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26th September 2018

ENVIRONMENTAL NOISE ASSESSMENT

GLAN LASH SMALL SURFACE MINE EXTENSION

for

Glo Bryn Bach Coal Ltd

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1 Introduction

1.1 It is proposed to extend the Glan Lash Small Surface to extract coal by surface working at to the north east of the current workings approximately 1 km north west of Ammanford. The site is currently used as pasture to which it will be returned on completion and restoration. A coal preparation plant is currently operated by the company to the south west on the opposite bank of the Afon Lash and this existing facility will be used to process the extracted coal.

1.2 Glo Bryn Bach Coal Ltd have requested that Kevan Walton Associates Ltd. undertake a noise assessment of the proposed extension to assess the likely noise impact on the closest dwellings.

2 Site Description and Proposed Development

2.1 The site is approximately 1km north west of Ammanford and 2 km south of Landybie as shown in Fig.1. The nearest residence to the extraction is Ty Uchaf Farm to the north which will be approximately 225m from the excavations. Y Garth is relatively close to the current extraction area but the owner has an interest in the extractions and it is not therefore noise sensitive. The nearest noise sensitive properties are as shown in Fig 1 and comprise the following:

Location	**Distance (m)**
Pen-y-waun-hafog	430
Tylegwyn	235
Nirvana	255
Llwyn Celyn	385
Ty Uchaf Farm	225

(Oaklands and Brynawel are in a similar position to Pen-y-waun Hafog and the latter has been used to represent the impact on all three properties. There are a number of dwellings at the crossroads at Tylegwyn. Likewise there are a number of properties in the vicinity or Nirvana. Further reference to the individual locations will indicate impact at the particular group of dwellings).

2.2 The proposed extraction extracts the Pumpchwart, Trichwart and Stinking Coals which dip in a south easterly direction, outcropping in the side of the Afon Lash valley. The coal will be extracted in a series of cuts from the existing surface mine in a north easterly direction with the greatest depth of excavation in the south eastern part of the cut between 45 and 52m depth. The depth will reduce in a northerly direction to a minimum of 17m. but generally over 33m.

2.3 Initial overburden extraction will be used to backfill the existing Glan Lash Mine void and to create an extension to the existing overburden dump situated to the west of the existing mine. On completion, the overburden dumps will be used to backfill the mine extension.

2.4 Topsoil and subsoil will be stored in landscaping and noise attenuation bunds to the west, south east and north east of the excavations. The general design is for topsoil bunds to be 3m high although there may be advantage to increasing the height of the northern topsoil bund to 5m as outlined below.

2.5 Excavation will be by back-acting excavator loading into the articulated dumptrucks and will initially be backfilled into exhausted areas in the existing excavations. Coal will be transported directly to the coal preparation plant by articulated dumptruck. Two small tracked dozers will also operate in support of the other equipment but it is only envisaged that one dozer will operate at a time.

2.6 Noise attenuation will be provided by the excavations and topsoil and overburden mounds in addition to attenuation provided by natural ground. Temporary overburden, sub-soil and topsoil storage will be to the west, south east and north east of the site. In addition to operational convenience, these have been positioned so as to provide the maximum visual, noise and dust attenuation to nearby dwellings.

2.7 Hours of working will be 07:30hrs to 17:00hrs Monday to Friday and 07:30hrs to 13:00hrs on Saturday with limited maintenance only being conducted on Sunday, if required

3 Method of calculating noise levels

3.1 The calculations forming the basis of this report have been undertaken in accordance with the method contained in *B.S. 5228: 1984 Noise control on* construction *and open sites: Part 1*[1] and *Calculation of Road Traffic Noise (CRTN).*[2] Guidance has been taken from the *MPS2: Controlling and Mitigating the Environmental Effects of Minerals Extraction in England* [3] and Minerals Technical Advice Note 2:Coal, January 2009 [4].

3.2 Background noise levels have been determined in accordance with *B.S. 4142: 1990 Method of rating industrial noise affecting mixed residential and industrial areas* [5].

3.3 B.S. 5228 recommends the use of L_{Aeq} as being the most appropriate index for assessing noise levels and this has been used in the calculations. It is defined as the equivalent continuous steady sound level that would produce the same sound energy as a fluctuating sound over the same period of time. It is expressed in 'A' weighted terms, ie. applicable to the human range of hearing.

3.4 Background noise has been measured as the LA_{90}, being the noise level exceeded for 90% of the time and the percentile measurement recommended in BS 4142. In addition, L_{Aeq}, and LA_{10} have been measured to more fully evaluate the nature of the noise

3.5 Sound pressure levels for individual items of plant have been obtained directly from the plant operating at the site company's Cym-yr-onen Colliery Reclamation Scheme site in March 2006 and plant has not changed significantly in the intervening period. The measurements were taken 10m from the item of plant under normal operating conditions or at engine speed conforming to normal operating conditions and, where possible, from four directions, front, back and at each side.

3.6 During measurement for plant performance, both L_{Aeq} and octave band measurements were taken, the latter to determine barrier attenuation. From these figures, a sound pressure level has been calculated based on the distance between the noise source and the receiving position to give the anticipated noise level at each of the noise sensitive properties.

3.7 During measurement the microphone was protected by a foam wind-shield, and the instrument was calibrated before and after the readings were taken

3.8 An allowance has been applied for barriers such as perimeter bunds, quarry faces and the intervening landmass in accordance with BS 5228, or soft ground attenuation using the CRTN method. Barrier attenuation has been calculated for each octave band, since noise at different frequencies is attenuated to different degrees.

4 Noise Criteria

4.1 MPS2 defines day-time and night-time working, day-time being defined as between the hours of 07:00 and 19:00, evening 19:00 to 22:00, and night-time between 22:00 and 07:00. Only daytime values are relevant to the operations under consideration.

4.2 MPS2 states that planning conditions should impose a noise level at noise sensitive properties which does not exceed the background noise by more than 10 dB(A), subject to a maximum of 55 dB(A) $L_{Aeq.}$

4.3 Construction work and preparatory work such as topsoil stripping is recognised as being a short-term operation and as such higher levels may be permissible during such periods. A value of 70 dB L_{Aeq} is suggested in MPS2, for periods of up to 8 weeks in any year.

5 Background Noise

5.1 Background noise levels were measured on 5th May 2018 normally for 1 hour. However, after a short time monitoring at Llwyn Celyn a tractor was operating in the adjacent field and monitoring was abandoned. However, previous reading were taken in 2011 and these are also presented below for comparison. Despite the brevity of the 2018 measurements they were similar to the 2011 values and have been used in the current analyses. Additional monitoring was undertaken at Oaklands and Llwyn Celyn with the plant running on 13th March 2006 to determine the contribution of the plant noise.

5.2 For each position, the start time, elapsed time, and various other parameters, including, $L_{Aeq,}L_{A10,}$ and L_{A90} were taken and observations of significant noise sources noted. The results are summarised in Table 1. The air was generally still (0.4m/sec, occasionally gusting to 1.7m/sec.) with little cloud cover. Temperature was above 20°C.

Table 1 : Background Noise Measurements at Noise Sensitive Properties

Location & Date	Start time (hr:min)	Period (hr:min)	L_{eq} dB(A)	L_{10} dB(A)	L_{90} dB(A)	Comments
Pen-y-waun hafog / Oaklands						
17/05/2018	15:40	1:00	45.5	45.4	36.0	Traffic noise. Birdsong.
Llwyn Celyn						
08/02/2011	17:07	0:20	50.3	47.4	41.6	Stream noise. 5 cars passing.
17/05/2018	16:50	0:07	48.0	51.0	39.8	Traffic on adjacent road. Mowing of adjacent field begun part way through – monitoring abandoned.
Tylegwyn						
17/05/2018	11:45	1:00	49.7	47.6	33.2	Traffic noise. Cars arriving & leaving. Strimmer in distance. Siren in distance at 12min. Helicopter overhead at 16min (pause). Birdsong.
Nirvana						
17/05/2018	09:30	1:00	42.0	44.6	34.2	Distant traffic. Occ. Cars on adjacent road. Occ plane high overhead. Birdsong
Ty Uchaf Farm						
17/05/2018	12:55	0:45	40.4	41.6	31.2	Distant traffic. Plane high overhead @33 min. Train in distance @35 min. Birdsong

5.3 The following values of L_{A90} have been taken to represent the background noise.

Table 2: Background Noise

Location	Background Noise (dB_{A90})
Pen-y-waun hafog	36
Llwyn Celyn	40
Tylegwyn	33
Nirvana	34
Ty Uchaf Farm	31

5.4 The noise emanating from the coal preparation plant has been calculated by subtracting the sound level with and without the plant running at Pen-y-waun hafog and Llwyn Celyn

6 Predicted Noise Levels and Impact

6.1 Operating conditions

6.1.1 The sound pressure levels used for each piece of equipment are presented in the tables referring to each location.

6.1.2 The plant to be used has been classified as follows:

- Stationary - Plant that operates in one location.
  - Coal preparation plant
  - Excavator

- Mobile (Limited Area) - Plant that moves around an area during the shift.
  - Dozer

- Mobile (Extended Area) Plant traversing the same well defined routes
  - Dumptrucks

The appropriate methods of analysis from BS 5228 have been used in each case.

6.1.3 An attenuation value has been applied where this will be effective, i.e. where work will be undertaken behind faces or mounds or where the intervening topography affords some attenuation. Where bunds or other barriers are not effective, soft ground attenuation has been included.

6.1.4 Not all items of equipment will be working all of the time and the following durations (Table 2) have been used for the various activities.

Table 3: Activity Duration - Excavation

Plant Item	Activity - % of time
Excavator	90
Dumptrucks	90
Dozer	90

Although It is anticipated that the dozer will be working 90% of the time during soil movement and 50% of the time during normal production, a level of operation of 90% has been used in all situations to allow for occasional greater use.

6.1.5 There will be a short period of time at the beginning of each phase when topsoil and subsoil will be moved from the excavation area to storage areas at the east and north of the site. Topsoil and sub soil storage is planned to be approximately 3m high. In order to simulate dumptrucks moving from the excavation to the storage mounds and back, one has been considered at the closest point on the top of the mound and one at the point of loading each with a traverse from the excavation to the mound.

6.1.6 It is anticipated that when coal is exposed there will be a short period of time when production is dedicated to removal of coal and its movement to the coal preparation plant with no overburden stripping.

6.1.7 At all locations, activities closest to the property have first been considered to give the worst case, and in all cases, further attenuation will be obtained as the excavations progress.

6.1.8 Although 3 seams are to be extracted, the noise reported at the base of the void refers to the basal seam. Noise from extraction of the other seams will lie between this value and the value reported for stripping overburden at surface.

6.2 **Pen-y-waun-hafog**

6.2.1 Soil Stripping

The existing overburden dump will remain in place during soil stripping and movement to the topsoil storage area. It is anticipated that the noise levels experienced at Pen-y-waun-hafog will be as shown in Table 4 :

Table 4 - Predicted Noise at Pen-y-waun-hafog
Soil Stripping

ITEM	SOUND PRESSURE LEVEL (L_{Aeq} dB(A))	RADIUS (m)	ATTENUATION (dB(A))	NOISE LEVEL (L_{Aeq} - dB(A))
Excavator	78	430	24	15
Dumptruck	75	430	25	11
Dumptruck	75	430	25	11
Dozer	75	430	25	11
PREDICTED CUMULATIVE NOISE LEVEL				**18**

Predicted noise levels L_{Aeq} during soil removal will be mitigated significantly by the existing overburden dump and will be 18dB(A), well below background noise level the limit suggested in MPS2 for soil removal.

6.2.2 Overburden Removal

Pen-y-waun-hafog will initially benefit from noise attenuation from the existing overburden dump during overburden removal when working at surface. However, it is proposed to extend the existing dump eastwards with material from the extension once the current void is backfilled. This will necessitate the dozer working on top of the dump and on average one dumptruck will be on the dump. The noise impact has therefore been modelled with the excavator and one dumptruck in the extension void and one on the dump. It is anticipated that the noise levels experienced at Pen-y-waun-halog will be as shown in Table 5:

Table 5 - Predicted Noise at Pen-y-waun-hafog
Overburden Removal at Surface, Extending Overburden Dump

ITEM	SOUND PRESSURE LEVEL (L_{Aeq} dB(A))	RADIUS (m)	ATTENUATION (dB(A))	NOISE LEVEL (L_{Aeq} - dB(A))
Excavator	78	430	24	15
Dumptruck	75	430	25	10
Dumptruck	75	340	3	34
Dozer	75	340	3	35
PREDICTED CUMULATIVE NOISE LEVEL				**38**

Table 6 - Predicted Noise at Pen-y-waun-hafog
Overburden Removal at Surface, Overburden Dump in Position

ITEM	SOUND PRESSURE LEVEL (L_{Aeq} dB(A))	RADIUS (m)	ATTENUATION (dB(A))	NOISE LEVEL (L_{Aeq} - dB(A))
Excavator	78	430	24	15
Dumptruck	75	430	25	11
Dumptruck	75	430	25	11
Dozer	75	430	25	11
PREDICTED CUMULATIVE NOISE LEVEL				**18**

As excavation proceeds, the overburden dump will provide additional attenuation as shown in Table 6.

Noise level L_{Aeq} during overburden removal is initially predicted at 38dB(A), 2 dB above background with the noise reducing to well below background once the overburden dump has been established.

6.2.3 Coaling

During coaling operations, the ADTs will move coal to the coal preparation plant and the following noise levels in Table 7 and 8 are predicted for those situations nearest and farthest from the dwellings:

Table 7 - Predicted Noise at Pen-y-waun-hafog
Coaling within the Void, Closest

ITEM	SOUND PRESSURE LEVEL (L_{Aeq} dB(A))	RADIUS (m)	ATTENUATION (dB(A))	NOISE LEVEL (L_{Aeq} - dB(A))
Excavator	78	485	30	7
Dumptruck	75	485	31	3
Dumptruck	75	485	31	2
Dozer	75	485	31	3
PREDICTED CUMULATIVE NOISE LEVEL				**10**

Table 8 - Predicted Noise at Pen-y-waun-hafog
Coaling within the Void, Farthest

ITEM	SOUND PRESSURE LEVEL (L_{Aeq} dB(A))	RADIUS (m)	ATTENUATION (dB(A))	NOISE LEVEL (L_{Aeq} - dB(A))
Excavator	78	735	23	10
Dumptruck	75	735	24	6
Dumptruck	75	735	24	6
Dozer	75	735	24	6
PREDICTED CUMULATIVE NOISE LEVEL				**13**

The predicted noise level L_{Aeq} will be between 10 and 13 dB(A), the noise being totally mitigated by the barrier effects of the dump and excavations. Whilst the coa;l preparation plant is operating this will be the main noise source and there will therefore be no perceivable change from the current noise levels at this property.

6.3 **Llwyn Celyn**

6.3.1 Soil Stripping

During topsoil and subsoil stripping and movement to the storage area, it is anticipated that the noise levels experienced at Llwyn Celyn will be as shown in Table 9:

Table 9 - Predicted Noise at Llwyn Celyn
Soil Stripping - Closest

ITEM	SOUND PRESSURE LEVEL (L_{Aeq} dB(A))	RADIUS (m)	ATTENUATION (dB(A))	NOISE LEVEL (L_{Aeq} - dB(A))
Excavator	78	385	5	35
Dumptruck	75	385	5	30
Dumptruck	75	385	5	31
Dozer	75	385	5	32
PREDICTED CUMULATIVE NOISE LEVEL				**38**

Llwyn Celyn will not benefit from barrier attenuation until plant is below the pit rim, although some soft ground attenuation will be effective. The predicted noise level L_{Aeq} from soil stripping is 38dB(A) at the closest location, below background noise level., The soil stripping will be of short duration and well within the limits recommended in MPS2 for this activity.

6.3.2 Overburden Removal

Noise levels during production at surface are predicted as follows in Table 10:

Table 10 - Predicted Noise at Llwyn Celyn
Overburden Removal at Surface, Closest

ITEM	SOUND PRESSURE LEVEL (L_{Aeq} dB(A))	RADIUS (m)	ATTENUATION (dB(A))	NOISE LEVEL (L_{Aeq} - dB(A))
Excavator	78	385	5	35
Dumptruck	75	385	5	29
Dumptruck	75	385	5	31
Dozer	75	385	5	32
PREDICTED CUMULATIVE NOISE LEVEL				**38**

The noise level during overburden removal is therefore predicted at L_{Aeq} of 38 dB(A), 2 dB below background noise level and will decrease as distance away increases. Barrier attenuation will increase as soon as the excavations go below ground surface and will approach the levels for coaling as the depth increases.

6.3.3 Coaling

During coaling operations, the ADTs will move coal to the coal preparation plant and therefore move closer to the dwelling and the following noise levels in Tables 11 and 12 are predicted:

Table 11 - Predicted Noise at Llwyn Celyn Coaling Operations - Closest

ITEM	SOUND PRESSURE LEVEL (L_{Aeq} dB(A))	RADIUS (m)	ATTENUATION (dB(A))	NOISE LEVEL (L_{Aeq} - dB(A))
Excavator	78	385	17	23
Dumptruck	75	385	18	16
Dumptruck	75	385	18	17
Dozer	75	385	18	19
PREDICTED CUMULATIVE NOISE LEVEL				**26**

Table 12 - Predicted Noise at Llwyn Celyn Coaling Operations - Farthest

ITEM	SOUND PRESSURE LEVEL (L_{Aeq} dB(A))	RADIUS (m)	ATTENUATION (dB(A))	NOISE LEVEL (L_{Aeq} - dB(A))
Excavator	78	690	6	28
Dumptruck	75	690	6	23
Dumptruck	75	690	6	21
Dozer	75	690	7	24
PREDICTED CUMULATIVE NOISE LEVEL				**31**

Without the plant running, noise (L_{eq}) from the coal extraction will be between 26 and 31 dB(A), well below background level at this location. The ambient noise level will be controlled by noise from the coal preparation plant, when it is running, and therefore the situation will remain as at present.

6.4 Tylegwyn

6.4.1 Soil Stripping

During topsoil and subsoil extraction and movement to the storage area, it is anticipated that the noise levels experienced at Tylegwyn will be as shown in Table 13:

Table 13 - Predicted Noise at Tylegwyn
Soil Stripping

ITEM	SOUND PRESSURE LEVEL (L_{Aeq} dB(A))	RADIUS (m)	ATTENUATION (dB(A))	NOISE LEVEL (L_{Aeq} - dB(A))
Excavator	78	225	7	39
Dumptruck	75	235	11	31
Dumptruck	75	225	7	36
Dozer	75	225	7	36
PREDICTED CUMULATIVE NOISE LEVEL				**42**

The predicted noise L_{Aeq} of 42 dB(A) at Tylegwyn from the soil stripping operations will be above the background noise level of 33 dB(A) by 9 dB(A). However the process will be over a short period of time and well within the guidelines suggested in MPS2 for soil removal and storage.

6.4.2 Overburden Removal

Noise levels during production at surface are predicted as follows in Table 14:

Table 14- Predicted Noise at Tylegwyn
Overburden Removal at Surface

ITEM	SOUND PRESSURE LEVEL (L_{Aeq} dB(A))	RADIUS (m)	ATTENUATION (dB(A))	NOISE LEVEL (L_{Aeq} - dB(A))
Excavator	78	235	11	34
Dumptruck	75	235	11	31
Dumptruck	75	235	11	31
Dozer	75	235	12	30
PREDICTED CUMULATIVE NOISE LEVEL				**38**

The noise from the overburden mining operations will be 5 dB(A) above the background noise. As the excavator moves to the base of the excavations, noise levels of the excavator and dump truck within the void will be attenuated by the sides of the void as for coal production.

6.4.3 Coaling

Coal production from the base of the excavation will have a noise impact as shown in as shown in Table 15:

Table 15 - Predicted Noise at Tylegwyn
Coal Production within the Void - Closest

ITEM	SOUND PRESSURE LEVEL (L_{Aeq} dB(A))	RADIUS (m)	ATTENUATION (dB(A))	NOISE LEVEL (L_{Aeq} - dB(A))
Excavator	78	280	29	14
Dumptruck	75	280	30	10
Dumptruck	75	280	30	10
Dozer	75	280	30	10
PREDICTED CUMULATIVE NOISE LEVEL				**18**

Noise at the village of L_{Aeq} =18 dB(A) will be well below background noise and impact will therefore be negligible. As the excavations move away from the closest face, barrier attenuation will be reduced but distance attenuation compensates for the loss of barrier and hence the overall noise level will fall slightly as shown in Table 16:

Table 16 - Predicted Noise at Tylegwyn
Coal Production in the Void - Farthest

ITEM	SOUND PRESSURE LEVEL (L_{Aeq} dB(A))	RADIUS (m)	ATTENUATION (dB(A))	NOISE LEVEL (L_{Aeq} - dB(A))
Excavator	78	520	24	13
Dumptruck	75	520	25	9
Dumptruck	75	520	25	9
Dozer	75	520	25	9
PREDICTED CUMULATIVE NOISE LEVEL				**16**

The coal preparation plant will not contribute to the noise impact.

6.5 Nirvana

6.5.1 Soil Stripping

During topsoil and subsoil extraction and movement to the storage area, it is anticipated that the noise levels experienced at Nirvana will be as shown in Table 17:

Table 17 - Predicted Noise at Nirvana
Soil Stripping

ITEM	SOUND PRESSURE LEVEL (L_{Aeq} dB(A))	RADIUS (m)	ATTENUATION (dB(A))	NOISE LEVEL (L_{Aeq} - dB(A))
Excavator	78	245	13	32
Dumptruck	75	245	13	29
Dumptruck	75	245	10	31
Dozer	75	245	10	31
PREDICTED CUMULATIVE NOISE LEVEL				**37**

The predicted noise L_{Aeq} of 37 dB(A) at Nirvana from the soil stripping operations will be 3 dB(A) above the background noise level of 34 dB(A) and therefore not of significant impact at this location.

6.5.2 Overburden Removal

Noise levels during production at surface are predicted as follows in Table 18:

Table 18 - Predicted Noise at Nirvana
Overburden Removal at Surface

ITEM	SOUND PRESSURE LEVEL (L_{Aeq} dB(A))	RADIUS (m)	ATTENUATION (dB(A))	NOISE LEVEL (L_{Aeq} - dB(A))
Excavator	78	255	13	31
Dumptruck	75	255	13	28
Dumptruck	75	255	13	28
Dozer	75	255	14	27
PREDICTED CUMULATIVE NOISE LEVEL				**35**

The noise level for overburden extraction at surface at L_{Aeq} = 35 dB(A) will be 1 dB(A) above background noise level and will be of negligible impact. Noise levels will decrease further as the excavations deepen and obtain attenuation from the excavations as for the coaling operations.

6.5.3 Coaling

When the excavator moves to the base of the excavations, noise levels of the excavator and dump truck within the void will be attenuated by the sides of the void as shown in Table 19:

Table 19 - Predicted Noise at Nirvana
Coal Production and Overburden Removal within the Void

ITEM	SOUND PRESSURE LEVEL (L_{Aeq} dB(A))	RADIUS (m)	ATTENUATION (dB(A))	NOISE LEVEL (L_{Aeq} - dB(A))
Excavator	78	280	32	11
Dumptruck	75	280	33	7
Dumptruck	75	280	33	7
Dozer	75	280	33	7
PREDICTED CUMULATIVE NOISE LEVEL				**15**

The coal preparation plant will not contribute to the noise impact.

Once the attenuation of the faces becomes fully effective then the noise level L_{Aeq} will reduce to 15 dB(A), significantly below the background noise level of 34 dB(A) and therefore the noise from the excavations will not be noticeable. Once excavation is moved further into the void the attenuation of the faces will increase and the noise level L_{Aeq} will drop to 13 dB(A), again well below the background noise level and is unlikely to be heard as shown in Table 20:

Table 20 - Predicted Noise at Nirvana
Coal Production and Overburden Removal at the Void Extremity

ITEM	SOUND PRESSURE LEVEL (L_{Aeq} dB(A))	RADIUS (m)	ATTENUATION (dB(A))	NOISE LEVEL (L_{Aeq} - dB(A))
Excavator	78	520	28	9
Dumptruck	75	520	29	5
Dumptruck	75	520	29	5
Dozer	75	520	29	5
PREDICTED CUMULATIVE NOISE LEVEL				**13**

6.6 Ty Uchaf Farm

6.6.1 Soil Stripping

During topsoil and subsoil extraction and movement to the storage area, it is anticipated that the noise levels experienced at Ty Uchaf Farm will be as shown in Table 21:

Table 21 - Predicted Noise at Ty Uchaf Farm
Soil Stripping

ITEM	SOUND PRESSURE LEVEL (L_{Aeq} dB(A))	RADIUS (m)	ATTENUATION (dB(A))	NOISE LEVEL (L_{Aeq} - dB(A))
Excavator	78	225	11	35
Dumptruck	75	225	13	30
Dumptruck	75	210	6	37
Dozer	75	210	6	37
PREDICTED CUMULATIVE NOISE LEVEL				**42**

The predicted noise L_{Aeq} of 42 dB(A) at Ty Uchaf from the soil stripping operations will be 11 dB(A) above the background noise level of 31 dB(A). However, this will be of short duration and well within the limits set in MPS2 for soil removal and storage.

6.6.2 Overburden Removal

Noise levels during production at surface are predicted as follows in Table 22:

Table 22 - Predicted Noise at Ty Uchaf Farm
Overburden Removal at Surface

ITEM	SOUND PRESSURE LEVEL (L_{Aeq} dB(A))	RADIUS (m)	ATTENUATION (dB(A))	NOISE LEVEL (L_{Aeq} - dB(A))
Excavator	78	225	11	35
Dumptruck	75	225	12	31
Dumptruck	75	225	12	31
Dozer	75	225	12	31
PREDICTED CUMULATIVE NOISE LEVEL				**38**

The noise level L_{Aeq} for overburden extraction at surface at 38 dB(A) will be 7 dB(A) above background noise level. Noise levels will decrease further as the excavations deepen and obtain attenuation from the excavations as for the coaling operations.

The noise level could be reduced by increasing the barrier effect of the topsoil bund. Current design is for 3m high bund but increasing this to 5m high will increase the barrier attenuation by 7-8 dB(A) and reduce the predicted cumulative noise level L_{Aeq} by 6 dB to 32 dB(A), approximately the same as the background noise level and hence not discernable. (Table 23).

Table 23 - Predicted Noise at Ty Uchaf Farm
Overburden Removal at Surface - 5m Topsoil Bund

ITEM	SOUND PRESSURE LEVEL (L_{Aeq} dB(A))	RADIUS (m)	ATTENUATION (dB(A))	NOISE LEVEL (L_{Aeq} - dB(A))
Excavator	78	225	17	29
Dumptruck	75	225	20	23
Dumptruck	75	225	20	23
Dozer	75	225	18	25
PREDICTED CUMULATIVE NOISE LEVEL				**32**

6.6.3 Coaling

When the excavator moves to the base of the excavations, noise levels of the excavator and dump truck within the void will be attenuated by the sides of the void as shown on Table 24:

Table 24 - Predicted Noise at Ty Uchaf Farm
Coal Production and Overburden Removal within the Void

ITEM	SOUND PRESSURE LEVEL (L_{Aeq} dB(A))	RADIUS (m)	ATTENUATION (dB(A))	NOISE LEVEL (L_{Aeq} - dB(A))
Excavator	78	250	25	20
Dumptruck	75	250	26	16
Dumptruck	75	250	26	16
Dozer	75	250	26	16
PREDICTED CUMULATIVE NOISE LEVEL				**23**

The coal preparation plant will not contribute to the noise impact.

Once the attenuation of the faces becomes fully effective then the noise level L_{Aeq} will reduce to 23 dB(A), significantly below the background noise level of 31 dB(A) and therefore the noise from the excavations will not be noticeable. Once excavation is moved further into the void the attenuation of the faces will increase and the noise level L_{Aeq} will drop to 20dB(A), again well below the background noise level and is unlikely to be heard as shown in Table 25:

Table 25 - Predicted Noise at Ty Uchaf
Coal Production and Overburden Removal at the Void Extremity

ITEM	SOUND PRESSURE LEVEL (L_{Aeq} dB(A))	RADIUS (m)	ATTENUATION (dB(A))	NOISE LEVEL (L_{Aeq} - dB(A))
Excavator	78	530	19	17
Dumptruck	75	530	22	11
Dumptruck	75	530	22	11
Dozer	75	530	22	11
PREDICTED CUMULATIVE NOISE LEVEL				**20**

For both these instances, an increase in the height of the topsoil bund to 5m will have less effect than for the excavation at surface and will reduce the predicted cumulative noise level by 1 dB only to between L_{Aeq} = 19 and 22 dB(A)

7 Noise Control

7.1 The excavation faces, topsoil and overburden mounds and the natural topography will provide barrier attenuation to all properties near to the coal extraction area.

7.2 Unnecessary noise can be created by poorly maintained plant and therefore the operator will ensure that all plant is adequately maintained and that doors and enclosures are kept closed whilst plant is operating.

7.3 One significant source of nuisance to residents adjacent or close to such operations is reversing horns on mobile plant. In order to reduce this to a minimum, the operator is investigating the use of environmentally friendly reversing alarms and other reversing aids, so long as these are commensurate with adequate health and safety provisions.

7.4 The operator has been operating the adjacent coal preparation plant and the original Glan Lash for some time.

8 Conclusions

8.1 It is proposed to extract coal from a small site at Glan Lash, Llandybie to the north west of Ammanford. The mining operations are small scale and will involve the use of an excavator, 2 articulated dumptrucks and a dozer. The extracted coal will be processed in the existing adjacent coal preparation plant.

8.2 Potentially noise-sensitive properties are Pen-y-waun-hafog, Llwyn Celyn, Tylegwyn, Nirvana and Ty Uchaf Farm.

8.3 Background noise levels have been determined by on site measurement and the background noise levels used are as follows:

Location	**Background Noise ($dB_{A90.1hr}$)**
Pen-y-waun hafog	36
Llwyn Celyn	40
Tylegwyn	33
Nirvana	34
Ty Uchaf Farm	31

8.4 Predicted noise levels during topsoil and subsoil removal have been determined in the noise sensitive properties and are summarised below

Location	**Predicted Noise Level ($dB\ L_{Aeq}$)**
Pen-y-waun hafog	18
Llwyn Celyn	38
Tylegwyn	42
Nirvana	37
Ty Uchaf Farm	42

8.5 Predicted noise levels during coal extraction and overburden removal are:

Location	**Predicted Noise Level ($dB\ L_{Aeq}$)**
Pen-y-waun-hafog	10-18
Llwyn Celyn	26-38
Tylegwyn	16-38
Nirvana	13-35
Ty Uchaf Farm	20-32 or 38

8.6 The predicted noise levels relative to background noise are summarised in the following table:

	Variance to Background Noise Level (dB(A))			
Location	**Topsoil**	**Overburden Closest**	**Overburden / Coaling Closest**	**Overburden / Coaling farthest**
Pen-y-waun-hafog	-18	+2 * -18**	-26	-23
Llwyn Celyn	-2	-2	-14	-9
Tylegwyn	+9	+5	-15	-17
Nirvana	+3	+1	-19	-21
Ty Uchaf Farm	+11	+7 +1***	-7	-11

*Whilst extending overburden dump
**Overburden dump in place
***Reduced noise impact if topsoil bund raised from 3m to 5m.

8.7 Predicted noise levels at all locations are attenuated by the proposed excavations, topsoil mounds, intervening landmass or soft ground.

8.8 All predicted noise levels are within the guidelines suggested in Minerals Policy Statement 2: Controlling and Mitigating the Environmental Effects of Minerals Extraction in England – Annex 2: Noise.

8.9 It is not anticipated that noise during construction and preparatory work will be higher than during operation.

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Director

References

1. B.S. 5228-1: 2009+A1:2014 – Code of practice for noise and vibration control on construction and open sites – Part 1: British Standards 2014.

2. Calculation of Road Traffic Noise, Department of Transport, Welsh Office, HMSO, 1988.

3. Minerals Policy Statement 2: Controlling and Mitigating the Environmental Effects of Minerals Extraction in England – Annex 2: Noise. Office of the Deputy Prime Minister, March 2005.

4. Minerals Technical Advice Note 2:Coal, January 2009

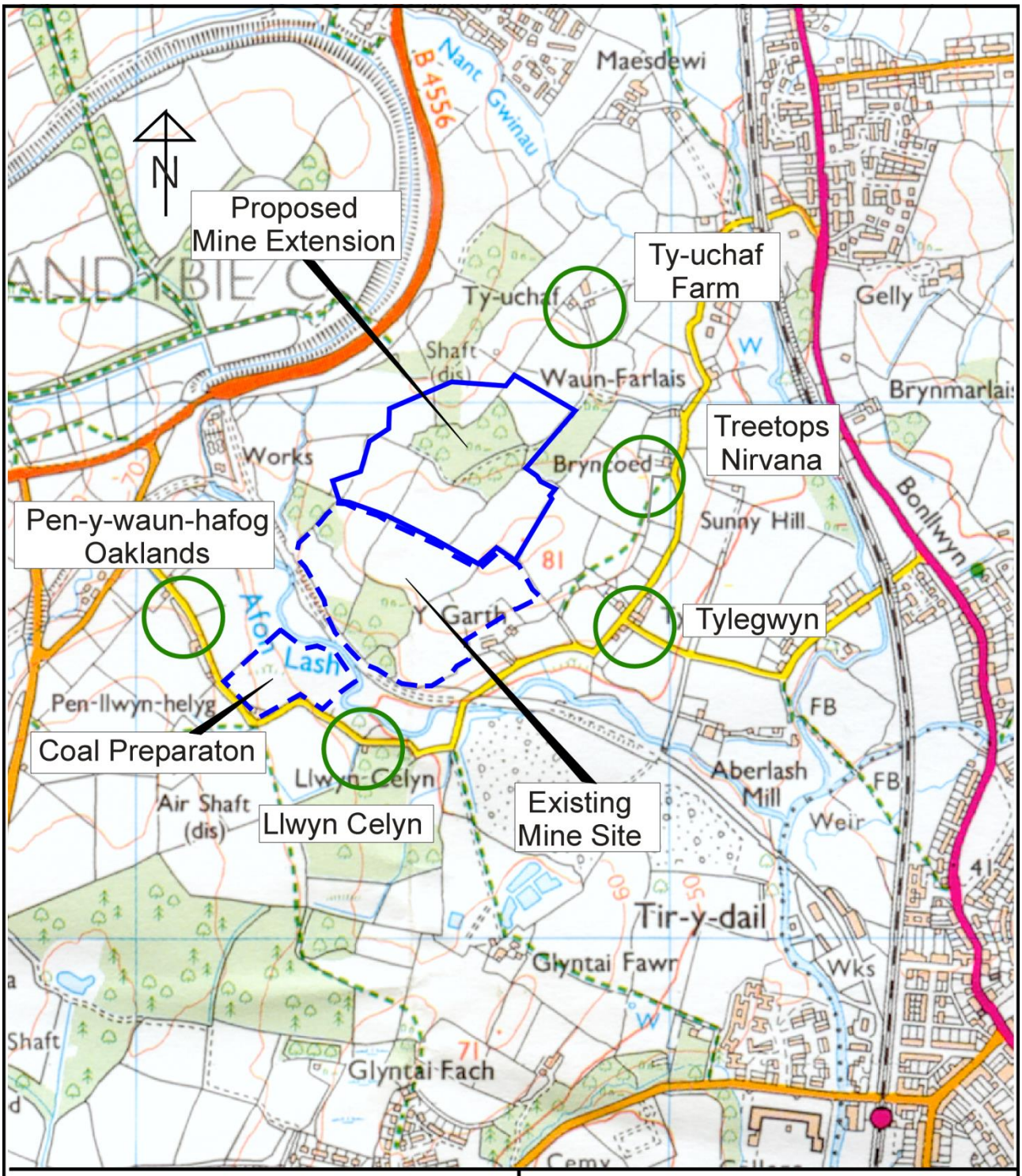
5. B.S. 4142 : 2014: Methods for rating and assessing industrial and commercial sound. British Standards, 2014.

Appendix A

Sound Level Meter

Meter	Brüel & Kjœr Model 2236, Type 1 Integrating Sound Level Meter Serial No. 1735502
Microphone	Brüel & Kjœr Model 4188 Serial No. 1740476
Calibrator	Brüel & Kjœr Model 4231 Serial No. 1730726

Certificates of calibration Issued by : PASS (Portable Appliance Safety Services), Thornaby
Date of Calibration: 18/10/2017



GLO BRYN BACH COAL LTD GLAN LASH SMALL MINE EXTENSION	NOISE ASSESSMENT CLOSEST PROPERTIES
Kevan Walton Associates Ltd.	Scale: 1:10000
	Fig. 1N (2018)