundon site activity with low frequency noise, roadwork's at entrance to Pussy Willows, 2 trains.
6	Court Farm	15:55-16:10	58	46	55	Road traffic, 2 trains, some noise from road works, breeze in trees, Grundon site works in distance.
7	Wingmoor Lodge	16:15-16:30	64	50	60	Road traffic dominant, breeze in trees, some Grundon site noise to west and road works.
2	Lower Farm	16:35-16:50	49	39	46	Road traffic in distance, mobile plant noise from Grundon site, some activity from nearby barn, breeze in trees, birdsong.

## Noise Measurements

Thursday 25 to 26 September 2008 Night-time  
 Dry, very light and variable wind, ~ 1m/s, clear

Pos	Location	Time	L <sub>A10,T</sub>	L <sub>A90,T</sub>	L <sub>Aeq,T</sub>	Comments
5/6	Pussy Willows / Court Farm	21:55-22:10	51	32	53	Passing vehicles on Stoke Orchard Road and in distance, quiet music from nearby dwelling, passing train.
7	Wingmoor Lodge	22:15-22:30	57	37	52	Road traffic dominant, faint rumble of plant noise from direction of Grundon site audible during traffic lulls.
4a	Haydon	22:35-22:50	55	40	51	Passing road traffic dominant also with road traffic in distance.
3	Stoke Road	22:55-23:10	55	38	58	Road traffic in distance and passing on Stoke Orchard Road, hum from plant and occasional activity from industrial estate.
2a	Lower Farm	23:20-23:35	49	39	45	Road traffic on road to west.
1a	Home Farm	23:40-23:55	37	33	36	Distant road traffic, animals in field, distant dog bark.
5/6	Pussy Willows / Court Farm	00:10-00:25	43	31	49	Continuous whine audible from direction of Grundon site (tanker off-loading), distant road traffic with occasional passing car.
7	Wingmoor Lodge	00:30-00:45	38	29	42	Distant road traffic and very occasional passing vehicle on road, rumble from Grundon site.
4a	Haydon	00:50-01:05	42	30	42	Distant road traffic, some plant noise audible from industrial estate, loud bird calls.
3	Stoke Road	01:10-01:25	36	32	50	Plant noise continuous from industrial estate, occasional vehicle on Stoke Road and Stoke Orchard Road.
2a	Lower Farm	01:35-01:50	39	28	36	Very distant and occasional road traffic, bird calls, aircraft.
1a	Home Farm	01:55-02:10	32	27	30	Distant road traffic, birdcalls, some plant noise from west.

## Noise Measurements

Thursday 25 September 2008 and Friday 26 September 2008  
Continuous monitoring at Wingmoor Lodge

Day	Date	Start Time	L <sub>A10,T</sub>	L <sub>A90,T</sub>	L <sub>Aeq,T</sub>
Thursday	25/09/2008	11:32	62	39	58
Thursday	25/09/2008	12:00	62	39	59
Thursday	25/09/2008	13:00	62	38	58
Thursday	25/09/2008	14:00	62	40	58
Thursday	25/09/2008	15:00	62	41	58
Thursday	25/09/2008	16:00	63	43	59
Thursday	25/09/2008	17:00	64	45	60
Thursday	25/09/2008	18:00	62	42	58
Thursday	25/09/2008	19:00	61	37	56
Thursday	25/09/2008	20:00	56	33	54
Thursday	25/09/2008	21:00	52	33	51
Thursday	25/09/2008	22:00	50	32	50
Thursday	25/09/2008	23:00	46	29	50
Friday	26/09/2008	00:00	39	26	44
Friday	26/09/2008	01:00	37	25	41
Friday	26/09/2008	02:00	30	26	29
Friday	26/09/2008	03:00	37	26	44
Friday	26/09/2008	04:00	35	28	43
Friday	26/09/2008	05:00	44	30	48
Friday	26/09/2008	06:00	59	35	55
Friday	26/09/2008	07:00	64	46	60
Friday	26/09/2008	08:00	65	48	62
Friday	26/09/2008	09:00	64	46	61
Friday	26/09/2008	10:00	62	41	59
Friday	26/09/2008	11:06	62	42	59
Friday	26/09/2008	12:00	63	42	59
Friday	26/09/2008	13:00	63	40	59
Friday	26/09/2008	14:00	63	41	59
Friday	26/09/2008	15:00	63	42	59
Friday	26/09/2008	16:00	63	43	59
Friday	26/09/2008	17:00	63	42	59
Friday	26/09/2008	18:00	63	40	59
Friday	26/09/2008	19:00	61	38	56
Friday	26/09/2008	20:00	58	34	54
Friday	26/09/2008	21:00	55	33	53
Friday	26/09/2008	22:00	53	31	52
Friday	26/09/2008	23:00	51	32	51

## Noise Measurements

Saturday 27 September 2008 and Monday 29 September 2008  
Continuous monitoring at Wingmoor Lodge

Day	Date	Start Time	L <sub>A10,T</sub>	L <sub>A90,T</sub>	L <sub>Aeq,T</sub>
Saturday	27/09/2008	00:00	43	29	48
Saturday	27/09/2008	01:00	42	29	45
Saturday	27/09/2008	02:00	41	30	47
Saturday	27/09/2008	03:00	39	30	45
Saturday	27/09/2008	04:00	38	32	42
Saturday	27/09/2008	05:00	45	32	48
Saturday	27/09/2008	06:00	55	37	53
Saturday	27/09/2008	07:00	58	40	56
Saturday	27/09/2008	08:00	61	37	57
Saturday	27/09/2008	09:00	62	38	57
Saturday	27/09/2008	10:00	62	37	58
Saturday	27/09/2008	11:00	62	36	58
Saturday	27/09/2008	12:00	62	37	58
Saturday	27/09/2008	13:00	62	39	58
Saturday	27/09/2008	14:00	61	39	57
Saturday	27/09/2008	15:00	61	41	57
Saturday	27/09/2008	16:00	62	43	57
Saturday	27/09/2008	17:00	62	43	58
Saturday	27/09/2008	18:00	63	42	58
Saturday	27/09/2008	19:00	60	41	55
Saturday	27/09/2008	20:00	53	42	52
Saturday	27/09/2008	21:00	52	39	52
Saturday	27/09/2008	22:00	50	36	50
Saturday	27/09/2008	23:00	50	36	50
Monday	29/09/2008	00:00	35	29	40
Monday	29/09/2008	01:00	37	29	42
Monday	29/09/2008	02:00	37	30	43
Monday	29/09/2008	03:00	41	34	42
Monday	29/09/2008	04:00	41	35	43
Monday	29/09/2008	05:00	49	41	50
Monday	29/09/2008	06:00	59	48	56
Monday	29/09/2008	07:00	64	50	60
Monday	29/09/2008	08:00	64	50	61
Monday	29/09/2008	09:00	63	48	60
Monday	29/09/2008	10:00	63	45	60
Monday	29/09/2008	11:00	63	49	60
Monday	29/09/2008	12:00	63	50	60
Monday	29/09/2008	13:00	63	46	60
Monday	29/09/2008	14:00	64	51	60
Monday	29/09/2008	15:00	63	51	60
Monday	29/09/2008	16:00	64	50	61

## Noise Measurements

Sunday 28 September 2008  
Continuous monitoring at Wingmoor Lodge

Day	Date	Start Time	L <sub>A10,T</sub>	L <sub>A90,T</sub>	L <sub>Aeq,T</sub>
Sunday	28/09/2008	00:00	47	35	49
Sunday	28/09/2008	01:00	40	30	44
Sunday	28/09/2008	02:00	36	30	33
Sunday	28/09/2008	03:00	36	30	38
Sunday	28/09/2008	04:00	36	30	40
Sunday	28/09/2008	05:00	39	31	43
Sunday	28/09/2008	06:00	53	32	50
Sunday	28/09/2008	07:00	51	34	51
Sunday	28/09/2008	08:00	57	37	53
Sunday	28/09/2008	09:00	61	38	56
Sunday	28/09/2008	10:00	62	41	58
Sunday	28/09/2008	11:00	62	42	57
Sunday	28/09/2008	12:00	62	39	58
Sunday	28/09/2008	13:00	61	39	56
Sunday	28/09/2008	14:00	61	39	57
Sunday	28/09/2008	15:00	61	41	57
Sunday	28/09/2008	16:00	62	44	58
Sunday	28/09/2008	17:00	62	44	57
Sunday	28/09/2008	18:00	60	44	56
Sunday	28/09/2008	19:00	58	44	54
Sunday	28/09/2008	20:00	54	32	52
Sunday	28/09/2008	00:00	47	35	49
Sunday	28/09/2008	01:00	40	30	44
Sunday	28/09/2008	02:00	36	30	33

*Note: Sunday data is presented for information only; it is not used in the assessment*

## Noise Measurements

Thursday 25 September 2008 and Friday 26 September 2008  
Continuous monitoring at Lower Farm

Day	Date	Start Time	L <sub>A10,T</sub>	L <sub>A90,T</sub>	L <sub>Aeq,T</sub>
Thursday	25/09/2008	13:18	49	43	47
Thursday	25/09/2008	14:00	61	45	58
Thursday	25/09/2008	15:00	50	45	48
Thursday	25/09/2008	16:00	50	46	49
Thursday	25/09/2008	17:00	50	44	48
Thursday	25/09/2008	18:00	48	44	46
Thursday	25/09/2008	19:00	50	44	48
Thursday	25/09/2008	20:00	50	42	47
Thursday	25/09/2008	21:00	49	41	46
Thursday	25/09/2008	22:00	50	41	47
Thursday	25/09/2008	23:00	49	37	46
Friday	26/09/2008	00:00	41	32	38
Friday	26/09/2008	01:00	40	27	36
Friday	26/09/2008	02:00	38	28	35
Friday	26/09/2008	03:00	41	29	38
Friday	26/09/2008	04:00	39	32	36
Friday	26/09/2008	05:00	46	35	43
Friday	26/09/2008	06:00	54	42	50
Friday	26/09/2008	07:00	53	49	51
Friday	26/09/2008	08:00	52	45	50
Friday	26/09/2008	09:00	51	43	53
Friday	26/09/2008	10:05	53	46	51
Friday	26/09/2008	11:00	51	45	49
Friday	26/09/2008	12:00	52	46	50
Friday	26/09/2008	13:00	56	47	58
Friday	26/09/2008	14:00	52	45	51
Friday	26/09/2008	15:00	51	45	49
Friday	26/09/2008	16:00	51	45	49
Friday	26/09/2008	17:00	51	46	50
Friday	26/09/2008	18:00	52	47	50
Friday	26/09/2008	19:00	53	47	51
Friday	26/09/2008	20:00	52	44	49
Friday	26/09/2008	21:00	48	42	46
Friday	26/09/2008	22:00	49	40	46
Friday	26/09/2008	23:00	49	39	47

## Noise Measurements

*Saturday 27 September 2008 and Monday 29 September 2008*

*Continuous monitoring at Lower Farm*

Day	Date	Start Time	L <sub>A10,T</sub>	L <sub>A90,T</sub>	L <sub>Aeq,T</sub>
Saturday	27/09/2008	00:00	41	36	40
Saturday	27/09/2008	01:00	42	33	39
Saturday	27/09/2008	02:00	43	34	40
Saturday	27/09/2008	03:00	43	31	39
Saturday	27/09/2008	04:00	41	31	38
Saturday	27/09/2008	05:00	44	33	40
Saturday	27/09/2008	06:00	49	37	46
Saturday	27/09/2008	07:00	53	43	50
Saturday	27/09/2008	08:00	49	39	46
Saturday	27/09/2008	09:00	46	35	47
Saturday	27/09/2008	10:00	48	35	50
Saturday	27/09/2008	11:00	43	34	43
Saturday	27/09/2008	12:00	50	33	50
Saturday	27/09/2008	13:00	40	33	38
Saturday	27/09/2008	14:00	42	33	42
Saturday	27/09/2008	15:00	45	34	46
Saturday	27/09/2008	16:00	45	34	44
Saturday	27/09/2008	17:00	43	35	42
Saturday	27/09/2008	18:00	44	38	43
Saturday	27/09/2008	19:00	44	37	42
Saturday	27/09/2008	20:00	48	39	45
Saturday	27/09/2008	21:00	46	38	43
Saturday	27/09/2008	22:00	44	35	42
Saturday	27/09/2008	23:00	45	37	42
Monday	29/09/2008	00:00	33	27	31
Monday	29/09/2008	01:00	34	26	31
Monday	29/09/2008	02:00	33	27	31
Monday	29/09/2008	03:00	36	31	35
Monday	29/09/2008	04:00	42	33	38
Monday	29/09/2008	05:00	45	36	42
Monday	29/09/2008	06:00	51	43	49
Monday	29/09/2008	07:00	53	49	51
Monday	29/09/2008	08:00	50	46	49
Monday	29/09/2008	09:00	48	43	47
Monday	29/09/2008	10:00	47	39	49
Monday	29/09/2008	11:00	50	41	47
Monday	29/09/2008	12:00	51	40	51
Monday	29/09/2008	13:00	49	39	48
Monday	29/09/2008	14:00	52	40	50
Monday	29/09/2008	15:00	53	42	53
Monday	29/09/2008	16:00	53	43	55

## Noise Measurements

*Sunday 29 September 2008*

*Continuous monitoring at Lower Farm*

Day	Date	Start Time	L <sub>A10,T</sub>	L <sub>A90,T</sub>	L <sub>Aeq,T</sub>
Sunday	28/09/2008	00:00	44	34	42
Sunday	28/09/2008	01:00	42	30	39
Sunday	28/09/2008	02:00	41	28	37
Sunday	28/09/2008	03:00	41	29	38
Sunday	28/09/2008	04:00	39	28	35
Sunday	28/09/2008	05:00	42	29	38
Sunday	28/09/2008	06:00	47	32	47
Sunday	28/09/2008	07:00	45	37	44
Sunday	28/09/2008	08:00	44	35	47
Sunday	28/09/2008	09:00	45	37	45
Sunday	28/09/2008	10:00	46	36	45
Sunday	28/09/2008	11:00	44	37	42
Sunday	28/09/2008	12:00	46	32	43
Sunday	28/09/2008	13:00	45	33	42
Sunday	28/09/2008	14:00	45	34	42
Sunday	28/09/2008	15:00	45	35	42
Sunday	28/09/2008	16:00	44	36	41
Sunday	28/09/2008	17:00	44	38	42
Sunday	28/09/2008	18:00	44	37	43
Sunday	28/09/2008	19:00	42	35	42
Sunday	28/09/2008	20:00	40	33	38
Sunday	28/09/2008	21:00	39	29	36
Sunday	28/09/2008	22:00	36	28	33
Sunday	28/09/2008	23:00	36	28	33

*Note: Sunday data is presented for information only; it is not used in the assessment*

## Noise Measurements

*Wednesday 08 October 2008 (daytime)*

*Grundon Waste Management Wingmoor Farm IWWMF Site*

*External Plant Noise Measurements (~ 10.00 to 14:30)*

*One third octave band data was measured and is available for inspection*

Position	Measurement Location Description	Distance (metres)	L <sub>A90,T</sub> dB	L <sub>Aeq,T</sub> dB	L <sub>Amax,F</sub> dB
Pos A	Gas Compound, side of access road	20	58	58	59
Pos B	Gas Compound, by site entrance gates	35	50	51	57
Pos C	Gas Compound, on grass by parked road sweeper	20	57	57	66
Pos D	Gas Compound, on grass bank over looking plant	20	56	57	62
Pos E	Loading shovel at quarry processing plant	40	55	68	80
Pos F	Ash plant, corner of yard near skip storage, d/t	20	66	74	79
Pos F	Ash plant, corner of yard near skip storage, d/t	20	68	73	80
Pos G	Ash plant, @ 15 metres to Silo 3, d/t loading @ 20 m	20	68	71	85
Pos H	At rear of ash plant, behind enclosure, d/t	20	58	63	68
Pos I	Ash plant, @ 35 metres to Silo 3, d/t loading	40	57	61	66
Pos I	Dump truck (d/t) passing in vicinity of ash plant	5	71	78	83
Pos J	Skip area, HGV lifting off enclosed skip	30	56	59	69
Pos K	Clay stockpile, dozer pushing material	30	68	73	79
Pos K	Clay stockpile, dozer pushing material	30	69	73	77
Pos I	Ash plant, tanker unloading into Silo 4, rear	45	63	66	75
Pos L	Ash plant, tanker unloading into Silo 4, rear	25	69	70	77
Pos M	Ash plant, tanker unloading into Silo 4, side	10	79	80	81
Pos N	Ash plant, tanker unloading into Silo 4, front	20	68	69	72
Pos H	Ash plant, tanker unloading into Silo 4, side	20	74	74	79
Pos O	Ash plant, tanker unloading into Silo 4, front	40	61	63	68
Pos P	Dump truck pass, haul road from ash disposal	5	70	81	85
Pos P	Dump truck pass, haul road to ash disposal	5	63	72	76
Pos P	Dump truck pass, haul road from ash disposal	5	53	74	82
Pos P	Dump truck pass, haul road to ash disposal	5	59	74	80
Pos P	Dump truck pass, haul road from ash disposal	5	69	79	84
Pos Q	Ash disposal area, dump trucks tipping	60	56	66	76
Pos Q'	Ash disposal area, dozer constructing ramp	20	62	71	78
Pos R	Landfill area, distant ash disposal area	n/a	45	52	66
Pos S	Landfill area, Bomag compactor idling, moved	20	58	69	77
Pos S	Landfill area, Bomag compactor moving	15	65	71	76
Pos S	Landfill area, Bomag compactor & tipping	20	60	71	86
Pos T	Landfill area, Bomag compactor & tipping	100	50	59	70
Pos U	Landfill area, bulk carrier leaving site	10	60	68	74
Pos V	MRF area (not complete), wheel wash (hired unit)	10	76	77	82

## APPENDIX 10.4

### Summary of Noise Levels

Location	Average Daytime Background Noise Level, dB L <sub>A90,T</sub>	Average Daytime Ambient Noise Level, dB L <sub>Aeq,T</sub>
Home Farm	39	48
Lower Farm	41 (43 unattended)	47 (51 unattended*)
Stoke Road	50	67
Haydon	46	59
Pussy Willows / Log Cabin**	45	56
Court Farm	42	55
Wingmoor Lodge	44 (43 unattended)	58 (59 unattended*)

\*Note: the average daytime noise levels for Lower Farm and Wingmoor Lodge exclude the Sunday noise measurements since there are no operations or vehicle movements on the IWMF proposed for Sunday daytime, other than the possibility of one or two Air Pollution Control (APC) residue deliveries.

\*\*Note: the sample measurements made in the vicinity of the Log Cabin were averaged with the sample measurements made in the vicinity of Pussy Willows; both dwellings are associated with the cattery.

Location	Lowest Night-time Background Noise Level, dB L <sub>A90,T</sub>	Lowest Night-time Ambient Noise Level, dB L <sub>Aeq,T</sub>
Home Farm	27	30
Lower Farm	28 (30 unattended*)	36
Stoke Road	32	50
Haydon	30	42
Pussy Willows / Log Cabin	31	49
Court Farm	31	49
Wingmoor Lodge	29 (29 unattended*)	42

\*Note: the lowest night-time background noise levels for the unattended measurements at Lower Farm and Wingmoor Lodge are the average background noise levels, dB L<sub>A90, T</sub> during the quietest part of the night-time period between 1 am and 5 am, rather than the absolute minimum background noise level measured at these locations for the weekdays and weekend period.

## APPENDIX 10.5

### Suggested Site Noise Limits for IWMF Operation

Daytime (07.00 to 18.00) Monday to Friday and Saturday  
(07.00 to 13.00)

Location	Average Daytime Background Noise Level, dB L <sub>A90,T</sub>	Suggested Daytime IWMF Site Noise Limit dB L <sub>Aeq, 1 hour, free field</sub>
Home Farm	39	49
Lower Farm	41 (43 unattended)	53*
Stoke Road	50	55
Haydon	46	55
Pussy Willows / Log Cabin	45	55
Court Farm	42	52
Wingmoor Lodge	44 (43 unattended)	53*

\*Note: based on the average background noise levels for the unattended measurements

Night time (23.00 to 07.00) Weekdays and Weekend & Sundays

Location	Lowest Night-time Background Noise Level, dB L <sub>A90,T</sub>	Suggested Night-time & Sundays Site Noise Limit dB L <sub>Aeq, 1 hour, free field</sub>
Home Farm	27	32
Lower Farm	28 (30 unattended*)	35**
Stoke Road	32	37
Haydon	30	35
Pussy Willows / Log Cabin	31	36
Court Farm	31	36
Wingmoor Lodge	29 (29 unattended*)	34**

\*Note: the lowest night-time background noise levels for the unattended measurements at Lower Farm and Wingmoor Lodge are the average background noise levels during the quietest part of the night-time period between 1 am and 5 am, rather than the absolute minimum background noise level measured at these locations for the weekdays and weekend period.

\*\*Note: the suggested night-time noise limit for Lower Farm and Wingmoor Lodge are based on 5 dB(A) above the average background noise level value given in brackets in the second column.

## APPENDIX 10.6

### Calculated Site Noise Levels for IWMF Operation - Unmitigated

Daytime (07.00 to 18.00) Monday to Friday and Saturday  
(07.00 to 13.00)

Location	Calculated Site Noise Level dB L <sub>Aeq,T</sub>	Suggested Site Noise Limit dB L <sub>Aeq,T</sub>
Home Farm	42	49
Lower Farm	47	53
Stoke Road	46	55
Haydon	52	55
Pussy Willows	<b>58</b>	55
Court Farm	<b>55</b>	52
Wingmoor Lodge	53	53
Log Cabin	<b>61</b>	55

Note: values in bold indicate potential excess over suggested noise limit

Night time (23.00 to 07.00) Weekdays and Weekend & Sundays

Location	Calculated Site Noise Level dB L <sub>Aeq,T</sub>	Suggested Site Noise Limit dB L <sub>Aeq,T</sub>
Home Farm	32	32
Lower Farm	27	35
Stoke Road	28	37
Haydon	<b>37</b>	35
Pussy Willows	32	36
Court Farm	31	36
Wingmoor Lodge	<b>37</b>	34
Log Cabin	33	36

Note: values in bold indicate potential excess over suggested noise limit

## APPENDIX 10.7

### Calculated Site Noise Levels for IWMF Operation - Mitigated

Daytime (07.00 to 18.00) Monday to Friday and Saturday  
(07.00 to 13.00)

Location	Calculated Site Noise Level dB L <sub>Aeq,T</sub>	Suggested Site Noise Limit dB L <sub>Aeq,T</sub>
Home Farm	42	49
Lower Farm	47	53
Stoke Road	46	55
Haydon	52	55
Pussy Willows	54	55
Court Farm	52	52
Wingmoor Lodge	53	53
Log Cabin	54	55

Night time (23.00 to 07.00) Weekdays and Weekend & Sundays

Location	Calculated Site Noise Level dB L <sub>Aeq,T</sub>	Suggested Site Noise Limit dB L <sub>Aeq,T</sub>
Home Farm	32	32
Lower Farm	27	35
Stoke Road	28	37
Haydon	33	35
Pussy Willows	32	36
Court Farm	31	36
Wingmoor Lodge	34	34
Log Cabin	33	36

## APPENDIX 10.8

### Calculated Temporary Site Noise Levels

Location	Calculated Site Noise Level dB L <sub>Aeq,T</sub>	Recommended Site Noise Limit dB L <sub>Aeq,T</sub>
Home Farm	32	70
Lower Farm	27	70
Stoke Road	28	70
Haydon	33	70
Pussy Willows	32	70
Court Farm	31	70
Wingmoor Lodge	34	70
Log Cabin	33	70

Note: The calculated site noise level and the recommended site noise limit values are all expressed in terms of dB L<sub>Aeq, 1 hour, free field</sub>.

Note: Temporary Works are the formation of noise attenuation bunds in the north western corner of the site, at about 30 metres to the nearest dwelling and surface water management pond formation in the south eastern corner of the site.

## APPENDIX 10.9

### Site Noise Calculation Summary Sheets

Home Farm, Brockhampton

GRUNDON WASTE MANAGEMENT LIMITED

3722 06-May-09

WINGMOOR FARM INTEGRATED WASTE MANAGEMENT FACILITY  
BISHOPS CLEEVE, GLOUCESTERSHIRE

MRF HGV movements / hour 6 Access Road Receiver Height: 1.5 m  
IWMF HGV movements / hour 24 Access Road Site base height: 40 m AOD

Ref.	Plant Item	Data Source / Comment	No.	Power LWA	On-time	Source Height (m)	2 way flow Speed Q per hr V kph	BS5228 ref.	BS5228 method	Ref.
1	1. Excavator & dump truck in sand and gravel extraction area	WBM plant noise database		106	100	2		2	Power	1
2	2. Loading shovel by stockpiles for sand and gravel export	Measured on site 08.10.08		108	100	2		2	Power	2
3	3. Processing plant for sand and gravel (s&g plant)	WBM plant noise database		110	100	4		2	Power	3
4	4. Excavators for extraction of clay for engineering and restoration	WBM plant noise database	2	106	100	2		2	Power	4
5	5. Dump trucks for clay for engineering and restoration	Measured on site 08.10.08		106	100	2		2	Power	5
6	6. Dozer for extraction of clay for engineering and restoration	Measured on site 08.10.08		111	100	2		2	Power	6
7	7. Spare Plant Item			-999	100	2		2	Power	7
8	8. Spare Plant Item			-999	100	2		2	Power	8
9	9. Gas engines and flare stack in existing location	Measured on site 08.10.08	2	94	100	3		2	Power	9
10	10. Air pollution control tankers discharging at ash plant	Measured on site 08.10.08	2	109	100	2		2	Power	10
11	11. Dump trucks collecting treated material from ash plant	Measured on site 08.10.08		103	100	2		2	Power	11
12	12. Dump trucks depositing hazardous material in landfill	Measured on site 08.10.08		106	100	2		2	Power	12
13	13. Dozer for grading hazardous material in landfill	Measured on site 08.10.08		106	100	2		2	Power	13
14	14. Compactors for commercial and industrial waste in landfill	Measured on site 08.10.08	2	109	100	2		2	Power	14
15	15. HGV for depositing commercial and industrial waste in landfill	Measured on site 08.10.08		104	100	2		2	Power	15
16	16. Materials recovery facility (MRF) main building openings	MRF application noise report		100	100	4		2	Power	16
17	17. Materials recovery facility movement of material and vehicles	WBM plant noise database		104	100	2		2	Power	17
18	18. Skip handling and moving at skip storage site near to MRF	Measured on site 08.10.08		100	100	2		2	Power	18
19	19. Vehicle depot and workshop adjacent to MRF	WBM plant noise database		100	100	2		2	Power	19
20	20. Gas engine and flare stack in proposed location (engine)	Proposed 1.1 MW Engine		97	100	3		2	Power	20
21	21. Gas engine and flare stack in proposed location (exhaust)	Proposed 1.1 MW Engine		86	100	8		2	Power	21
22	22. HGV movements to and from materials recycling facility (MRF)	WBM plant noise database		104	100	2	6 20	4	Haul Road	22
23	23. HGV movements on access for landfill, ash plant and s&g plant	WBM plant noise database		104	100	2	24 20	4	Haul Road	23
24	24. HGV movements on internal haul roads	WBM plant noise database		104	100	2	24 20	4	Haul Road	24
25	25. Dump truck movements on internal haul roads	Measured on site 08.10.08		106	100	2	24 20	4	Haul Road	25
26	24. Spare Plant Item			-999	100	2		2	Power	26
27	27. Excavator for bunding in NW corner of site - Temporary Works	WBM plant noise database		106	100	2		2	Power	27
28	28. Dozer for bunding in NW corner of site - Temporary Works	WBM plant noise database		111	100	2		2	Power	28
29	29. Excavator for pond in SE corner of site - Temporary Works	WBM plant noise database		106	100	2		2	Power	29
30	30. Dozer for pond in SE corner of site - Temporary Works	WBM plant noise database		111	100	2		2	Power	30

**Home Farm, Brockhampton**

Receiver (Ground Height at Receiver + Receiver Height) 41.5  
Average Daytime (07.00 to 18.00) Background Noise Level 39  
Lowest Night-time (23.00 to 07.00) Background Noise Level 27

Location No.

m AOD  
Temporary Works (Items 27-30) 39  
Total for IWMF Plant (Items 1-26) 42  
Night-time Plant (Items 9 & 10 or 20 & 21) 32  
dB LAeq, 1 hour, free field  
Daytime  
dB LAeq, 1 hour, free field  
Daytime  
dB LAeq, 1 hour, free field  
Night-time

Ref.	Plant Item	Plan Dist. (m)	Working Distance (m)	Ground Height (m AOD)	Height / depth (m)	Source Height	Angle Degrees	Range Metres	Barrier -Receiver	Barrier Height	Path Diff.	Barrier Atten.	Soft Ground %	Ground Atten.	Resultant LAeq
1	1. Excavator & dump truck in sand and gravel extraction area	962	962	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.9	30.4
2	2. Loading shovel by stockpiles for sand and gravel export	1101	1101	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	31.2
3	3. Processing plant for sand and gravel (s&g plant)	1105	1105	40.0	0.0	44.0	0	0	0	0.0	-1.000	0.0	100	7.0	34.2
4	4. Excavators for extraction of clay for engineering and restoration	1518	1518	0.0	0.0	2.0	0	0	0	0.0	-1.000	0.0	100	8.0	26.4
5	5. Dump trucks for clay for engineering and restoration	1518	1518	0.0	0.0	2.0	0	0	0	0.0	-1.000	0.0	100	8.0	26.4
6	6. Dozer for extraction of clay for engineering and restoration	1518	1518	0.0	0.0	2.0	0	0	0	0.0	-1.000	0.0	100	8.0	31.4
7	7. Spare Plant Item	1140	1140	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	-1076.1
8	8. Spare Plant Item	1140	1140	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	-1076.1
9	9. Gas engines and flare stack in existing location	1280	1280	38.0	0.0	41.0	0	0	0	0.0	-1.000	0.0	100	7.9	16.0
10	10. Air pollution control tankers discharging at ash plant	1150	1150	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	31.8
11	11. Dump trucks collecting treated material from ash plant	1150	1150	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	25.8
12	12. Dump trucks depositing hazardous material in landfill	1589	1589	0.0	0.0	2.0	0	0	0	0.0	-1.000	0.0	100	8.0	26.0
13	13. Dozer for grading hazardous material in landfill	1589	1589	0.0	0.0	2.0	0	0	0	0.0	-1.000	0.0	100	8.0	26.0
14	14. Compactors for commercial and industrial waste in landfill	875	875	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.7	34.5
15	15. HGV for depositing commercial and industrial waste in landfill	875	875	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.7	29.4
16	16. Materials recovery facility (MRF) main building openings	1221	1221	40.0	0.0	44.0	0	0	0	0.0	-1.000	0.0	100	7.1	23.1
17	17. Materials recovery facility movement of material and vehicles	1221	1221	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	26.3
18	18. Skip handling and moving at skip storage site near to MRF	1231	1231	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	22.2
19	19. Vehicle depot and workshop adjacent to MRF	1231	1231	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	22.2
20	20. Gas engine and flare stack in proposed location (engine)	1301	1301	0.0	0.0	3.0	0	0	0	0.0	-1.000	0.0	100	7.9	18.8
21	21. Gas engine and flare stack in proposed location (exhaust)	1301	1301	0.0	0.0	8.0	0	0	0	0.0	-1.000	0.0	100	4.6	11.1
22	22. HGV movements to and from materials recycling facility (MRF)	168	168	40.0	0.0	42.0	1	0	0	0.0	-1.000	0.0	100	4.1	18.6
23	23. HGV movements on access for landfill, ash plant and s&g plant	239	239	40.0	0.0	42.0	3	0	0	0.0	-1.000	0.0	100	4.9	24.6
24	24. HGV movements on internal haul roads	1063	1063	40.0	0.0	42.0	7	0	0	0.0	-1.000	0.0	100	8.0	19.7
25	25. Dump truck movements on internal haul roads	685	685	40.0	0.0	42.0	10	0	0	0.0	-1.000	0.0	100	7.2	25.6
26	24. Spare Plant Item	1265	1265	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	-1077.0
27	27. Excavator for bunding in NW corner of site - Temporary Works	1614	1614	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	25.8
28	28. Dozer for bunding in NW corner of site - Temporary Works	1603	1603	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	30.9
29	29. Excavator for pond in SE corner of site - Temporary Works	875	875	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.7	31.4
30	30. Dozer for pond in SE corner of site - Temporary Works	875	875	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.7	36.4

Site Noise Calculation Summary Sheets

Lower Farm

GRUNDON WASTE MANAGEMENT LIMITED

3722 06-May-09

WINGMOOR FARM INTEGRATED WASTE MANAGEMENT FACILITY  
BISHOPS CLEEVE, GLOUCESTERSHIRE

MRF HGV movements / hour 6 Access Road Receiver Height: 1.5 m  
IWMF HGV movements / hour 24 Access Road Site base height: 40 m AOD

Ref.	Plant Item	Data Source / Comment	No.	Power LWA	On-time	Source Height (m)	2 way flow Speed Q per hr V kph	BS5228 ref.	BS5228 method	Ref.
1	1. Excavator & dump truck in sand and gravel extraction area	WBM plant noise database		106	100	2		2	Power	1
2	2. Loading shovel by stockpiles for sand and gravel export	Measured on site 08.10.08		108	100	2		2	Power	2
3	3. Processing plant for sand and gravel (s&g plant)	WBM plant noise database		110	100	4		2	Power	3
4	4. Excavators for extraction of clay for engineering and restoration	WBM plant noise database	2	106	100	2		2	Power	4
5	5. Dump trucks for clay for engineering and restoration	Measured on site 08.10.08		106	100	2		2	Power	5
6	6. Dozer for extraction of clay for engineering and restoration	Measured on site 08.10.08		111	100	2		2	Power	6
7	7. Spare Plant Item			-999	100	2		2	Power	7
8	8. Spare Plant Item			-999	100	2		2	Power	8
9	9. Gas engines and flare stack in existing location	Measured on site 08.10.08	2	94	100	3		2	Power	9
10	10. Air pollution control tankers discharging at ash plant	Measured on site 08.10.08	2	109	100	2		2	Power	10
11	11. Dump trucks collecting treated material from ash plant	Measured on site 08.10.08		103	100	2		2	Power	11
12	12. Dump trucks depositing hazardous material in landfill	Measured on site 08.10.08		106	100	2		2	Power	12
13	13. Dozer for grading hazardous material in landfill	Measured on site 08.10.08		106	100	2		2	Power	13
14	14. Compactors for commercial and industrial waste in landfill	Measured on site 08.10.08	2	109	100	2		2	Power	14
15	15. HGV for depositing commercial and industrial waste in landfill	Measured on site 08.10.08		104	100	2		2	Power	15
16	16. Materials recovery facility (MRF) main building openings	MRF application noise report		100	100	4		2	Power	16
17	17. Materials recovery facility movement of material and vehicles	WBM plant noise database		104	100	2		2	Power	17
18	18. Skip handling and moving at skip storage site near to MRF	Measured on site 08.10.08		100	100	2		2	Power	18
19	19. Vehicle depot and workshop adjacent to MRF	WBM plant noise database		100	100	2		2	Power	19
20	20. Gas engine and flare stack in proposed location (engine)	Proposed 1.1 MW Engine		97	100	3		2	Power	20
21	21. Gas engine and flare stack in proposed location (exhaust)	Proposed 1.1 MW Engine		86	100	8		2	Power	21
22	22. HGV movements to and from materials recycling facility (MRF)	WBM plant noise database		104	100	2	6 20	4	Haul Road	22
23	23. HGV movements on access for landfill, ash plant and s&g plant	WBM plant noise database		104	100	2	24 20	4	Haul Road	23
24	24. HGV movements on internal haul roads	WBM plant noise database		104	100	2	24 20	4	Haul Road	24
25	25. Dump truck movements on internal haul roads	Measured on site 08.10.08		106	100	2	24 20	4	Haul Road	25
26	24. Spare Plant Item			-999	100	2		2	Power	26
27	27. Excavator for bunding in NW corner of site - Temporary Works	WBM plant noise database		106	100	2		2	Power	27
28	28. Dozer for bunding in NW corner of site - Temporary Works	WBM plant noise database		111	100	2		2	Power	28
29	29. Excavator for pond in SE corner of site - Temporary Works	WBM plant noise database		106	100	2		2	Power	29
30	30. Dozer for pond in SE corner of site - Temporary Works	WBM plant noise database		111	100	2		2	Power	30

Lower Farm

Receiver (Ground Height at Receiver + Receiver Height) 44.5  
Average Daytime (07.00 to 18.00) Background Noise Level 43  
Lowest Night-time (23.00 to 07.00) Background Noise Level 30

Location No.

m AOD  
Temporary Works (Items 27-30) 47  
Total for IWMF Plant (Items 1-26) 47  
Night-time Plant (Items 9 & 10 or 20 & 21) 27

dB LAeq, 1 hour, free field Daytime  
dB LAeq, 1 hour, free field Daytime  
dB LAeq, 1 hour, free field Night-time

Ref.	Plant Item	Plan Dist. (m)	Working Distance (m)	Ground Height (m AOD)	Height / depth (m)	Source Height	Angle Degrees	Range Metres	Barrier -Receiver	Barrier Height	Path Diff.	Barrier Atten.	Soft Ground %	Ground Atten.	Resultant LAeq
1	1. Excavator & dump truck in sand and gravel extraction area	DAY	1011	1011	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	8.0	29.9
2	2. Loading shovel by stockpiles for sand and gravel export	DAY	967	967	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	7.9	32.4
3	3. Processing plant for sand and gravel (s&g plant)	DAY	1012	1012	40.0	0.0	44.0	0	0	0.0	-1.000	0.0	100	6.8	35.1
4	4. Excavators for extraction of clay for engineering and restoration	DAY	1484	1484	0.0	0.0	2.0	0	0	0.0	-1.000	0.0	100	8.0	26.6
5	5. Dump trucks for clay for engineering and restoration	DAY	1484	1484	0.0	0.0	2.0	0	0	0.0	-1.000	0.0	100	8.0	26.6
6	6. Dozer for extraction of clay for engineering and restoration	DAY	1484	1484	0.0	0.0	2.0	0	0	0.0	-1.000	0.0	100	8.0	31.6
7	7. Spare Plant Item	DAY	1730	1730	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	8.0	-1079.8
8	8. Spare Plant Item	DAY	1730	1730	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	8.0	-1079.8
9	9. Gas engines and flare stack in existing location	NIGHT	996	996	38.0	0.0	41.0	0	0	0.0	-1.000	0.0	100	7.4	18.7
10	10. Air pollution control tankers discharging at ash plant	NIGHT	1074	1074	40.0	0.0	42.0	0	0	900	0.198	14.1	100	8.0	26.3
11	11. Dump trucks collecting treated material from ash plant	DAY	1074	1074	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	8.0	26.4
12	12. Dump trucks depositing hazardous material in landfill	DAY	1454	1454	0.0	0.0	2.0	0	0	0.0	-1.000	0.0	100	8.0	26.7
13	13. Dozer for grading hazardous material in landfill	DAY	1454	1454	0.0	0.0	2.0	0	0	0.0	-1.000	0.0	100	8.0	26.7
14	14. Compactors for commercial and industrial waste in landfill	DAY	383	383	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	5.9	43.4
15	15. HGV for depositing commercial and industrial waste in landfill	DAY	383	383	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	5.9	38.4
16	16. Materials recovery facility (MRF) main building openings	DAY	672	672	40.0	0.0	44.0	0	0	0.0	-1.000	0.0	100	6.0	29.4
17	17. Materials recovery facility movement of material and vehicles	DAY	672	672	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	7.1	32.3
18	18. Skip handling and moving at skip storage site near to MRF	DAY	595	595	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	6.9	29.6
19	19. Vehicle depot and workshop adjacent to MRF	DAY	595	595	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	6.9	29.6
20	20. Gas engine and flare stack in proposed location (engine)	NIGHT	984	984	0.0	0.0	3.0	0	0	0.0	-1.000	0.0	100	7.4	21.8
21	21. Gas engine and flare stack in proposed location (exhaust)	NIGHT	984	984	0.0	0.0	8.0	0	0	0.0	-1.000	0.0	100	4.3	13.9
22	22. HGV movements to and from materials recycling facility (MRF)	DAY	495	495	40.0	0.0	42.0	18	0	0.0	-1.000	0.0	100	6.5	22.3
23	23. HGV movements on access for landfill, ash plant and s&g plant	DAY	897	897	40.0	0.0	42.0	15	0	0.0	-1.000	0.0	100	7.8	23.8
24	24. HGV movements on internal haul roads	DAY	173	173	40.0	0.0	42.0	2	0	0.0	-1.000	0.0	100	4.2	24.6
25	25. Dump truck movements on internal haul roads	DAY	398	398	40.0	0.0	42.0	6	0	0.0	-1.000	0.0	100	6.0	27.2
26	24. Spare Plant Item	DAY	659	659	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	7.1	-1070.5
27	27. Excavator for bunding in NW corner of site - Temporary Works	DAY	1537	1537	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	8.0	26.3
28	28. Dozer for bunding in NW corner of site - Temporary Works	DAY	1503	1503	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	8.0	31.5
29	29. Excavator for pond in SE corner of site - Temporary Works	DAY	383	383	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	5.9	40.4
30	30. Dozer for pond in SE corner of site - Temporary Works	DAY	383	383	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	5.9	45.4

**Site Noise Calculation Summary Sheets**

*Stoke Road*

**GRUNDON WASTE MANAGEMENT LIMITED**

**3722 06-May-09**

**WINGMOOR FARM INTEGRATED WASTE MANAGEMENT FACILITY  
BISHOPS CLEEVE, GLOUCESTERSHIRE**

MRF HGV movements / hour 6 Access Road Receiver Height: 1.5 m  
IWMF HGV movements / hour 24 Access Road Site base height: 40 m AOD

Ref.	Plant Item	Data Source / Comment	No.	Power LWA	On-time	Source Height (m)	2 way flow Speed Q per hr V kph	BS5228 ref.	BS5228 method	Ref.
1	1. Excavator & dump truck in sand and gravel extraction area	WBM plant noise database		106	100	2		2	Power	1
2	2. Loading shovel by stockpiles for sand and gravel export	Measured on site 08.10.08		108	100	2		2	Power	2
3	3. Processing plant for sand and gravel (s&g plant)	WBM plant noise database		110	100	4		2	Power	3
4	4. Excavators for extraction of clay for engineering and restoration	WBM plant noise database	2	106	100	2		2	Power	4
5	5. Dump trucks for clay for engineering and restoration	Measured on site 08.10.08		106	100	2		2	Power	5
6	6. Dozer for extraction of clay for engineering and restoration	Measured on site 08.10.08		111	100	2		2	Power	6
7	7. Spare Plant Item			-999	100	2		2	Power	7
8	8. Spare Plant Item			-999	100	2		2	Power	8
9	9. Gas engines and flare stack in existing location	Measured on site 08.10.08	2	94	100	3		2	Power	9
10	10. Air pollution control tankers discharging at ash plant	Measured on site 08.10.08	2	109	100	2		2	Power	10
11	11. Dump trucks collecting treated material from ash plant	Measured on site 08.10.08		103	100	2		2	Power	11
12	12. Dump trucks depositing hazardous material in landfill	Measured on site 08.10.08		106	100	2		2	Power	12
13	13. Dozer for grading hazardous material in landfill	Measured on site 08.10.08		106	100	2		2	Power	13
14	14. Compactors for commercial and industrial waste in landfill	Measured on site 08.10.08	2	109	100	2		2	Power	14
15	15. HGV for depositing commercial and industrial waste in landfill	Measured on site 08.10.08		104	100	2		2	Power	15
16	16. Materials recovery facility (MRF) main building openings	MRF application noise report		100	100	4		2	Power	16
17	17. Materials recovery facility movement of material and vehicles	WBM plant noise database		104	100	2		2	Power	17
18	18. Skip handling and moving at skip storage site near to MRF	Measured on site 08.10.08		100	100	2		2	Power	18
19	19. Vehicle depot and workshop adjacent to MRF	WBM plant noise database		100	100	2		2	Power	19
20	20. Gas engine and flare stack in proposed location (engine)	Proposed 1.1 MW Engine		97	100	3		2	Power	20
21	21. Gas engine and flare stack in proposed location (exhaust)	Proposed 1.1 MW Engine		86	100	8		2	Power	21
22	22. HGV movements to and from materials recycling facility (MRF)	WBM plant noise database		104	100	2	6 20	4	Haul Road	22
23	23. HGV movements on access for landfill, ash plant and s&g plant	WBM plant noise database		104	100	2	24 20	4	Haul Road	23
24	24. HGV movements on internal haul roads	WBM plant noise database		104	100	2	24 20	4	Haul Road	24
25	25. Dump truck movements on internal haul roads	Measured on site 08.10.08		106	100	2	24 20	4	Haul Road	25
26	24. Spare Plant Item			-999	100	2		2	Power	26
27	27. Excavator for bunding in NW corner of site - Temporary Works	WBM plant noise database		106	100	2		2	Power	27
28	28. Dozer for bunding in NW corner of site - Temporary Works	WBM plant noise database		111	100	2		2	Power	28
29	29. Excavator for pond in SE corner of site - Temporary Works	WBM plant noise database		106	100	2		2	Power	29
30	30. Dozer for pond in SE corner of site - Temporary Works	WBM plant noise database		111	100	2		2	Power	30

**Stoke Road**

Receiver (Ground Height at Receiver + Receiver Height) 44.5  
Average Daytime (07.00 to 18.00) Background Noise Level 50  
Lowest Night-time (23.00 to 07.00) Background Noise Level 32

Location No. 3  
m AOD  
Temporary Works (Items 27-30) 43  
Total for IWMF Plant (Items 1-26) 46  
Night-time Plant (Items 9 & 10 or 20 & 21) 28  
dB LAeq, 1 hour, free field  
Daytime  
dB LAeq, 1 hour, free field  
Daytime  
dB LAeq, 1 hour, free field  
Night-time

Ref.	Plant Item	Plan Dist. (m)	Working Distance (m)	Ground Height (m AOD)	Height / depth (m)	Source Height	Angle Degrees	Range Metres	Barrier -Receiver	Barrier Height	Path Diff.	Barrier Atten.	Soft Ground %	Ground Atten.	Result LAeq
1	1. Excavator & dump truck in sand and gravel extraction area	DAY	990	990	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	8.0	30.1
2	2. Loading shovel by stockpiles for sand and gravel export	DAY	860	860	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	7.7	33.6
3	3. Processing plant for sand and gravel (s&g plant)	DAY	909	909	40.0	0.0	44.0	0	0	0.0	-1.000	0.0	100	6.6	36.2
4	4. Excavators for extraction of clay for engineering and restoration	DAY	1269	1269	0.0	0.0	2.0	0	0	0.0	-1.000	0.0	100	8.0	27.9
5	5. Dump trucks for clay for engineering and restoration	DAY	1269	1269	0.0	0.0	2.0	0	0	0.0	-1.000	0.0	100	8.0	27.9
6	6. Dozer for extraction of clay for engineering and restoration	DAY	1269	1269	0.0	0.0	2.0	0	0	0.0	-1.000	0.0	100	8.0	32.9
7	7. Spare Plant Item	DAY	1781	1781	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	8.0	-1080.0
8	8. Spare Plant Item	DAY	1781	1781	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	8.0	-1080.0
9	9. Gas engines and flare stack in existing location	NIGHT	782	782	38.0	0.0	41.0	0	0	0.0	-1.000	0.0	100	6.9	21.3
10	10. Air pollution control tankers discharging at ash plant	NIGHT	954	954	40.0	0.0	42.0	0	0	800	0.223	14.5	100	7.9	26.9
11	11. Dump trucks collecting treated material from ash plant	DAY	954	954	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	7.9	27.5
12	12. Dump trucks depositing hazardous material in landfill	DAY	1194	1194	0.0	0.0	2.0	0	0	0.0	-1.000	0.0	100	8.0	28.5
13	13. Dozer for grading hazardous material in landfill	DAY	1194	1194	0.0	0.0	2.0	0	0	0.0	-1.000	0.0	100	8.0	28.5
14	14. Compactors for commercial and industrial waste in landfill	DAY	594	594	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	6.9	38.7
15	15. HGV for depositing commercial and industrial waste in landfill	DAY	594	594	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	6.9	33.7
16	16. Materials recovery facility (MRF) main building openings	DAY	454	454	40.0	0.0	44.0	0	0	0.0	-1.000	0.0	100	5.3	33.5
17	17. Materials recovery facility movement of material and vehicles	DAY	454	454	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	6.3	36.6
18	18. Skip handling and moving at skip storage site near to MRF	DAY	369	369	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	5.8	34.8
19	19. Vehicle depot and workshop adjacent to MRF	DAY	369	369	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	5.8	34.8
20	20. Gas engine and flare stack in proposed location (engine)	NIGHT	753	753	0.0	0.0	3.0	0	0	0.0	-1.000	0.0	100	6.8	24.6
21	21. Gas engine and flare stack in proposed location (exhaust)	NIGHT	753	753	0.0	0.0	8.0	0	0	0.0	-1.000	0.0	100	4.0	16.5
22	22. HGV movements to and from materials recycling facility (MRF)	DAY	353	353	40.0	0.0	42.0	32	0	0.0	-1.000	0.0	100	5.7	27.1
23	23. HGV movements on access for landfill, ash plant and s&g plant	DAY	753	753	40.0	0.0	42.0	20	0	0.0	-1.000	0.0	100	7.4	26.1
24	24. HGV movements on internal haul roads	DAY	332	332	40.0	0.0	42.0	4	0	0.0	-1.000	0.0	100	5.6	24.2
25	25. Dump truck movements on internal haul roads	DAY	745	745	40.0	0.0	42.0	15	0	0.0	-1.000	0.0	100	7.4	27.0
26	24. Spare Plant Item	DAY	401	401	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	6.0	-1065.1
27	27. Excavator for bunding in NW corner of site - Temporary Works	DAY	1290	1290	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	8.0	27.8
28	28. Dozer for bunding in NW corner of site - Temporary Works	DAY	1252	1252	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	8.0	33.0
29	29. Excavator for pond in SE corner of site - Temporary Works	DAY	594	594	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	6.9	35.7
30	30. Dozer for pond in SE corner of site - Temporary Works	DAY	594	594	40.0	0.0	42.0	0	0	0.0	-1.000	0.0	100	6.9	40.7

Site Noise Calculation Summary Sheets

Haydon

GRUNDON WASTE MANAGEMENT LIMITED

3722 06-May-09

WINGMOOR FARM INTEGRATED WASTE MANAGEMENT FACILITY  
BISHOPS CLEEVE, GLOUCESTERSHIRE

MRF HGV movements / hour 6 Access Road Receiver Height: 1.5 m  
IWMF HGV movements / hour 24 Access Road Site base height: 40 m AOD

Ref.	Plant Item	Data Source / Comment	No.	Power LWA	On-time	Source Height (m)	2 way flow Speed Q per hr V kph	BS5228 ref.	BS5228 method	Ref.
1	1. Excavator & dump truck in sand and gravel extraction area	WBM plant noise database		106	100	2		2	Power	1
2	2. Loading shovel by stockpiles for sand and gravel export	Measured on site 08.10.08		108	100	2		2	Power	2
3	3. Processing plant for sand and gravel (s&g plant)	WBM plant noise database		110	100	4		2	Power	3
4	4. Excavators for extraction of clay for engineering and restoration	WBM plant noise database	2	106	100	2		2	Power	4
5	5. Dump trucks for clay for engineering and restoration	Measured on site 08.10.08		106	100	2		2	Power	5
6	6. Dozer for extraction of clay for engineering and restoration	Measured on site 08.10.08		111	100	2		2	Power	6
7	7. Spare Plant Item			-999	100	2		2	Power	7
8	8. Spare Plant Item			-999	100	2		2	Power	8
9	9. Gas engines and flare stack in existing location	Measured on site 08.10.08	2	94	100	3		2	Power	9
10	10. Air pollution control tankers discharging at ash plant	Measured on site 08.10.08	2	109	100	2		2	Power	10
11	11. Dump trucks collecting treated material from ash plant	Measured on site 08.10.08		103	100	2		2	Power	11
12	12. Dump trucks depositing hazardous material in landfill	Measured on site 08.10.08		106	100	2		2	Power	12
13	13. Dozer for grading hazardous material in landfill	Measured on site 08.10.08		106	100	2		2	Power	13
14	14. Compactors for commercial and industrial waste in landfill	Measured on site 08.10.08	2	109	100	2		2	Power	14
15	15. HGV for depositing commercial and industrial waste in landfill	Measured on site 08.10.08		104	100	2		2	Power	15
16	16. Materials recovery facility (MRF) main building openings	MRF application noise report		100	100	4		2	Power	16
17	17. Materials recovery facility movement of material and vehicles	WBM plant noise database		104	100	2		2	Power	17
18	18. Skip handling and moving at skip storage site near to MRF	Measured on site 08.10.08		100	100	2		2	Power	18
19	19. Vehicle depot and workshop adjacent to MRF	WBM plant noise database		100	100	2		2	Power	19
20	20. Gas engine and flare stack in proposed location (engine)	Proposed 1.1 MW Engine		97	100	3		2	Power	20
21	21. Gas engine and flare stack in proposed location (exhaust)	Proposed 1.1 MW Engine		86	100	8		2	Power	21
22	22. HGV movements to and from materials recycling facility (MRF)	WBM plant noise database		104	100	2	6 20	4	Haul Road	22
23	23. HGV movements on access for landfill, ash plant and s&g plant	WBM plant noise database		104	100	2	24 20	4	Haul Road	23
24	24. HGV movements on internal haul roads	WBM plant noise database		104	100	2	24 20	4	Haul Road	24
25	25. Dump truck movements on internal haul roads	Measured on site 08.10.08		106	100	2	24 20	4	Haul Road	25
26	24. Spare Plant Item			-999	100	2		2	Power	26
27	27. Excavator for bunding in NW corner of site - Temporary Works	WBM plant noise database		106	100	2		2	Power	27
28	28. Dozer for bunding in NW corner of site - Temporary Works	WBM plant noise database		111	100	2		2	Power	28
29	29. Excavator for pond in SE corner of site - Temporary Works	WBM plant noise database		106	100	2		2	Power	29
30	30. Dozer for pond in SE corner of site - Temporary Works	WBM plant noise database		111	100	2		2	Power	30

Haydon

Receiver (Ground Height at Receiver + Receiver Height) 40.0  
Average Daytime (07.00 to 18.00) Background Noise Level 46  
Lowest Night-time (23.00 to 07.00) Background Noise Level 30

Location No. 4  
m AOD  
Temporary Works (Items 27-30) 44  
Total for IWMF Plant (Items 1-26) 52  
Night-time Plant (Items 9 & 10 or 20 & 21) 33  
dB LAeq, 1 hour, free field  
Daytime  
dB LAeq, 1 hour, free field  
Daytime  
dB LAeq, 1 hour, free field  
Night-time

Ref.	Plant Item	Plan Dist. (m)	Working Distance (m)	Ground Height (m AOD)	Height / depth (m)	Source Height	Angle Degrees	Range Metres	Barrier -Receiver	Barrier Height	Path Diff.	Barrier Atten.	Soft Ground %	Ground Atten.	Result LAeq
1	1. Excavator & dump truck in sand and gravel extraction area	602	602	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	6.9	35.5
2	2. Loading shovel by stockpiles for sand and gravel export	430	430	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	6.2	41.2
3	3. Processing plant for sand and gravel (s&g plant)	472	472	40.0	0.0	44.0	0	0	0	0.0	-1.000	0.0	100	5.4	43.1
4	4. Excavators for extraction of clay for engineering and restoration	757	757	0.0	0.0	2.0	0	0	0	0.0	-1.000	0.0	100	7.4	33.0
5	5. Dump trucks for clay for engineering and restoration	757	757	0.0	0.0	2.0	0	0	0	0.0	-1.000	0.0	100	7.4	33.0
6	6. Dozer for extraction of clay for engineering and restoration	757	757	0.0	0.0	2.0	0	0	0	0.0	-1.000	0.0	100	7.4	38.0
7	7. Spare Plant Item	1365	1365	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	-1077.7
8	8. Spare Plant Item	1365	1365	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	-1077.7
9	9. Gas engines and flare stack in existing location	289	289	38.0	0.0	41.0	0	0	250	42.0	0.019	6.6	100	4.9	30.2
10	10. Air pollution control tankers discharging at ash plant	497	497	40.0	0.0	42.0	0	0	400	50.0	0.450	17.2	100	6.5	29.9
11	11. Dump trucks collecting treated material from ash plant	497	497	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	6.5	34.6
12	12. Dump trucks depositing hazardous material in landfill	680	680	0.0	0.0	2.0	0	0	0	0.0	-1.000	0.0	100	7.2	34.2
13	13. Dozer for grading hazardous material in landfill	680	680	0.0	0.0	2.0	0	0	0	0.0	-1.000	0.0	100	7.2	34.2
14	14. Compactors for commercial and industrial waste in landfill	618	618	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.0	38.2
15	15. HGV for depositing commercial and industrial waste in landfill	618	618	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.0	33.2
16	16. Materials recovery facility (MRF) main building openings	187	187	40.0	0.0	44.0	0	0	0	0.0	-1.000	0.0	100	3.7	42.9
17	17. Materials recovery facility movement of material and vehicles	187	187	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	4.4	46.2
18	18. Skip handling and moving at skip storage site near to MRF	244	244	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	4.9	39.3
19	19. Vehicle depot and workshop adjacent to MRF	244	244	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	4.9	39.3
20	20. Gas engine and flare stack in proposed location (engine)	255	255	37.0	0.0	40.0	0	0	230	42.0	0.089	10.4	100	4.6	30.5
21	21. Gas engine and flare stack in proposed location (exhaust)	255	255	37.0	0.0	45.0	0	0	230	42.0	-0.139	0.0	100	2.7	27.2
22	22. HGV movements to and from materials recycling facility (MRF)	161	161	40.0	0.0	42.0	47	0	0	0.0	-1.000	0.0	100	4.0	33.8
23	23. HGV movements on access for landfill, ash plant and s&g plant	239	239	40.0	0.0	42.0	45	0	0	0.0	-1.000	0.0	100	4.9	37.1
24	24. HGV movements on internal haul roads	319	319	40.0	0.0	42.0	15	0	0	0.0	-1.000	0.0	100	5.5	30.4
25	25. Dump truck movements on internal haul roads	469	469	40.0	0.0	42.0	33	0	0	0.0	-1.000	0.0	100	6.4	33.3
26	24. Spare Plant Item	180	180	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	4.3	-1056.4
27	27. Excavator for bunding in NW corner of site - Temporary Works	776	776	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.4	32.8
28	28. Dozer for bunding in NW corner of site - Temporary Works	738	738	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.3	38.3
29	29. Excavator for pond in SE corner of site - Temporary Works	618	618	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.0	35.2
30	30. Dozer for pond in SE corner of site - Temporary Works	618	618	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.0	40.2

Site Noise Calculation Summary Sheets

Pussy Willows

GRUNDON WASTE MANAGEMENT LIMITED

3722 06-May-09

WINGMOOR FARM INTEGRATED WASTE MANAGEMENT FACILITY  
BISHOPS CLEEVE, GLOUCESTERSHIRE

MRF HGV movements / hour 6 Access Road Receiver Height: 1.5 m  
IWMF HGV movements / hour 24 Access Road Site base height: 40 m AOD

Ref.	Plant Item	Data Source / Comment	No.	Power LWA	On-time	Source Height (m)	2 way flow Speed Q per hr V kph	BS5228 ref.	BS5228 method	Ref.
1	1. Excavator & dump truck in sand and gravel extraction area	WBM plant noise database		106	100	2		2	Power	1
2	2. Loading shovel by stockpiles for sand and gravel export	Measured on site 08.10.08		108	100	2		2	Power	2
3	3. Processing plant for sand and gravel (s&g plant)	WBM plant noise database		110	100	4		2	Power	3
4	4. Excavators for extraction of clay for engineering and restoration	WBM plant noise database	2	106	100	2		2	Power	4
5	5. Dump trucks for clay for engineering and restoration	Measured on site 08.10.08		106	100	2		2	Power	5
6	6. Dozer for extraction of clay for engineering and restoration	Measured on site 08.10.08		111	100	2		2	Power	6
7	7. Spare Plant Item			-999	100	2		2	Power	7
8	8. Spare Plant Item			-999	100	2		2	Power	8
9	9. Gas engines and flare stack in existing location	Measured on site 08.10.08	2	94	100	3		2	Power	9
10	10. Air pollution control tankers discharging at ash plant	Measured on site 08.10.08	2	109	100	2		2	Power	10
11	11. Dump trucks collecting treated material from ash plant	Measured on site 08.10.08		103	100	2		2	Power	11
12	12. Dump trucks depositing hazardous material in landfill	Measured on site 08.10.08		106	100	2		2	Power	12
13	13. Dozer for grading hazardous material in landfill	Measured on site 08.10.08		106	100	2		2	Power	13
14	14. Compactors for commercial and industrial waste in landfill	Measured on site 08.10.08	2	109	100	2		2	Power	14
15	15. HGV for depositing commercial and industrial waste in landfill	Measured on site 08.10.08		104	100	2		2	Power	15
16	16. Materials recovery facility (MRF) main building openings	MRF application noise report		100	100	4		2	Power	16
17	17. Materials recovery facility movement of material and vehicles	WBM plant noise database		104	100	2		2	Power	17
18	18. Skip handling and moving at skip storage site near to MRF	Measured on site 08.10.08		100	100	2		2	Power	18
19	19. Vehicle depot and workshop adjacent to MRF	WBM plant noise database		100	100	2		2	Power	19
20	20. Gas engine and flare stack in proposed location (engine)	Proposed 1.1 MW Engine		97	100	3		2	Power	20
21	21. Gas engine and flare stack in proposed location (exhaust)	Proposed 1.1 MW Engine		86	100	8		2	Power	21
22	22. HGV movements to and from materials recycling facility (MRF)	WBM plant noise database		104	100	2	6 20	4	Haul Road	22
23	23. HGV movements on access for landfill, ash plant and s&g plant	WBM plant noise database		104	100	2	24 20	4	Haul Road	23
24	24. HGV movements on internal haul roads	WBM plant noise database		104	100	2	24 20	4	Haul Road	24
25	25. Dump truck movements on internal haul roads	Measured on site 08.10.08		106	100	2	24 20	4	Haul Road	25
26	24. Spare Plant Item			-999	100	2		2	Power	26
27	27. Excavator for bunding in NW corner of site - Temporary Works	WBM plant noise database		106	100	2		2	Power	27
28	28. Dozer for bunding in NW corner of site - Temporary Works	WBM plant noise database		111	100	2		2	Power	28
29	29. Excavator for pond in SE corner of site - Temporary Works	WBM plant noise database		106	100	2		2	Power	29
30	30. Dozer for pond in SE corner of site - Temporary Works	WBM plant noise database		111	100	2		2	Power	30

Pussy Willows

Receiver (Ground Height at Receiver + Receiver Height) 34.0  
Average Daytime (07.00 to 18.00) Background Noise Level 45  
Lowest Night-time (23.00 to 07.00) Background Noise Level 31

Location No. 5  
m AOD  
Temporary Works (Items 27-30) 62  
Total for IWMF Plant (Items 1-26) 54  
Night-time Plant (Items 9 & 10 or 20 & 21) 32  
dB LAeq, 1 hour, free field Daytime  
dB LAeq, 1 hour, free field Daytime  
dB LAeq, 1 hour, free field Night-time

Ref.	Plant Item	Plan Dist. (m)	Working Distance (m)	Ground Height (m AOD)	Height / depth (m)	Source Height	Angle Degrees	Range Metres	Barrier -Receiver	Barrier Height	Path Diff.	Barrier Atten.	Soft Ground %	Ground Atten.	Result LAeq
1	1. Excavator & dump truck in sand and gravel extraction area	738	738	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.3	33.3
2	2. Loading shovel by stockpiles for sand and gravel export	673	673	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.1	36.3
3	3. Processing plant for sand and gravel (s&g plant)	640	640	40.0	0.0	44.0	0	0	0	0.0	-1.000	0.0	100	5.9	39.9
4	4. Excavators for extraction of clay for engineering and restoration	158	158	35.0	0.0	37.0	0	0	150	40.0	0.635	17.3	100	4.0	36.7
5	5. Dump trucks for clay for engineering and restoration	158	158	35.0	0.0	37.0	0	0	150	40.0	0.635	16.1	100	4.0	37.9
6	6. Dozer for extraction of clay for engineering and restoration	158	158	35.0	0.0	37.0	0	0	150	40.0	0.635	17.8	100	4.0	41.2
7	7. Spare Plant Item	985	985	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	-1074.8
8	8. Spare Plant Item	985	985	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	-1074.8
9	9. Gas engines and flare stack in existing location	611	611	38.0	0.0	41.0	0	0	0	0.0	-1.000	0.0	100	6.4	23.9
10	10. Air pollution control tankers discharging at ash plant	578	578	40.0	0.0	42.0	0	0	400	47.0	0.226	14.6	100	6.8	31.2
11	11. Dump trucks collecting treated material from ash plant	578	578	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	6.8	33.0
12	12. Dump trucks depositing hazardous material in landfill	158	158	37.0	0.0	39.0	0	0	100	37.5	0.002	5.0	100	4.0	49.0
13	13. Dozer for grading hazardous material in landfill	158	158	37.0	0.0	39.0	0	0	100	37.5	0.002	5.1	100	4.0	48.9
14	14. Compactors for commercial and industrial waste in landfill	1275	1275	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	30.9
15	15. HGV for depositing commercial and industrial waste in landfill	1275	1275	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	25.9
16	16. Materials recovery facility (MRF) main building openings	953	953	40.0	0.0	44.0	0	0	0	0.0	-1.000	0.0	100	6.7	25.7
17	17. Materials recovery facility movement of material and vehicles	953	953	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.9	28.5
18	18. Skip handling and moving at skip storage site near to MRF	1042	1042	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	23.6
19	19. Vehicle depot and workshop adjacent to MRF	1042	1042	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	23.6
20	20. Gas engine and flare stack in proposed location (engine)	626	626	37.0	0.0	40.0	0	0	590	42.0	0.081	10.2	100	6.4	22.9
21	21. Gas engine and flare stack in proposed location (exhaust)	626	626	37.0	0.0	45.0	0	0	590	42.0	-0.082	0.0	100	3.8	18.3
22	22. HGV movements to and from materials recycling facility (MRF)	996	996	40.0	0.0	42.0	13	0	0	0.0	-1.000	0.0	100	8.0	16.3
23	23. HGV movements on access for landfill, ash plant and s&g plant	597	597	40.0	0.0	42.0	23	0	0	0.0	-1.000	0.0	100	6.9	28.2
24	24. HGV movements on internal haul roads	354	354	40.0	0.0	42.0	8	0	0	0.0	-1.000	0.0	100	5.7	26.9
25	25. Dump truck movements on internal haul roads	68	68	40.0	0.0	42.0	19	0	0	0.0	-1.000	0.0	100	2.2	43.5
26	24. Spare Plant Item	985	985	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	-1074.8
27	27. Excavator for bunding in NW corner of site - Temporary Works	71	71	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	2.3	58.7
28	28. Dozer for bunding in NW corner of site - Temporary Works	103	103	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	3.1	59.7
29	29. Excavator for pond in SE corner of site - Temporary Works	1275	1275	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	27.9
30	30. Dozer for pond in SE corner of site - Temporary Works	1275	1275	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	32.9

Site Noise Calculation Summary Sheets

Court Farm

GRUNDON WASTE MANAGEMENT LIMITED

3722 06-May-09

WINGMOOR FARM INTEGRATED WASTE MANAGEMENT FACILITY  
BISHOPS CLEEVE, GLOUCESTERSHIRE

MRF HGV movements / hour 6 Access Road Receiver Height: 1.5 m  
IWMF HGV movements / hour 24 Access Road Site base height: 40 m AOD

Ref.	Plant Item	Data Source / Comment	No.	Power LWA	On-time	Source Height (m)	2 way flow Speed Q per hr V kph	BS5228 ref.	BS5228 method	Ref.
1	1. Excavator & dump truck in sand and gravel extraction area	WBM plant noise database		106	100	2		2	Power	1
2	2. Loading shovel by stockpiles for sand and gravel export	Measured on site 08.10.08		108	100	2		2	Power	2
3	3. Processing plant for sand and gravel (s&g plant)	WBM plant noise database		110	100	4		2	Power	3
4	4. Excavators for extraction of clay for engineering and restoration	WBM plant noise database	2	106	100	2		2	Power	4
5	5. Dump trucks for clay for engineering and restoration	Measured on site 08.10.08		106	100	2		2	Power	5
6	6. Dozer for extraction of clay for engineering and restoration	Measured on site 08.10.08		111	100	2		2	Power	6
7	7. Spare Plant Item			-999	100	2		2	Power	7
8	8. Spare Plant Item			-999	100	2		2	Power	8
9	9. Gas engines and flare stack in existing location	Measured on site 08.10.08	2	94	100	3		2	Power	9
10	10. Air pollution control tankers discharging at ash plant	Measured on site 08.10.08	2	109	100	2		2	Power	10
11	11. Dump trucks collecting treated material from ash plant	Measured on site 08.10.08		103	100	2		2	Power	11
12	12. Dump trucks depositing hazardous material in landfill	Measured on site 08.10.08		106	100	2		2	Power	12
13	13. Dozer for grading hazardous material in landfill	Measured on site 08.10.08		106	100	2		2	Power	13
14	14. Compactors for commercial and industrial waste in landfill	Measured on site 08.10.08	2	109	100	2		2	Power	14
15	15. HGV for depositing commercial and industrial waste in landfill	Measured on site 08.10.08		104	100	2		2	Power	15
16	16. Materials recovery facility (MRF) main building openings	MRF application noise report		100	100	4		2	Power	16
17	17. Materials recovery facility movement of material and vehicles	WBM plant noise database		104	100	2		2	Power	17
18	18. Skip handling and moving at skip storage site near to MRF	Measured on site 08.10.08		100	100	2		2	Power	18
19	19. Vehicle depot and workshop adjacent to MRF	WBM plant noise database		100	100	2		2	Power	19
20	20. Gas engine and flare stack in proposed location (engine)	Proposed 1.1 MW Engine		97	100	3		2	Power	20
21	21. Gas engine and flare stack in proposed location (exhaust)	Proposed 1.1 MW Engine		86	100	8		2	Power	21
22	22. HGV movements to and from materials recycling facility (MRF)	WBM plant noise database		104	100	2	6 20	4	Haul Road	22
23	23. HGV movements on access for landfill, ash plant and s&g plant	WBM plant noise database		104	100	2	24 20	4	Haul Road	23
24	24. HGV movements on internal haul roads	WBM plant noise database		104	100	2	24 20	4	Haul Road	24
25	25. Dump truck movements on internal haul roads	Measured on site 08.10.08		106	100	2	24 20	4	Haul Road	25
26	24. Spare Plant Item			-999	100	2		2	Power	26
27	27. Excavator for bunding in NW corner of site - Temporary Works	WBM plant noise database		106	100	2		2	Power	27
28	28. Dozer for bunding in NW corner of site - Temporary Works	WBM plant noise database		111	100	2		2	Power	28
29	29. Excavator for pond in SE corner of site - Temporary Works	WBM plant noise database		106	100	2		2	Power	29
30	30. Dozer for pond in SE corner of site - Temporary Works	WBM plant noise database		111	100	2		2	Power	30

Court Farm

Receiver (Ground Height at Receiver + Receiver Height) 34.0  
Average Daytime (07.00 to 18.00) Background Noise Level 42  
Lowest Night-time (23.00 to 07.00) Background Noise Level 31

Location No.

6 m AOD  
Temporary Works (Items 27-30) 56  
Total for IWMF Plant (Items 1-26) 52  
Night-time Plant (Items 9 & 10 or 20 & 21) 31

dB LAeq, 1 hour, free field Daytime  
dB LAeq, 1 hour, free field Daytime  
dB LAeq, 1 hour, free field Night-time

Ref.	Plant Item	Plan Dist. (m)	Working Distance (m)	Ground Height (m AOD)	Height / depth (m)	Source Height	Angle Degrees	Range Metres	Barrier -Receiver	Barrier Height	Path Diff.	Barrier Atten.	Soft Ground %	Ground Atten.	Resultant LAeq
1	1. Excavator & dump truck in sand and gravel extraction area	812	812	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.5	32.3
2	2. Loading shovel by stockpiles for sand and gravel export	727	727	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.3	35.5
3	3. Processing plant for sand and gravel (s&g plant)	700	700	40.0	0.0	44.0	0	0	0	0.0	-1.000	0.0	100	6.1	39.0
4	4. Excavators for extraction of clay for engineering and restoration	250	250	35.0	0.0	37.0	0	0	210	40.0	0.180	12.7	100	5.0	37.4
5	5. Dump trucks for clay for engineering and restoration	250	250	35.0	0.0	37.0	0	0	210	40.0	0.180	11.9	100	5.0	38.1
6	6. Dozer for extraction of clay for engineering and restoration	250	250	35.0	0.0	37.0	0	0	210	40.0	0.180	13.3	100	5.0	41.7
7	7. Spare Plant Item	1093	1093	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	-1075.8
8	8. Spare Plant Item	1093	1093	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	-1075.8
9	9. Gas engines and flare stack in existing location	638	638	38.0	0.0	41.0	0	0	0	0.0	-1.000	0.0	100	6.5	23.4
10	10. Air pollution control tankers discharging at ash plant	640	640	40.0	0.0	42.0	0	0	500	48.0	0.274	15.3	100	7.0	29.6
11	11. Dump trucks collecting treated material from ash plant	640	640	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.0	31.8
12	12. Dump trucks depositing hazardous material in landfill	186	186	37.0	0.0	39.0	0	0	125	37.5	0.000	4.8	100	4.3	47.8
13	13. Dozer for grading hazardous material in landfill	186	186	37.0	0.0	39.0	0	0	125	37.5	0.000	4.9	100	4.3	47.7
14	14. Compactors for commercial and industrial waste in landfill	1316	1316	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	30.6
15	15. HGV for depositing commercial and industrial waste in landfill	1316	1316	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	25.6
16	16. Materials recovery facility (MRF) main building openings	968	968	40.0	0.0	44.0	0	0	0	0.0	-1.000	0.0	100	6.7	25.6
17	17. Materials recovery facility movement of material and vehicles	968	968	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.9	28.4
18	18. Skip handling and moving at skip storage site near to MRF	1055	1055	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	23.5
19	19. Vehicle depot and workshop adjacent to MRF	1055	1055	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	23.5
20	20. Gas engine and flare stack in proposed location (engine)	648	648	37.0	0.0	40.0	0	0	610	42.0	0.077	10.1	100	6.5	22.7
21	21. Gas engine and flare stack in proposed location (exhaust)	648	648	37.0	0.0	45.0	0	0	610	42.0	-0.077	0.0	100	3.8	18.0
22	22. HGV movements to and from materials recycling facility (MRF)	978	978	40.0	0.0	42.0	12	0	0	0.0	-1.000	0.0	100	8.0	16.3
23	23. HGV movements on access for landfill, ash plant and s&g plant	579	579	40.0	0.0	42.0	20	0	0	0.0	-1.000	0.0	100	6.8	27.8
24	24. HGV movements on internal haul roads	461	461	40.0	0.0	42.0	9	0	0	0.0	-1.000	0.0	100	6.3	25.6
25	25. Dump truck movements on internal haul roads	167	167	40.0	0.0	42.0	27	0	0	0.0	-1.000	0.0	100	4.1	39.2
26	24. Spare Plant Item	995	995	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	-1074.9
27	27. Excavator for bunding in NW corner of site - Temporary Works	150	150	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	3.9	50.6
28	28. Dozer for bunding in NW corner of site - Temporary Works	158	158	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	4.0	55.0
29	29. Excavator for pond in SE corner of site - Temporary Works	1316	1316	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	27.6
30	30. Dozer for pond in SE corner of site - Temporary Works	1316	1316	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	32.6

**Site Noise Calculation Summary Sheets**

*Wingmoor Lodge*

**GRUNDON WASTE MANAGEMENT LIMITED**

**3722 06-May-09**

**WINGMOOR FARM INTEGRATED WASTE MANAGEMENT FACILITY  
BISHOPS CLEEVE, GLOUCESTERSHIRE**

MRF HGV movements / hour 6 Access Road Receiver Height: 1.5 m  
IWMF HGV movements / hour 24 Access Road Site base height: 40 m AOD

Ref.	Plant Item	Data Source / Comment	No.	Power LWA	On-time	Source Height (m)	2 way flow Speed Q per hr V kph	BS5228 ref.	BS5228 method	Ref.
1	1. Excavator & dump truck in sand and gravel extraction area	WBM plant noise database		106	100	2		2	Power	1
2	2. Loading shovel by stockpiles for sand and gravel export	Measured on site 08.10.08		108	100	2		2	Power	2
3	3. Processing plant for sand and gravel (s&g plant)	WBM plant noise database		110	100	4		2	Power	3
4	4. Excavators for extraction of clay for engineering and restoration	WBM plant noise database	2	106	100	2		2	Power	4
5	5. Dump trucks for clay for engineering and restoration	Measured on site 08.10.08		106	100	2		2	Power	5
6	6. Dozer for extraction of clay for engineering and restoration	Measured on site 08.10.08		111	100	2		2	Power	6
7	7. Spare Plant Item			-999	100	2		2	Power	7
8	8. Spare Plant Item			-999	100	2		2	Power	8
9	9. Gas engines and flare stack in existing location	Measured on site 08.10.08	2	94	100	3		2	Power	9
10	10. Air pollution control tankers discharging at ash plant	Measured on site 08.10.08	2	109	100	2		2	Power	10
11	11. Dump trucks collecting treated material from ash plant	Measured on site 08.10.08		103	100	2		2	Power	11
12	12. Dump trucks depositing hazardous material in landfill	Measured on site 08.10.08		106	100	2		2	Power	12
13	13. Dozer for grading hazardous material in landfill	Measured on site 08.10.08		106	100	2		2	Power	13
14	14. Compactors for commercial and industrial waste in landfill	Measured on site 08.10.08	2	109	100	2		2	Power	14
15	15. HGV for depositing commercial and industrial waste in landfill	Measured on site 08.10.08		104	100	2		2	Power	15
16	16. Materials recovery facility (MRF) main building openings	MRF application noise report		100	100	4		2	Power	16
17	17. Materials recovery facility movement of material and vehicles	WBM plant noise database		104	100	2		2	Power	17
18	18. Skip handling and moving at skip storage site near to MRF	Measured on site 08.10.08		100	100	2		2	Power	18
19	19. Vehicle depot and workshop adjacent to MRF	WBM plant noise database		100	100	2		2	Power	19
20	20. Gas engine and flare stack in proposed location (engine)	Proposed 1.1 MW Engine		97	100	3		2	Power	20
21	21. Gas engine and flare stack in proposed location (exhaust)	Proposed 1.1 MW Engine		86	100	8		2	Power	21
22	22. HGV movements to and from materials recycling facility (MRF)	WBM plant noise database		104	100	2	6 20	4	Haul Road	22
23	23. HGV movements on access for landfill, ash plant and s&g plant	WBM plant noise database		104	100	2	24 20	4	Haul Road	23
24	24. HGV movements on internal haul roads	WBM plant noise database		104	100	2	24 20	4	Haul Road	24
25	25. Dump truck movements on internal haul roads	Measured on site 08.10.08		106	100	2	24 20	4	Haul Road	25
26	24. Spare Plant Item			-999	100	2		2	Power	26
27	27. Excavator for bunding in NW corner of site - Temporary Works	WBM plant noise database		106	100	2		2	Power	27
28	28. Dozer for bunding in NW corner of site - Temporary Works	WBM plant noise database		111	100	2		2	Power	28
29	29. Excavator for pond in SE corner of site - Temporary Works	WBM plant noise database		106	100	2		2	Power	29
30	30. Dozer for pond in SE corner of site - Temporary Works	WBM plant noise database		111	100	2		2	Power	30

**Wingmoor Lodge**

Receiver (Ground Height at Receiver + Receiver Height) 37.0  
Average Daytime (07.00 to 18.00) Background Noise Level 43  
Lowest Night-time (23.00 to 07.00) Background Noise Level 29

**Location No.**

m AOD  
Temporary Works (Items 27-30) 49  
Total for IWMF Plant (Items 1-26) 53  
Night-time Plant (Items 9 & 10 or 20 & 21) 34

dB LAeq, 1 hour, free field Daytime  
dB LAeq, 1 hour, free field Daytime  
dB LAeq, 1 hour, free field Night-time

Ref.	Plant Item	Plan Dist. (m)	Working Distance (m)	Ground Height (m AOD)	Height / depth (m)	Source Height	Angle Degrees	Range Metres	Barrier -Receiver	Barrier Height	Path Diff.	Barrier Atten.	Soft Ground %	Ground Atten.	Result LAeq	
1	1. Excavator & dump truck in sand and gravel extraction area	DAY	521	521	40.0	0.0	42.0	0	0	270	50.0	0.416	15.7	100	6.6	28.0
2	2. Loading shovel by stockpiles for sand and gravel export	DAY	377	377	40.0	0.0	42.0	0	0	270	50.0	0.578	19.3	100	5.9	29.2
3	3. Processing plant for sand and gravel (s&g plant)	DAY	371	371	40.0	0.0	44.0	0	0	270	50.0	0.425	16.0	100	4.9	34.6
4	4. Excavators for extraction of clay for engineering and restoration	DAY	331	331	35.0	0.0	37.0	0	0	120	38.0	0.007	5.8	100	5.6	41.8
5	5. Dump trucks for clay for engineering and restoration	DAY	331	331	35.0	0.0	37.0	0	0	120	38.0	0.007	5.7	100	5.6	41.9
6	6. Dozer for extraction of clay for engineering and restoration	DAY	331	331	35.0	0.0	37.0	0	0	120	38.0	0.007	6.1	100	5.6	46.5
7	7. Spare Plant Item	DAY	1096	1096	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	-1075.8
8	8. Spare Plant Item	DAY	1096	1096	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	-1075.8
9	9. Gas engines and flare stack in existing location	NIGHT	236	236	38.0	0.0	41.0	0	0	200	42.0	0.042	7.9	100	4.5	30.7
10	10. Air pollution control tankers discharging at ash plant	NIGHT	331	331	40.0	0.0	42.0	0	0	280	50.0	0.887	20.0	100	5.6	30.6
11	11. Dump trucks collecting treated material from ash plant	DAY	331	331	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	5.6	39.0
12	12. Dump trucks depositing hazardous material in landfill	DAY	244	244	37.0	0.0	39.0	0	0	100	34.0	-0.124	0.0	100	4.9	45.3
13	13. Dozer for grading hazardous material in landfill	DAY	244	244	37.0	0.0	39.0	0	0	100	34.0	-0.124	0.0	100	4.9	45.3
14	14. Compactors for commercial and industrial waste in landfill	DAY	918	918	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.8	33.9
15	15. HGV for depositing commercial and industrial waste in landfill	DAY	918	918	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.8	28.9
16	16. Materials recovery facility (MRF) main building openings	DAY	558	558	40.0	0.0	44.0	0	0	0	0.0	-1.000	0.0	100	5.7	31.4
17	17. Materials recovery facility movement of material and vehicles	DAY	558	558	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	6.7	34.3
18	18. Skip handling and moving at skip storage site near to MRF	DAY	645	645	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.0	28.8
19	19. Vehicle depot and workshop adjacent to MRF	DAY	645	645	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.0	28.8
20	20. Gas engine and flare stack in proposed location (engine)	NIGHT	240	240	37.0	0.0	40.0	0	0	205	42.0	0.099	10.8	100	4.5	30.6
21	21. Gas engine and flare stack in proposed location (exhaust)	NIGHT	240	240	37.0	0.0	45.0	0	0	205	42.0	-0.056	0.0	100	2.6	27.8
22	22. HGV movements to and from materials recycling facility (MRF)	DAY	597	597	40.0	0.0	42.0	20	0	0	0.0	-1.000	0.0	100	6.9	21.7
23	23. HGV movements on access for landfill, ash plant and s&g plant	DAY	197	197	40.0	0.0	42.0	43	0	0	0.0	-1.000	0.0	100	4.5	38.2
24	24. HGV movements on internal haul roads	DAY	327	327	40.0	0.0	42.0	23	0	0	0.0	-1.000	0.0	100	5.6	32.2
25	25. Dump truck movements on internal haul roads	DAY	251	251	40.0	0.0	42.0	81	0	0	0.0	-1.000	0.0	100	5.0	41.3
26	24. Spare Plant Item	DAY	586	586	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	6.8	-1069.2
27	27. Excavator for bunding in NW corner of site - Temporary Works	DAY	340	340	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	5.7	41.7
28	28. Dozer for bunding in NW corner of site - Temporary Works	DAY	301	301	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	5.4	48.0
29	29. Excavator for pond in SE corner of site - Temporary Works	DAY	918	918	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.8	30.9
30	30. Dozer for pond in SE corner of site - Temporary Works	DAY	918	918	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.8	35.9

Site Noise Calculation Summary Sheets

Log Cabin

GRUNDON WASTE MANAGEMENT LIMITED

3722 06-May-09

WINGMOOR FARM INTEGRATED WASTE MANAGEMENT FACILITY  
BISHOPS CLEEVE, GLOUCESTERSHIRE

MRF HGV movements / hour 6 Access Road Receiver Height: 1.5 m  
IWMF HGV movements / hour 24 Access Road Site base height: 40 m AOD

Ref.	Plant Item	Data Source / Comment	No.	Power LWA	On-time	Source Height (m)	2 way flow Speed Q per hr V kph	BS5228 ref.	BS5228 method	Ref.
1	1. Excavator & dump truck in sand and gravel extraction area	WBM plant noise database		106	100	2		2	Power	1
2	2. Loading shovel by stockpiles for sand and gravel export	Measured on site 08.10.08		108	100	2		2	Power	2
3	3. Processing plant for sand and gravel (s&g plant)	WBM plant noise database		110	100	4		2	Power	3
4	4. Excavators for extraction of clay for engineering and restoration	WBM plant noise database	2	106	100	2		2	Power	4
5	5. Dump trucks for clay for engineering and restoration	Measured on site 08.10.08		106	100	2		2	Power	5
6	6. Dozer for extraction of clay for engineering and restoration	Measured on site 08.10.08		111	100	2		2	Power	6
7	7. Spare Plant Item			-999	100	2		2	Power	7
8	8. Spare Plant Item			-999	100	2		2	Power	8
9	9. Gas engines and flare stack in existing location	Measured on site 08.10.08	2	94	100	3		2	Power	9
10	10. Air pollution control tankers discharging at ash plant	Measured on site 08.10.08	2	109	100	2		2	Power	10
11	11. Dump trucks collecting treated material from ash plant	Measured on site 08.10.08		103	100	2		2	Power	11
12	12. Dump trucks depositing hazardous material in landfill	Measured on site 08.10.08		106	100	2		2	Power	12
13	13. Dozer for grading hazardous material in landfill	Measured on site 08.10.08		106	100	2		2	Power	13
14	14. Compactors for commercial and industrial waste in landfill	Measured on site 08.10.08	2	109	100	2		2	Power	14
15	15. HGV for depositing commercial and industrial waste in landfill	Measured on site 08.10.08		104	100	2		2	Power	15
16	16. Materials recovery facility (MRF) main building openings	MRF application noise report		100	100	4		2	Power	16
17	17. Materials recovery facility movement of material and vehicles	WBM plant noise database		104	100	2		2	Power	17
18	18. Skip handling and moving at skip storage site near to MRF	Measured on site 08.10.08		100	100	2		2	Power	18
19	19. Vehicle depot and workshop adjacent to MRF	WBM plant noise database		100	100	2		2	Power	19
20	20. Gas engine and flare stack in proposed location (engine)	Proposed 1.1 MW Engine		97	100	3		2	Power	20
21	21. Gas engine and flare stack in proposed location (exhaust)	Proposed 1.1 MW Engine		86	100	8		2	Power	21
22	22. HGV movements to and from materials recycling facility (MRF)	WBM plant noise database		104	100	2	6 20	4	Haul Road	22
23	23. HGV movements on access for landfill, ash plant and s&g plant	WBM plant noise database		104	100	2	24 20	4	Haul Road	23
24	24. HGV movements on internal haul roads	WBM plant noise database		104	100	2	24 20	4	Haul Road	24
25	25. Dump truck movements on internal haul roads	Measured on site 08.10.08		106	100	2	24 20	4	Haul Road	25
26	24. Spare Plant Item			-999	100	2		2	Power	26
27	27. Excavator for bunding in NW corner of site - Temporary Works	WBM plant noise database		106	100	2		2	Power	27
28	28. Dozer for bunding in NW corner of site - Temporary Works	WBM plant noise database		111	100	2		2	Power	28
29	29. Excavator for pond in SE corner of site - Temporary Works	WBM plant noise database		106	100	2		2	Power	29
30	30. Dozer for pond in SE corner of site - Temporary Works	WBM plant noise database		111	100	2		2	Power	30

Log Cabin

Receiver (Ground Height at Receiver + Receiver Height) 34.5  
Average Daytime (07.00 to 18.00) Background Noise Level 45  
Lowest Night-time (23.00 to 07.00) Background Noise Level 31

Location No. 8  
m AOD  
Temporary Works (Items 27-30) 70  
Total for IWMF Plant (Items 1-26) 54  
Night-time Plant (Items 9 & 10 or 20 & 21) 33  
dB LAeq, 1 hour, free field Daytime  
dB LAeq, 1 hour, free field Daytime  
dB LAeq, 1 hour, free field Night-time

Ref.	Plant Item	Plan Dist. (m)	Working Distance (m)	Ground Height (m AOD)	Height / depth (m)	Source Height	Angle Degrees	Range Metres	Barrier -Receiver	Barrier Height	Path Diff.	Barrier Atten.	Soft Ground %	Ground Atten.	Resultant LAeq
1	1. Excavator & dump truck in sand and gravel extraction area	662	662	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.1	34.5
2	2. Loading shovel by stockpiles for sand and gravel export	601	601	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	6.9	37.5
3	3. Processing plant for sand and gravel (s&g plant)	567	567	40.0	0.0	44.0	0	0	0	0.0	-1.000	0.0	100	5.7	41.2
4	4. Excavators for extraction of clay for engineering and restoration	82	82	35.0	0.0	37.0	0	0	60	40.0	0.417	15.7	100	2.6	44.0
5	5. Dump trucks for clay for engineering and restoration	82	82	35.0	0.0	37.0	0	0	60	40.0	0.417	14.6	100	2.6	45.1
6	6. Dozer for extraction of clay for engineering and restoration	82	82	35.0	0.0	37.0	0	0	60	40.0	0.417	16.2	100	2.6	48.5
7	7. Spare Plant Item	935	935	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.9	-1074.3
8	8. Spare Plant Item	935	935	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.9	-1074.3
9	9. Gas engines and flare stack in existing location	550	550	38.0	0.0	41.0	0	0	0	0.0	-1.000	0.0	100	6.2	25.0
10	10. Air pollution control tankers discharging at ash plant	504	504	40.0	0.0	42.0	0	0	330	47.0	0.253	15.0	100	6.5	32.0
11	11. Dump trucks collecting treated material from ash plant	504	504	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	6.5	34.4
12	12. Dump trucks depositing hazardous material in landfill	122	122	37.0	0.0	39.0	0	0	50	40.0	0.226	12.6	100	3.4	43.7
13	13. Dozer for grading hazardous material in landfill	122	122	37.0	0.0	39.0	0	0	50	40.0	0.226	13.1	100	3.4	43.2
14	14. Compactors for commercial and industrial waste in landfill	1206	1206	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	31.4
15	15. HGV for depositing commercial and industrial waste in landfill	1206	1206	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	26.4
16	16. Materials recovery facility (MRF) main building openings	896	896	40.0	0.0	44.0	0	0	0	0.0	-1.000	0.0	100	6.6	26.4
17	17. Materials recovery facility movement of material and vehicles	896	896	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.8	29.2
18	18. Skip handling and moving at skip storage site near to MRF	986	986	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	24.2
19	19. Vehicle depot and workshop adjacent to MRF	986	986	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	24.2
20	20. Gas engine and flare stack in proposed location (engine)	569	569	37.0	0.0	40.0	0	0	535	42.0	0.085	10.3	100	6.3	23.6
21	21. Gas engine and flare stack in proposed location (exhaust)	569	569	37.0	0.0	45.0	0	0	535	42.0	-0.088	0.0	100	3.6	19.2
22	22. HGV movements to and from materials recycling facility (MRF)	952	952	40.0	0.0	42.0	14	0	0	0.0	-1.000	0.0	100	7.9	16.9
23	23. HGV movements on access for landfill, ash plant and s&g plant	552	552	40.0	0.0	42.0	26	0	0	0.0	-1.000	0.0	100	6.7	29.2
24	24. HGV movements on internal haul roads	294	294	40.0	0.0	42.0	8	0	0	0.0	-1.000	0.0	100	5.3	28.3
25	25. Dump truck movements on internal haul roads	41	41	40.0	0.0	42.0	25	0	0	0.0	-1.000	0.0	100	1.1	48.1
26	24. Spare Plant Item	930	930	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	7.8	-1074.2
27	27. Excavator for bunding in NW corner of site - Temporary Works	28	28	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	0.2	68.8
28	28. Dozer for bunding in NW corner of site - Temporary Works	63	63	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	2.0	65.0
29	29. Excavator for pond in SE corner of site - Temporary Works	1206	1206	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	28.4
30	30. Dozer for pond in SE corner of site - Temporary Works	1206	1206	40.0	0.0	42.0	0	0	0	0.0	-1.000	0.0	100	8.0	33.4

**APPENDIX 10.10****Noise Measurement Locations**

Ref.	Location for Daytime Samples	Description of Measurement Position
1	Home Farm	To north east of dwelling, at start of access road to equestrian centre
2	Lower Farm	On grass verge to south of dwelling and stables
3	Stoke Road	On grass verge at junction of Stoke Road and Stoke Orchard Road
4	Haydon	On garden path to south of dwelling
5	Pussy Willows Cattery	On entrance driveway to north of dwelling
6	Court Farm	In farm yard to east of dwelling
7	Wingmoor Lodge	In garden to west of Lodge
8	Log Cabin	Adjacent to log cabin in vicinity of Cattery
Ref.	Location for Night-time Samples	Description of Measurement Position
1a	Home Farm	By bend in track to south of dwelling
2a	Lower Farm	By gate on access road east of Lower Farm
4	Haydon	In field adjacent to eastern boundary garden
5/6	Pussy Willows Cattery / Court Farm	In lay-by to west of dwellings

**APPENDIX 10.11****Noise Sensitive Locations**

Below is a list of selected noise sensitive receptors, closest in each direction to the Grundon Wingmoor Farm IWWMF Site.

The numbers in square brackets are Ordnance Survey co-ordinates used to represent the location of the dwellings to obtain separation distances from the plant noise sources identified in the site noise calculation sheets.

**Dwellings for Which Site Noise Calculations Undertaken**

1. Home Farm [393900, 226300]
2. Lower Farm [394730, 227000]
3. Stoke Road [394700, 227530]
4. Haydon [394200, 227650]
5. Pussy Willows [393400, 227900]
6. Court Farm [393440, 228000]
7. Wingmoor Lodge [393780, 227770]
8. Log Cabin [393430, 227830]

**Other dwellings identified**

- Dwellings in Brockhampton
- Dwellings adjacent to A435
- Dwellings adjacent to Stoke Orchard Road
- Isolated dwelling
- Dwelling closer to railway
- Dwelling closer to railway
- Isolated dwelling
- Isolated dwelling

## APPENDIX 10.12

### Details Relating to the Site Noise Calculation Sheets

*Table at top of page, a summary of the properties of the identified noise sources.*

#### *Ref.*

Reference number for plant items 1 to 30.

#### *Plant Item*

A list of plant items selected as potentially significant noise sources; contains some “Spare Plant Item” entries that are not used in the site noise calculations.

#### *Data source/comment*

Typically a reference to where the noise data has been measured or sourced from.

#### *No.*

The number of instances of that particular plant item at the same location on site. Specifically, where 2 No. plant items are stated, 3 dB(A) has been added to the noise output level (Power LWA) for one plant item.

#### *Power LWA*

The A-weighted sound power level for each plant item. A sound power level can be used to determine an  $L_{Aeq,T}$  at any distance required, assuming hemispherical propagation.

#### *On-time*

The operating time of each plant item given as a percentage of the period, generally taken to be 1 hour.

#### *Source Height (m)*

The height above the ground at which the actual noise source is located, for example noise sources associated with a wheeled loader would normally be approximately 2 metres above ground level.

#### *2 way flow Q per hr*

Used for haul road calculations and specifies the number of vehicles per hour expected on the site access roads or internal site haul road.

#### *Speed V kph*

The expected average speed of the vehicles on the access road or haul road.

#### *BS5228 ref & BS5228 method*

Indicates which method within BS5228: Part 1: 2009 has been used for assessing this particular noise source.

### *Information displayed in the middle of the page*

*Receptor information including dwelling name, location number, ground height and background noise level data.*

Also given are the summation for Temporary Works, overall daytime operation of the site and limited night-time activity.

*Table at bottom of page, resulting  $L_{Aeq,T}$  contributions from the individual noise sources.*

#### *Ref.*

Reference number for plant items – to link with table at top of page.

#### *Plant Item*

A list of plant items selected as potentially significant noise sources – to link with table at top of page.

#### *Undefined information column*

In this case specifying if the noise source is in operation during the day or night-time periods, for summation of noise sources for day and night.

#### *Plan Dist. (m)*

The distance from the noise source to receptor in metres, calculated from the co-ordinates entered for each plant item and for each receiver location.

#### *Working Distance (m)*

Any further distance correction used to alter the distance of the noise source to the receptor, for testing alternative scenarios if required.

#### *Ground Height (m AOD)*

The ground height at the location of the noise source, in metres above sea level (Ordnance datum).

#### *Height / depth (m)*

Any further adjustment to the height of the noise source, for example if noise sources are positioned above or below ground level.

#### *Source height*

Indicates the noise source height taking account of the ground height and the height / depth adjustment.

#### *Angle Degrees*

Used in the Haul Road Method calculations and specifies the angle of view from the haul road or access road to the receiver location.

#### *Range Metres*

Used in the “Mobile plant over a defined range” method to give the distance of the plant range back from the nearest edge of the site or nearest approach of the plant item.

#### *Barrier – Receiver*

Distance of any acoustic barrier to the receptor in metres, used to determine path difference.

#### *Barrier Height*

The height of the barrier in metres, used to determine path difference.

#### *Path Diff.*

The difference in path length from noise source to receptor to which the sound propagation is subjected by introduction of any barrier.

#### *Barrier Atten.*

The attenuation caused by the barrier to the resultant  $L_{Aeq,T}$  caused by the noise source, in decibels – based on calculations in third octave bands for each noise source.

#### *Soft Ground %*

The percentage of the ground between the noise source and receptor which is taken to be soft, i.e. grassland, rather than hard, i.e. concrete, or water.

#### *Ground Atten.*

The attenuation caused by any soft ground to the resultant  $L_{Aeq,T}$  caused by the noise source, in decibels.

#### *Resultant $L_{Aeq}$*

The resulting  $L_{Aeq}$  in decibels for the individual noise source at the receptor, including attenuation factors and any mitigation at source.

