

## **Appendix 10.1 – Glossary of Acoustic Terms**

### **General Noise and Acoustics**

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 –30 dB(A); normal speech conversation around 60 dB(A) at 1 m; noise from a very busy road around 70-80 dB(A) at 10m; the level near a pneumatic drill around 100 dB(A).

#### **Façade Noise Level**

Façade noise measurements are those undertaken near to reflective surfaces such as walls, usually at a distance of 1m from the surface. Façade noise levels at 1m from a reflective surface are normally around 3 dB greater than those obtained under freefield conditions.

#### **Freefield Noise Level**

Freefield noise measurements are those undertaken away from any reflective surfaces other than the ground

#### **Frequency Hz**

The frequency of a noise is the number of pressure variations per second, and relates to the "pitch" of the sound. Hertz (Hz) is the unit of frequency and is the same as cycles per second. Normal, healthy human hearing can detect sounds from around 20 Hz to 20 kHz.

#### **Octave and Third-Octave Bands**

Two frequencies are said to be an octave apart if the frequency of one is twice the frequency of the other. The octave bandwidth increases as the centre frequency increases. Each bandwidth is 70% of the band centre frequency.

Two frequencies are said to be a third-octave apart if the frequency of one is 1.26 times the other. The third octave bandwidth is 23% of the band centre frequency.

There are recognised octave band and third octave band centre frequencies. The octave or third-octave band sound pressure level is determined from the energy of the sound which falls within the boundaries of that particular octave or third octave band.

## Appendix 10.1 (continued)

### Day Evening Night Level $L_{den}$

The day evening night level is the average A-weighted sound level over a 24 hour period, determined from the  $L_{day}$  ( $L_{Aeq,12hr}$  7am-7pm),  $L_{evening}$  ( $L_{Aeq,4hr}$  7pm-11pm) and  $L_{night}$  ( $L_{Aeq,8hr}$  11pm-7am), with a 5 dB penalty added to the  $L_{evening}$  and a 10 dB penalty added to the  $L_{night}$ .

### 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  $L_{Aeq}$  is the chosen unit of BS 7445-1:2003 "Description and Measurement of Environmental noise".

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

The  $L_{Amax}$  value describes the overall maximum 'A'-weighted sound pressure level over the measurement interval. Maximum levels are measured with either a fast or slow time weighted, denoted as  $L_{Amax,f}$  or  $L_{Amax,s}$  respectively.

### Noise Rating NR

The noise rating level is a single figure index obtained from an octave band analysis of a noise. The NR level is obtained by comparing the octave band sound pressure levels to a set of reference curves and the highest NR curve that is intersected by the sound pressure levels gives the NR level.

### Sound Exposure Level $L_{AE}$ or SEL

The sound exposure level is a notional level which contains the same acoustic energy in 1 second as a varying 'A'-weighted noise level over a given period of time. It is normally used to quantify short duration noise events such as aircraft flyover or train passes.

### 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  $L_{A01,T}$ ,  $L_{A10,T}$  and the  $L_{A90,T}$ .

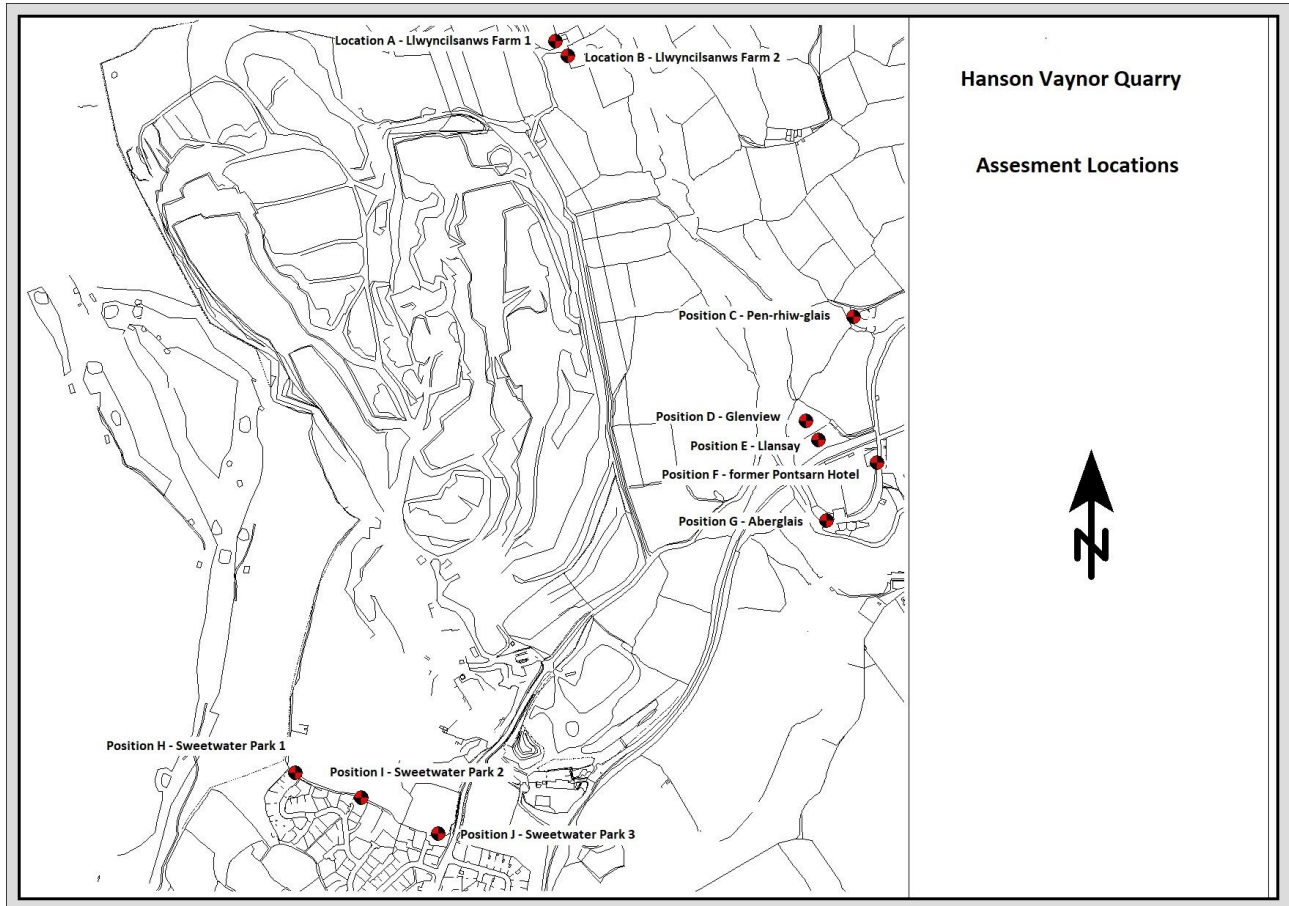
$L_{A01,T}$  is the 'A'-weighted level exceeded for 1% of the time interval T and is often used to give an indication of the upper maximum level of a fluctuating noise signal.

$L_{A10,T}$  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.

## Appendix 10.2 – Site Plans and Assessment/Masurement Locations

### Assessment Locations:



## Appendix 10.2 (continued)

### Measurement Locations:



| Location                                     | Description                                    |
|----------------------------------------------|------------------------------------------------|
| 1. Llwyncilsanws Farm (samples)              | At top of road leading to Llwyncilsanw         |
| 1. Llwyncilsanws Farm (install)              | At edge of paddock, west of property           |
| 2. Pen-rhiw-glais                            | On path between Dolcoed / Hy-Brasall           |
| 3. Taf Fechan Nature Reserve                 | Car park for Taf Fechan (For information only) |
| 4. Sweetwater Park / High Trees              | Field entrance at the north edge of Trefechan  |
| 5. Sweetwater Park                           | Sweetwater Park, opposite no. 62               |
| 6. Llansay/Glenview/Pontsarn Hotel/Aberglais | Entrance to Llansay and Glenview               |

## Appendix 10.3 – Baseline Noise: Installed Equipment

### Date and Locations of Survey

A data logging sound level meter was installed as follows:

| Location                                                                      | Installed Thursday<br>15 July 2021 | Collected Friday 23 July<br>2021 |
|-------------------------------------------------------------------------------|------------------------------------|----------------------------------|
| Llwyncilsanws Farm, south west of farm buildings,<br>Merthyr Tydfil, CF48 2LB | 13:00 hours                        | 13:00 hours                      |

See Location 1 on the measurement location plan in Appendix 10.2.

### Survey carried out by

Installed: David Littlewood

Collected: Rachel Canham

### Instrumentation and Calibration

The instrumentation used (including serial numbers in brackets) is tabulated below. The sensitivity of the meters was verified on site immediately before and after the survey using the field calibrator. The measured values were as follows:

| Instrumentation (Serial Number)       | Start Cal  | End Cal    |
|---------------------------------------|------------|------------|
| Rion NL-52 Sound Level Meter (420715) | 94.1 dB(A) | 93.9 dB(A) |
| Rion NC-74 Calibrator (34425556)      |            |            |

The meter and calibrator are tested monthly against Norsonic Calibrators, type 1253 (serial number 22906) and type 1256 (serial number 125626100) both with UKAS approved laboratory certificates of calibration. In addition, the meter and calibrator undergo traceable calibration at an external laboratory every two years.

### Survey Details

A data logging sound level meter was installed at Location 1 (see Appendix 10.2) and set to continually measure noise levels in 15 minute samples. The microphone was mounted on a tripod at around 1.5 metres above local ground level in a field at Llwynsilanws Farm, south west of the farm buildings. The measurements taken were free-field and throughout a Rion WS-15 weatherproof windshield was used.

During the installation and collection of the equipment, the noise environment was mainly due to agricultural noise, farm animals, distant road traffic and distant aircraft.

The results from the measurements are presented graphically in this appendix. Tabulated levels are available on request.

### Appendix 10.3 (continued)

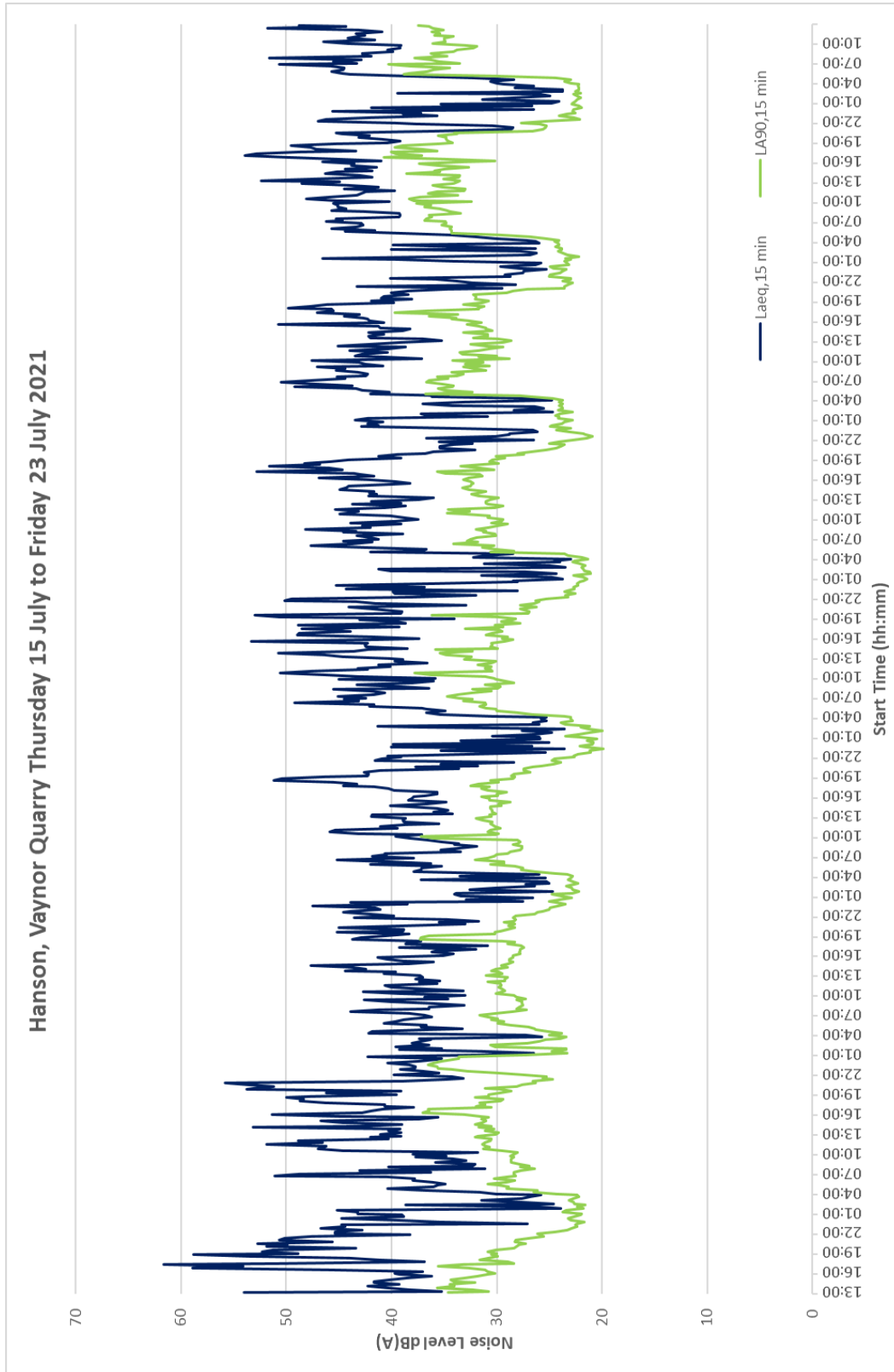
#### Weather Conditions

The weather for the period of install was recorded from the nearest met office location and the table below sets out the summary of the weather. The noise measurements were not adversely affected by weather conditions.

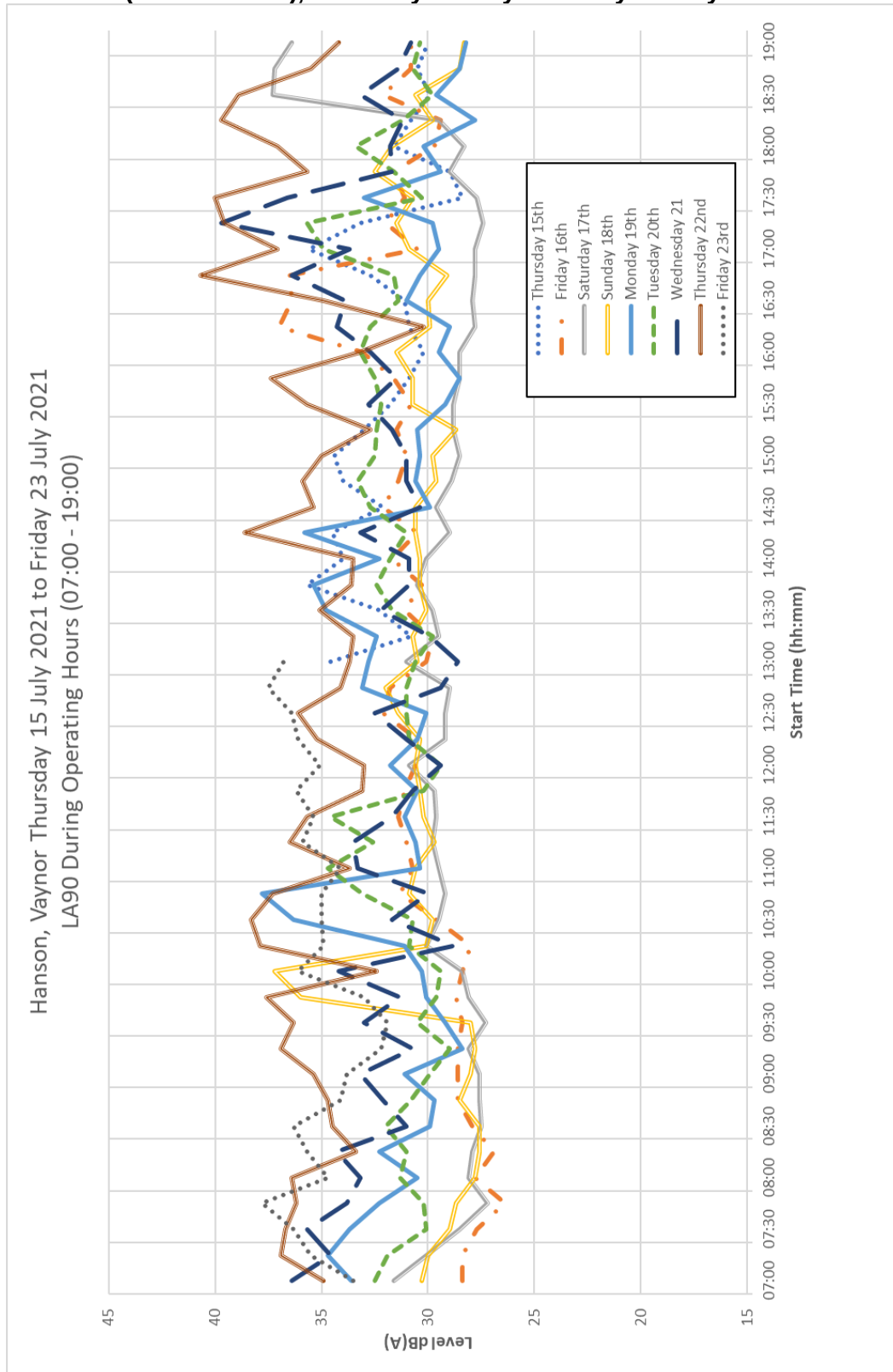
| Date                   | Period of Day | Maximum wind speeds (m/s) and direction | Minimum and Maximum Temperate (°C) | Any rain? |
|------------------------|---------------|-----------------------------------------|------------------------------------|-----------|
| Thursday 15 July 2021  | Day           | 0.5-2.5 N                               | 15-24                              | N         |
|                        | Evening       | 1-2.5 NE                                | 14-22                              | N         |
|                        | Night         | 0-1 variable                            | 8-14                               | N         |
| Friday 16 July 2021    | Day           | 0.5-3 NE                                | 13-25                              | N         |
|                        | Evening       | 2.5-4 NE                                | 19-23                              | N         |
|                        | Night         | 0-3 N                                   | 10-16                              | N         |
| Saturday 17 July 2021  | Day           | 1.5-2 NE                                | 16-27                              | N         |
|                        | Evening       | 1.5 NE                                  | 20-25                              | N         |
|                        | Night         | 1.5 NE                                  | 15-17                              | N         |
| Sunday 18 July 2021    | Day           | 0.5-2.5 variable                        | 18-28                              | N         |
|                        | Evening       | 0.5-4 SW                                | 17-27                              | N         |
|                        | Night         | 0-1 N                                   | 12-16                              | N         |
| Monday 19 July 2021    | Day           | 0.5-3.5 W                               | 21-27                              | N         |
|                        | Evening       | 1-2.5 variable                          | 15-26                              | N         |
|                        | Night         | 0-1 N                                   | 12-15                              | N         |
| Tuesday 20 July 2021   | Day           | 0-3.5 W                                 | 15-27                              | Y         |
|                        | Evening       | 0.5-1 N                                 | 13-26                              | N         |
|                        | Night         | 0-1 N                                   | 10-14                              | N         |
| Wednesday 21 July 2021 | Day           | 1-2.5 variable                          | 15-27                              | N         |
|                        | Evening       | 1.5-2 N                                 | 22-27                              | N         |
|                        | Night         | 1.5 E                                   | 18-21                              | N         |
| Thursday 22 July 2021  | Day           | 1.5-3.5 SE                              | 19-27                              | N         |
|                        | Evening       | 1.5-2 SE                                | 23-26                              | N         |
|                        | Night         | 1.5 E                                   | 17-20                              | N         |
| Friday 22 July 2021    | Day           | 2.5-5 E                                 | 18-24                              | N         |

Appendix 10.3 (continued)

Installed Meter Data at Llwynsilanws Farm(Thursday 15 July – Friday 23 July 2021)



**Appendix 10.3 (continued)**  
**Installed Meter Survey Results – Background Levels ( $L_{A90,15 \text{ min}}$ ) during operating hours**  
**(07:00 – 19:00), Thursday 15 July to Friday 23 July 2021**



## Appendix 10.4 – Baseline Noise: Attended Sample Measurements

### Date and Locations of Survey

Thursday 15 July 2021 between 12:30 and 16:15

Friday 16 July 2021 between 09:30 and 12:00

Thursday 22 July 2021 between 12:45 and 17:00

Friday 23 July 2021 between 09:15 and 13:00

Noise measurement locations as follows, See Appendix 10.2 for Plans.

| Location | Description                                                                                     |
|----------|-------------------------------------------------------------------------------------------------|
| 1        | Llwyncilsanws Farm, Pontsarn, Merthyr Tydfil, CF48 2LB                                          |
| 2        | Path North of Dolcoed House, Pontsarn, Merthyr Tydfil, CF48 2TS                                 |
| 3        | Car park for Taf Fechan nature reserve (Only used on first 2 days)                              |
| 4        | North of Trefachen near High Trees                                                              |
| 5        | 62 Sweetwater Park, Trefachen, Merthyr Tydfil, CF48 2LF                                         |
| 6        | Entrance to Llansay and Glenview, Pontsarn, Merthyr Tydfil, CF48 2TS (only used on last 2 days) |

### Survey carried out by

| Date              | WBM Personnel    |
|-------------------|------------------|
| 15 – 16 July 2021 | David Littlewood |
| 22 – 23 July 2021 | Rachel Canham    |

### Weather Conditions

| Date         | Conditions                                                                 |
|--------------|----------------------------------------------------------------------------|
| 15 July 2021 | 24/25°C, clear sky, hot, 3 or 4 m/s north/north-easterly wind.             |
| 16 July 2021 | Hot, clear sky, 19-23°C, mostly still, occasional 0.5-1 m/s northerly wind |
| 22 July 2021 | Hot, sunny, 26°C, some cloud, still                                        |
| 23 July 2021 | 23°C, sunny, warm, very light cloud, minimal breeze.                       |

## Appendix 10.4 (continued)

### Instrumentation and calibration

The instrumentation used (including serial number in brackets) is tabulated below. The sensitivity of the meter was verified on site immediately before and after the survey using the field calibrator. The measured calibration levels were as follows:

| Instrumentation                          | Survey Date           | Start Cal | End Cal |
|------------------------------------------|-----------------------|-----------|---------|
| Norsonic 140 Sound Level Meter (1403136) | Thursday 15 July 2021 | 113.8     | 113.6   |
| Norsonic 1251 Calibrator (31992)         |                       |           |         |
| Norsonic 140 Sound Level Meter (1403136) | Friday 16 July 2021   | 113.8     | 113.7   |
| Norsonic 1251 Calibrator (31992)         |                       |           |         |
| Norsonic 140 Sound Level Meter (1404819) | Thursday 22 July 2021 | 113.6     | 113.4   |
| Norsonic 1251 Calibrator (33321)         |                       |           |         |
| Norsonic 140 Sound Level Meter (1404819) | Friday 23 July 2021   | 113.6     | 113.5   |
| Norsonic 1251 Calibrator (33321)         |                       |           |         |

The meter and calibrator are tested monthly against Norsonic Calibrators, type 1253 (serial number 22906) and type 1256 (serial number 125626100) both with UKAS approved laboratory certificates of calibration. In addition, the meters and calibrators undergo traceable calibration at an external laboratory every two years.

### Appendix 10.4 (continued)

**Table 10.4.1: Thursday 15 July 2021**

| Location | Start Time | Results dB (T = 15 minutes) |                     |                    |                    | Comments                                                                                                                                                  |
|----------|------------|-----------------------------|---------------------|--------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |            | L <sub>Aeq,T</sub>          | L <sub>Amax,f</sub> | L <sub>A10,T</sub> | L <sub>A90,T</sub> |                                                                                                                                                           |
| 1        | 13:11      | 41                          | 64                  | 42                 | 29                 | Wind in trees, fowl, sheep, insects, very distant traffic, distant aircraft, car door                                                                     |
| 2        | 13:37      | 54                          | 75                  | 55                 | 36                 | Local road traffic infrequent, birds, insects, very distant road traffic, some very distant construction noise, aircraft, some bangs from afar, car radio |
| 3        | 13:59      | 49                          | 65                  | 50                 | 47                 | Van engines, wind in trees, running water, distant traffic, occasional local traffic, car horn, footsteps, distant dog barking,                           |
| 4        | 14:29      | 57                          | 74                  | 61                 | 40                 | Local traffic, insects, horse, distant traffic, power tools distantly, bangs and thuds from downhill                                                      |
| 5        | 14:51      | 54                          | 85                  | 45                 | 31                 | Some local traffic, distant rumbles and thuds, distant voices, dogs barking, car doors.0                                                                  |
| 1        | 15:16      | 43                          | 63                  | 43                 | 32                 | Chickens, sheep, dogs, wind in trees, distant aircraft                                                                                                    |
| 2        | 15:38      | 59                          | 81                  | 58                 | 33                 | Local traffic, dogs barking, wind in trees, voices, car radio                                                                                             |
| 3        | 15:59      | 47                          | 69                  | 49                 | 44                 | Running water, voices, knocking sound (stones), dog barking, local traffic, footsteps, car horn, bicycles, insects, scooter                               |

### Appendix 10.4 (continued)

**Table 10.4.2: Friday 16 July 2021**

| Location | Start Time | Results dB (T = 15 minutes) |                     |                    |                    | Comments                                                                                                                                                                          |
|----------|------------|-----------------------------|---------------------|--------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |            | L <sub>Aeq,T</sub>          | L <sub>Amax,f</sub> | L <sub>A10,T</sub> | L <sub>A90,T</sub> |                                                                                                                                                                                   |
| 5        | 09:33      | 46                          | 70                  | 42                 | 34                 | Distant traffic, vacuum cleaner inside, distant beeps, insects, birds, voices, occasional road local traffic, distant aircraft,                                                   |
| 4        | 09:53      | 62                          | 84                  | 61                 | 36                 | Distant drilling, local power tools, birds, occasional road traffic, insects, dog barks, voices, dog walkers                                                                      |
| 5        | 10:14      | 58                          | 85                  | 46                 | 30                 | Distant and local road traffic, birds, voices, footsteps                                                                                                                          |
| 4        | 10:34      | 58                          | 74                  | 61                 | 37                 | Distant barks, local road traffic occasionally, occasional pops and bangs, horses, metal clangs, distant music, footsteps, grinding from downhill, car radio, distant power tools |
| 3        | 10:56      | 47                          | 64                  | 50                 | 44                 | Running water, insects, birds, occasional local traffic, car horn                                                                                                                 |
| 2        | 11:24      | 53                          | 77                  | 51                 | 35                 | Birds, local traffic, car radio, voices from properties, distant mowing                                                                                                           |
| 1        | 11:46      | 44                          | 62                  | 44                 | 31                 | Sheep, chickens, wild birds, insects, trees in wind (very slight), horses                                                                                                         |

## Appendix 10.4 (continued)

**Table 10.4.3: 22 July 2021**

| Location | Start Time | Results dB (T = 15 minutes) |                     |                    |                    | Comments                                                                                                                                                                |
|----------|------------|-----------------------------|---------------------|--------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |            | L <sub>Aeq,T</sub>          | L <sub>Amax,f</sub> | L <sub>A10,T</sub> | L <sub>A90,T</sub> |                                                                                                                                                                         |
| 6        | 12:58      | 48                          | 68                  | 50                 | 36                 | Distant water, some birdsong or calls, local traffic, activity in car park opposite former inn (some engines shoveling).                                                |
| 1        | 13:24      | 42                          | 66                  | 45                 | 34                 | Distant road traffic, birdsong/calls, crowing cockerel, sheep, insects.                                                                                                 |
| 2        | 13:51      | 47                          | 69                  | 47                 | 32                 | Distant road traffic, birdsong/calls, passing traffic.                                                                                                                  |
| 6        | 14:13      | 48                          | 71                  | 47                 | 36                 | Distant and local road traffic, bird song, voices from walkers, distant water from stream to east, distant siren.                                                       |
| 5        | 14:44      | 48                          | 68                  | 48                 | 35                 | Distant traffic, local activity - building work, some birdsong, local traffic, some barking dogs, distant chimes of ice cream van.                                      |
| 4        | 15:04      | 56                          | 71                  | 61                 | 38                 | Local and distant road traffic, insects, some dogs barking in distance, bird calls, some noise from a sire to north.                                                    |
| 2        | 15:26      | 43                          | 68                  | 46                 | 32                 | Distant and local road traffic, distant aircraft, birdsong.                                                                                                             |
| 6        | 15:49      | 49                          | 68                  | 50                 | 35                 | Distant and local road traffic, music and voices from people using footpath below, some birdsong/calls, water noise, machinery (equipment in use in car park opposite). |
| 5        | 16:14      | 44                          | 62                  | 40                 | 34                 | Distant traffic, some birdsong, distant aircraft, distant bangs and car horns, distant sirens, local road traffic (passing cars).                                       |
| 4        | 16:34      | 58                          | 74                  | 62                 | 38                 | Distant and local road traffic, some birdsong/calls, insects, industrial activity to north.                                                                             |

### Appendix 10.4 (continued)

**Table 10.4.4: 23 July 2021**

| Location | Start Time | Results dB (T = 15 minutes) |                     |                    |                    | Comments                                                                                                                                                                                                         |
|----------|------------|-----------------------------|---------------------|--------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |            | L <sub>Aeq,T</sub>          | L <sub>Amax,f</sub> | L <sub>A10,T</sub> | L <sub>A90,T</sub> |                                                                                                                                                                                                                  |
| 5        | 09:26      | 46                          | 66                  | 44                 | 35                 | Distant road traffic, some birdsong/calls, distance voices - prayer, local road traffic, barking dogs in distance, distant aircraft, distant industrial activity from site north of Trefachen.                   |
| 4        | 09:45      | 55                          | 75                  | 57                 | 39                 | Distant and local road traffic, industrial noise from site to north of Trefachen - metallic grinding noise, some birdsong/calls, some rustling leaves, barking dogs at nearby house, insects.                    |
| 1        | 10:06      | 50                          | 71                  | 51                 | 35                 | Rustling leaves, birdsong/calls, ducks, sheep, banging at farm, distant aircraft, farm vehicle, cockerel crowing.                                                                                                |
| 2        | 10:28      | 44                          | 65                  | 47                 | 32                 | Distant and local road traffic, birdsong, rustling leaves, distant aircraft.                                                                                                                                     |
| 6        | 10:53      | 53                          | 79                  | 51                 | 39                 | Rustling leaves, distant aircraft, local road traffic, water noise, birdsong/calls, voices from people on path, construction work - drilling, grinding, very distant reversing beepers - unknown eastern source. |
| 5        | 11:17      | 47                          | 68                  | 45                 | 36                 | Distant road traffic, some birdsong/calls, dogs barking in nearby house, industrial noise from local site - mechanical, clanking and vehicular, local road traffic.                                              |
| 4        | 11:40      | 58                          | 75                  | 62                 | 42                 | Distance and local road traffic, birdsong/calls, insects, distant industrial - engines and metallic clanking, rustling leaves in trees.                                                                          |
| 2        | 12:02      | 46                          | 69                  | 48                 | 36                 | Distant and local road traffic, distant aircraft, rustling leaves, birdsong/calls.                                                                                                                               |
| 6        | 12:28      | 50                          | 70                  | 51                 | 40                 | Local and distant road traffic, rustling leaves, water noise, distant aircraft, distant motor - lawnmower from west, site compound.                                                                              |

## Appendix 10.5 – SoundPLAN Noise Mapping Assumptions

Calculations were undertaken using SoundPLAN 8.2 (updated 11 April 2022)

Noise calculations were made on a 10 metre grid at a calculation height of 1.5 metres above local ground level

The calculations assume 100% hard ground within the quarry

No barrier attenuation is included in the calculations apart from that afforded by the existing topography, proposed bunding to the north-east of the extraction area and the working face of the quarries

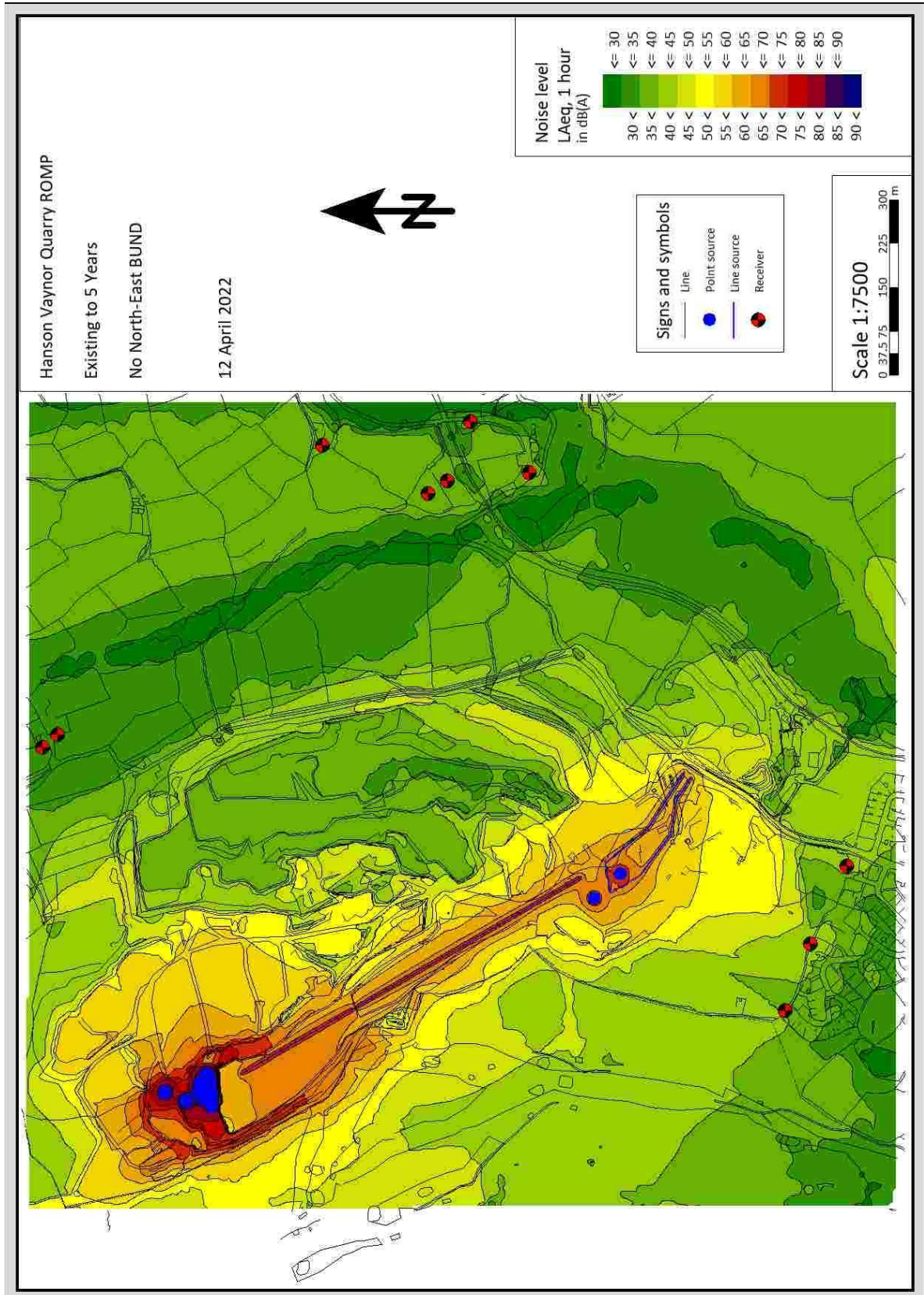
Sound Power Level data has been included based on typical plant items measured on similar sites

Dump truck and HGV movements have been input assuming an average speed of 15 km/h

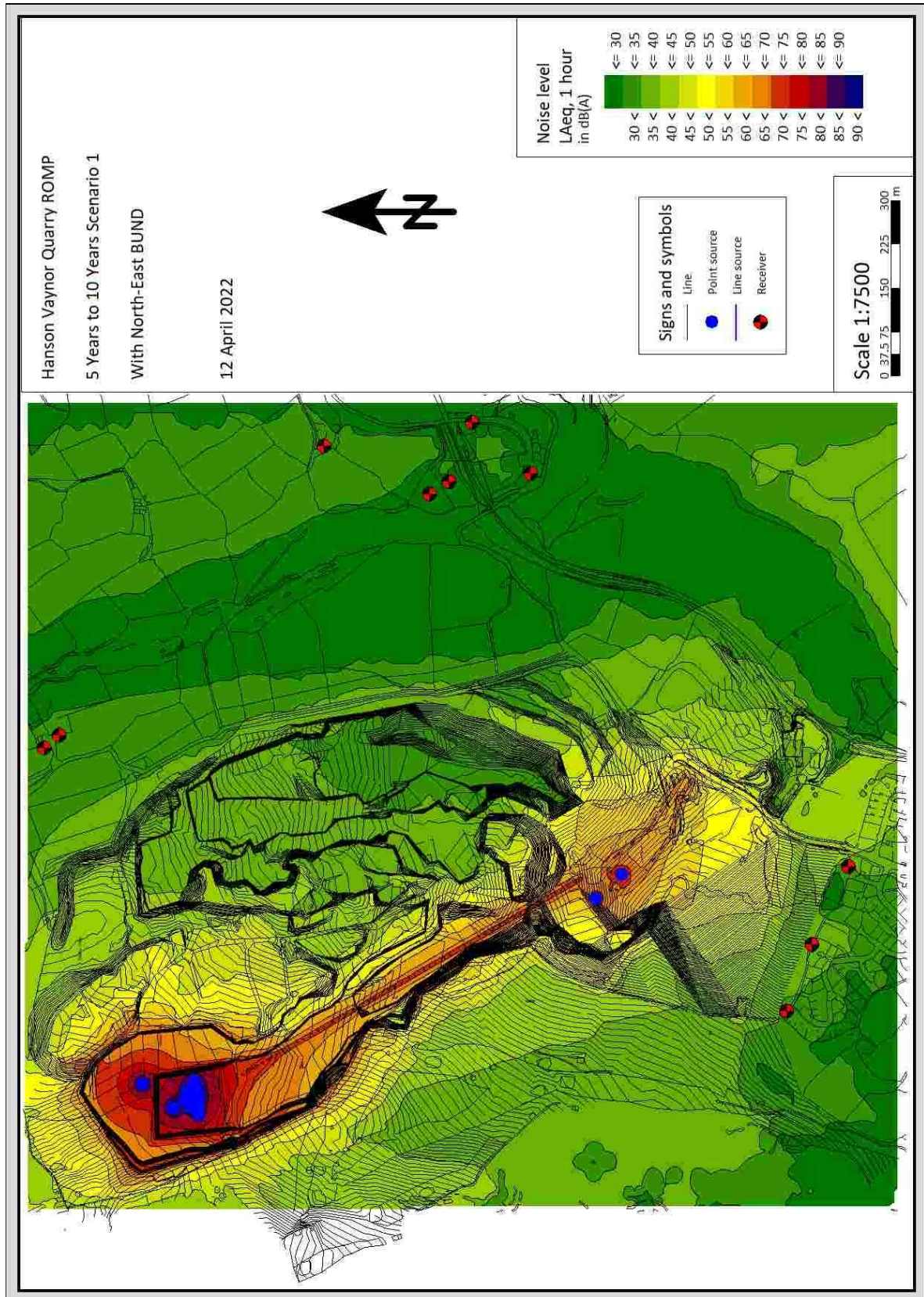
A summary of the data input into each of the SoundPLAN calculations is presented in the following table.

| Plant Item                               | Sound Power Level dB L <sub>WA</sub> | Source Height (m) | On time (per hour) |
|------------------------------------------|--------------------------------------|-------------------|--------------------|
| Rock Drill                               | 116                                  | 0.5               | 100%               |
| Hydraulic Hammer                         | 119                                  | 0.5               | 50%                |
| Excavator Cleaning Face                  | 104                                  | 2                 | 100%               |
| Excavator Loading Stone into Dump Trucks | 112                                  | 2                 | 100%               |
| Primary Impact Crushing Station          | 112                                  | 3                 | 100%               |
| Secondary Crushing Plant                 | 112                                  | 3                 | 100%               |
| Tertiary Crushing                        | 112                                  | 3                 | 100%               |
| (2 no.) Fixed Secondary Screens          | 115                                  | 3                 | 100%               |
| (2 no.) More Fixed Secondary Screens     | 115                                  | 3                 | 100%               |
| Dump Trucks                              | 111                                  | 2                 | 8 movements/hour   |
| Tipping of Material in Stockyard         | 110                                  | 0.5               | 10%                |
| Loading Shovel                           | 108                                  | 2                 | 25%                |
| Loading of HGVs                          | 108                                  | 2                 | 25%                |
| HGVs                                     | 104                                  | 2                 | 10 movements/hour  |

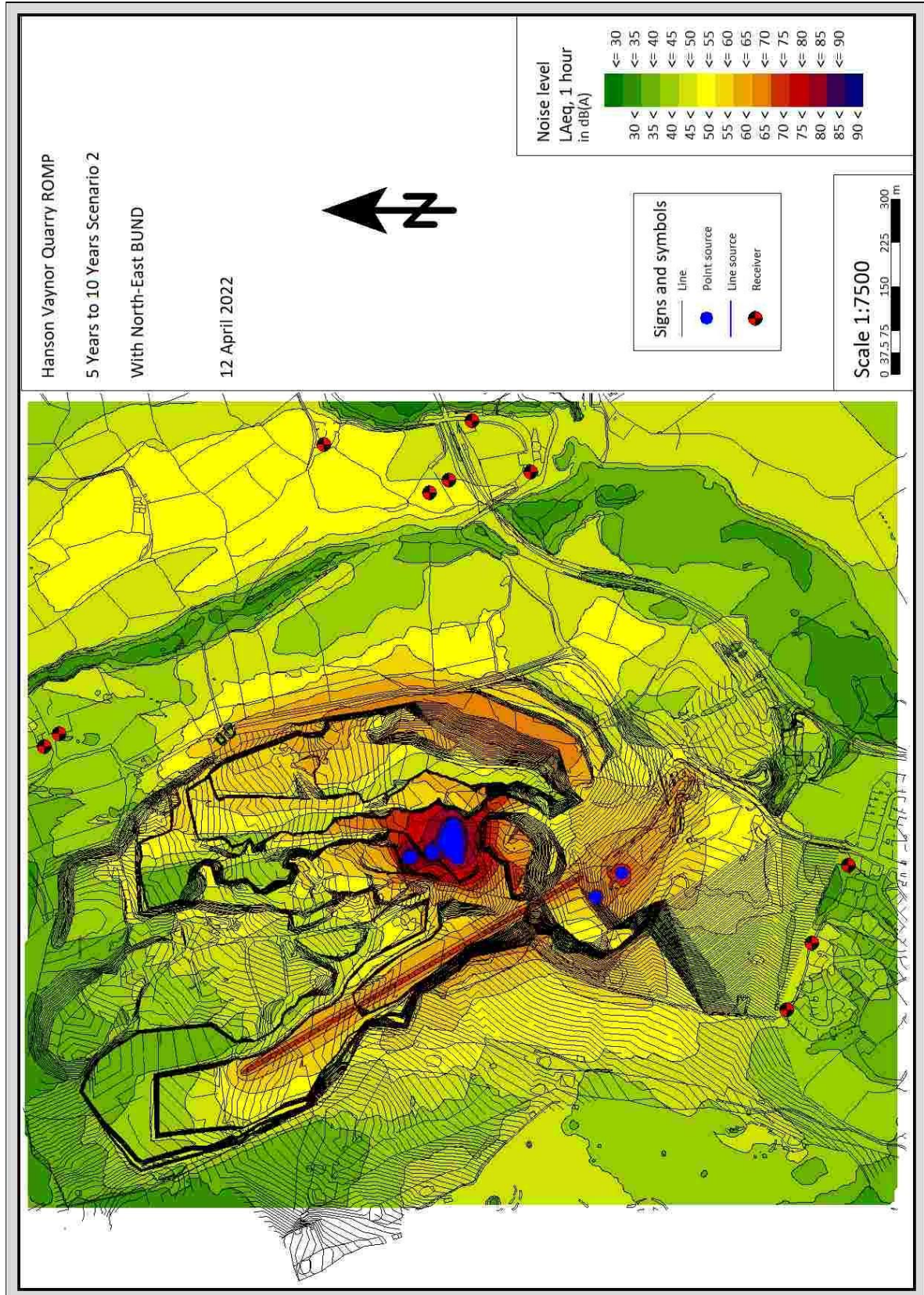
## Appendix 10.6 - SoundPLAN Noise Contour Maps



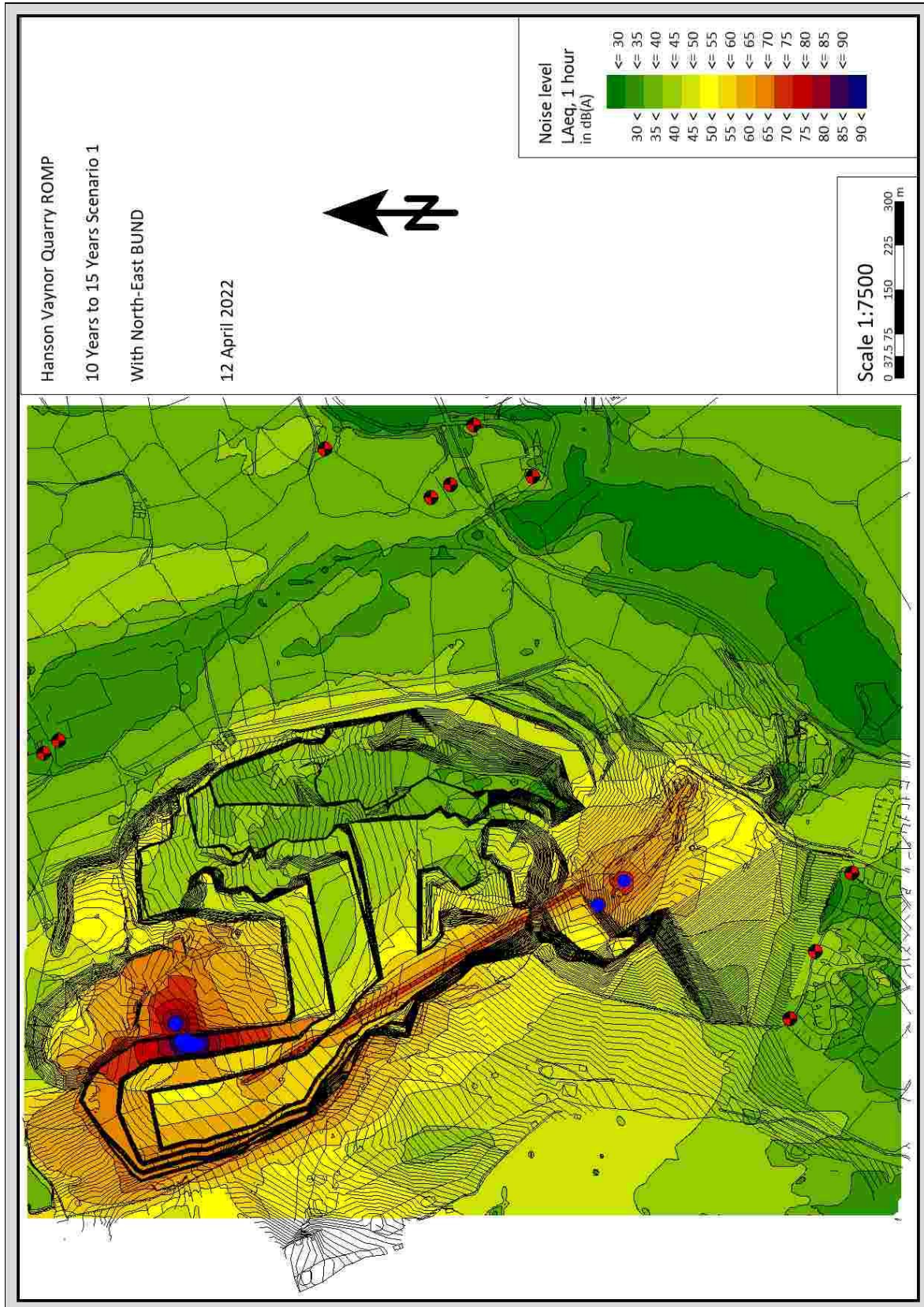
Appendix 10.6 (continued)



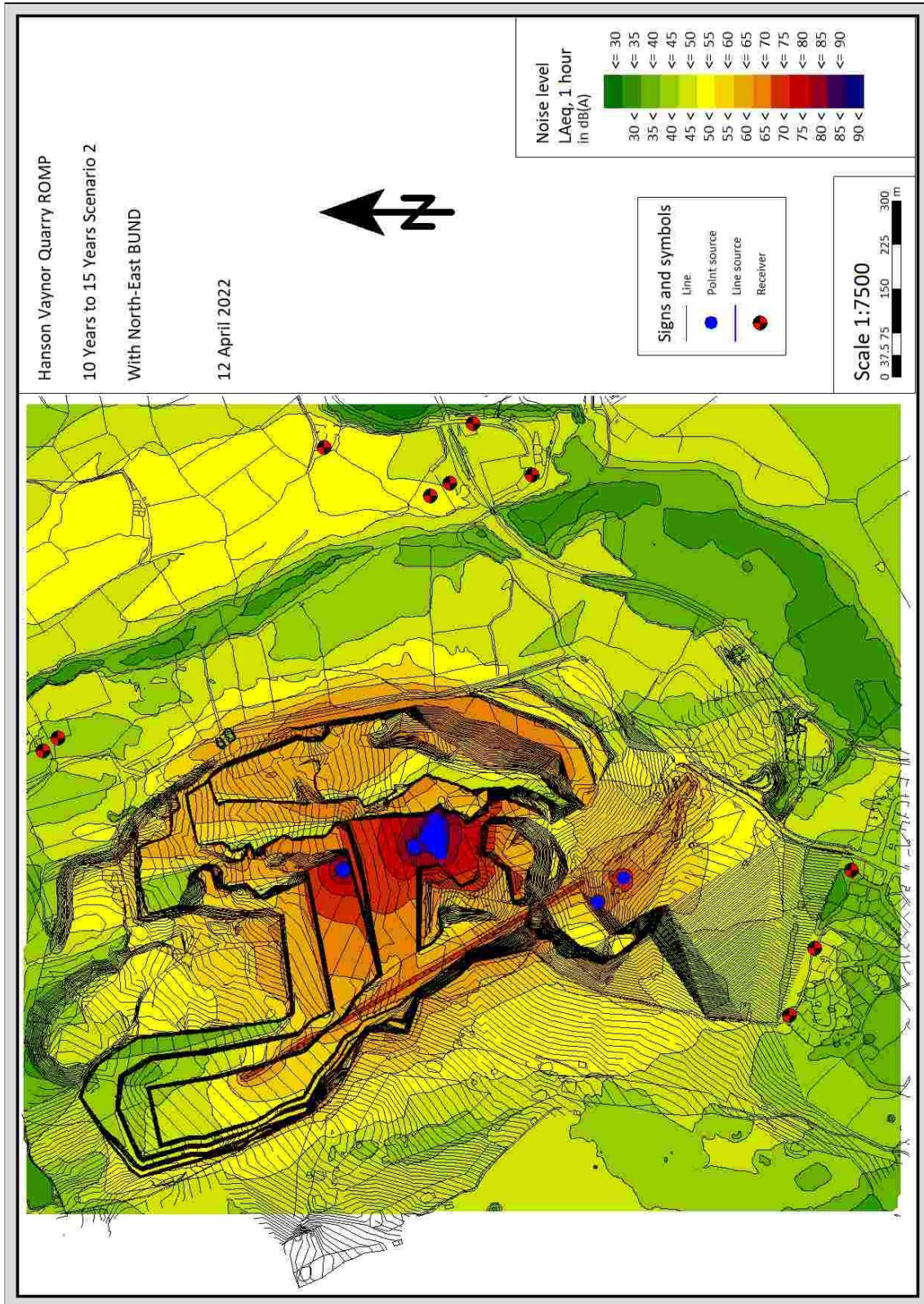
Appendix 10.6 (continued)



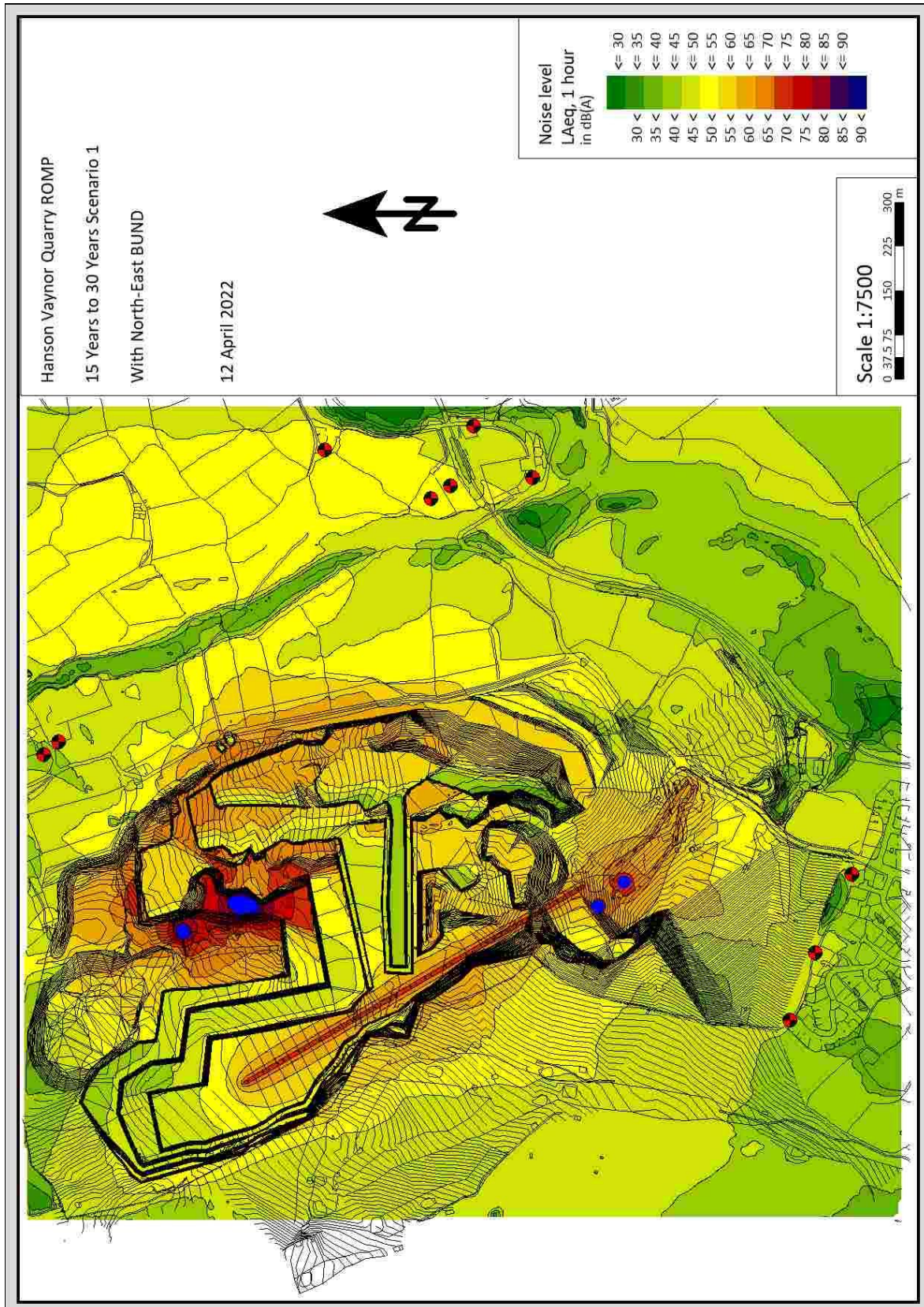
Appendix 10.6 (continued)



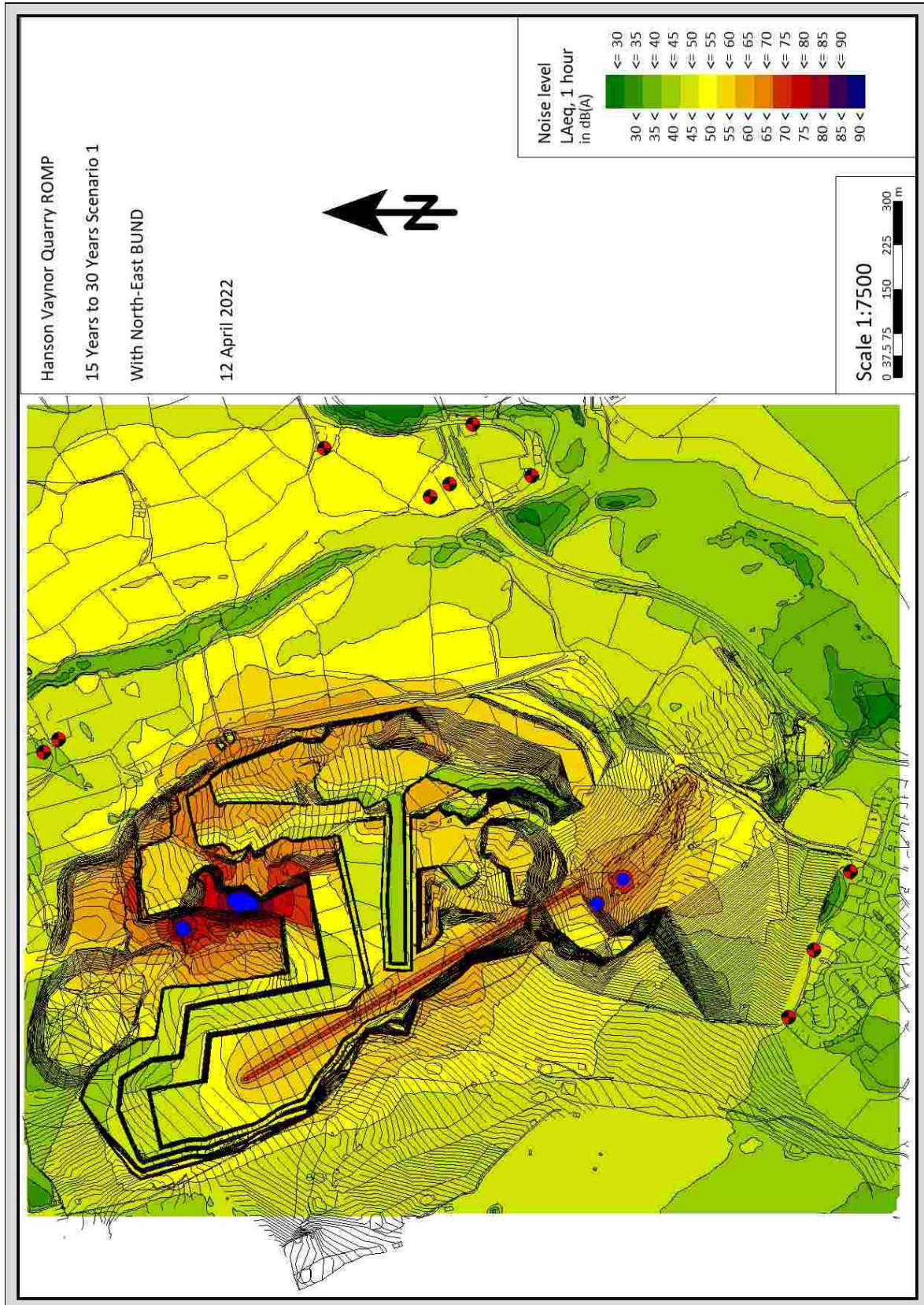
Appendix 10.6 (continued)



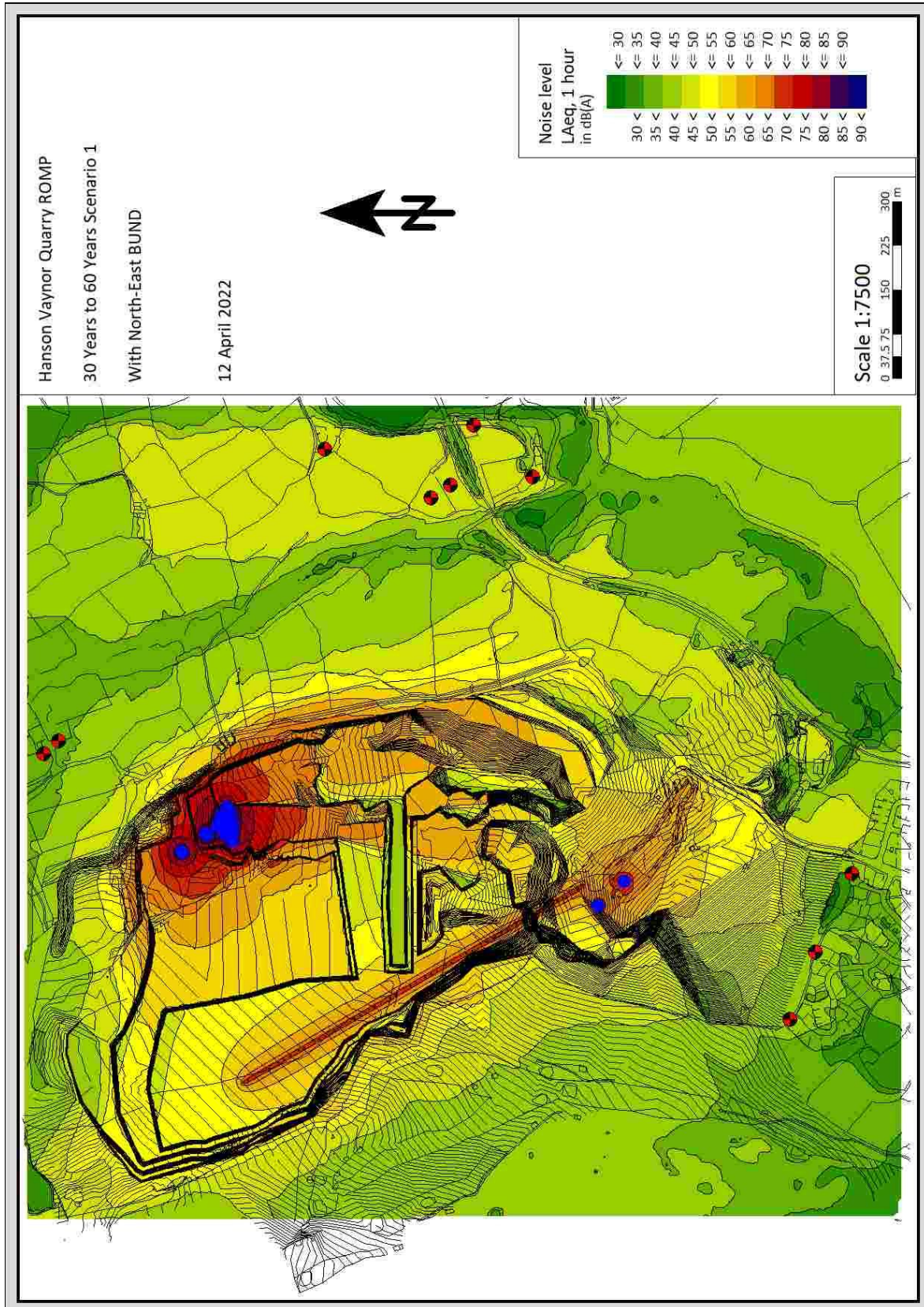
Appendix 10.6 (continued)



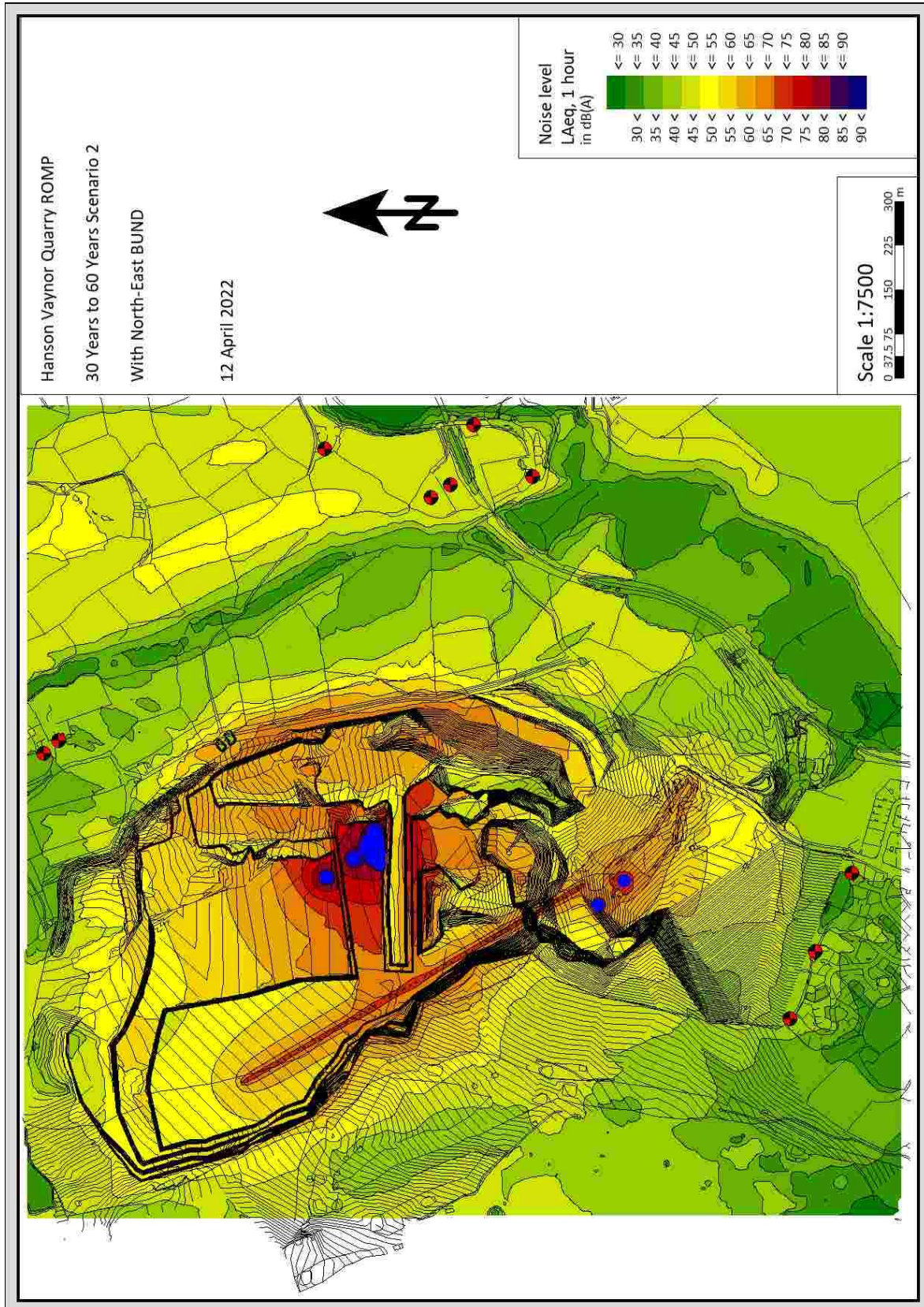
Appendix 10.6 (continued)



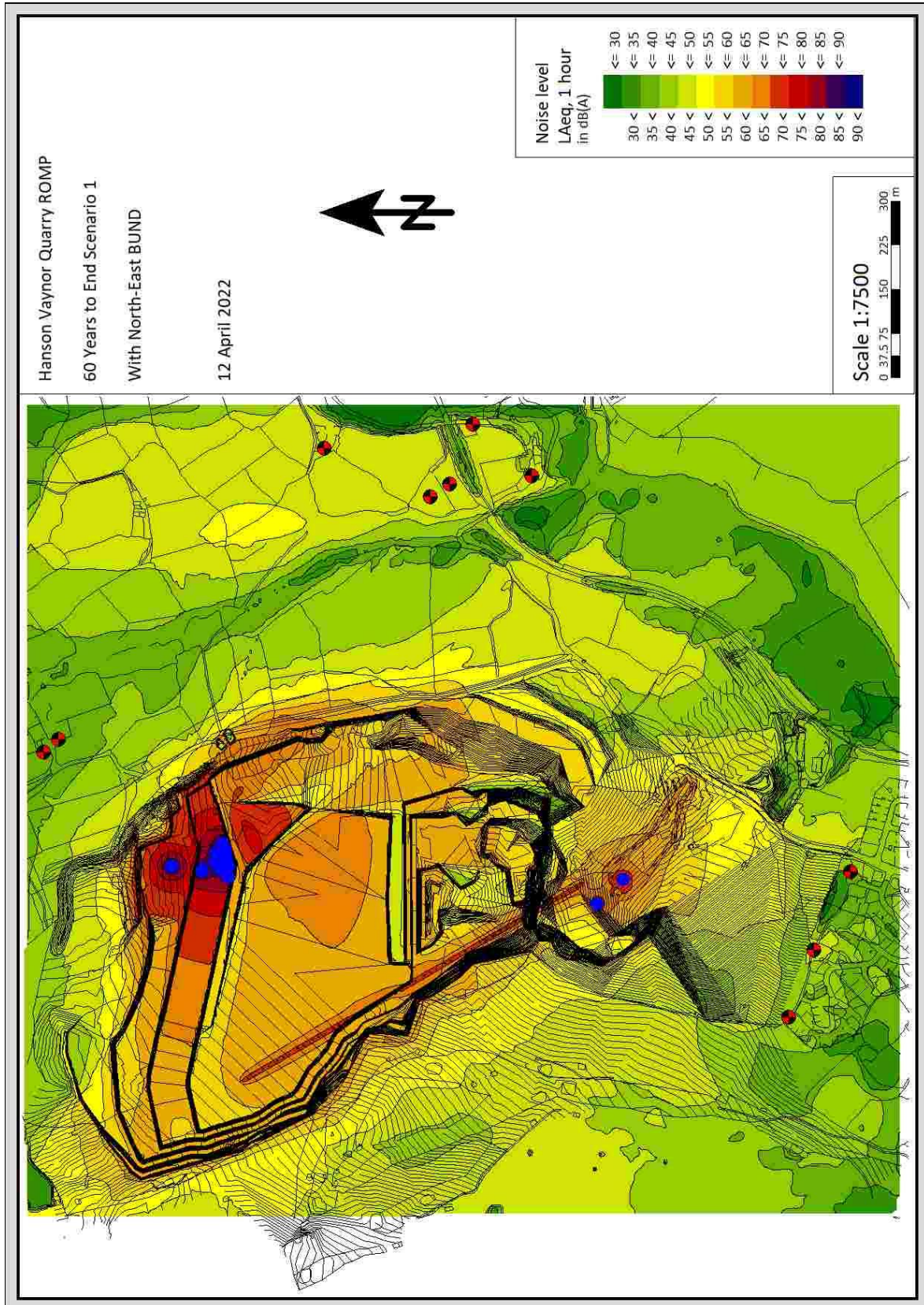
Appendix 10.6 (continued)



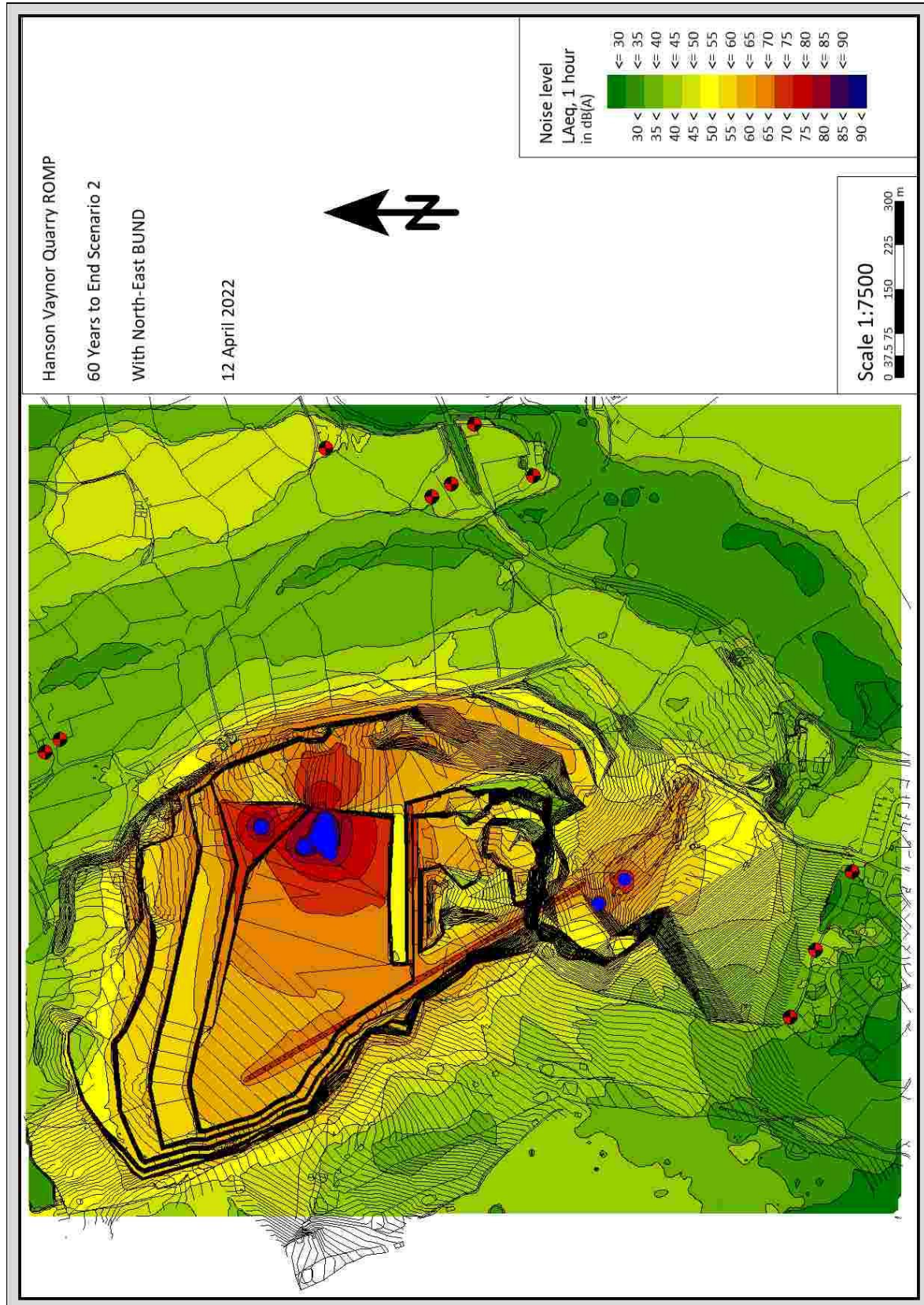
Appendix 10.6 (continued)



Appendix 10.6 (continued)



Appendix 10.6 (continued)



## Appendix 10.7 – Calculated Site Noise Levels

### Existing to 5 Years (No NE Bund)

| Location                | Calculated Site Noise Level<br>dB L <sub>Aeq,1 hr</sub> |
|-------------------------|---------------------------------------------------------|
| A Llwynsilanws Farm 1   | 32                                                      |
| B Llwynsilanws Farm 2   | 32                                                      |
| C Pen-rhiw-glais        | 38                                                      |
| D Glenview              | 37                                                      |
| E Llansay               | 37                                                      |
| F Former Pontsarn Hotel | 36                                                      |
| G Aberglais             | 36                                                      |
| H Sweetwater Park 1     | 37                                                      |
| I Sweetwater Park 2     | 44                                                      |
| J Sweetwater Park 3     | 41                                                      |

### 5 Years to 10 Years (Scenario 1)

| Location                | Calculated Site Noise Level<br>dB L <sub>Aeq,1 hr</sub> |
|-------------------------|---------------------------------------------------------|
| A Llwynsilanws Farm 1   | 31                                                      |
| B Llwynsilanws Farm 2   | 31                                                      |
| C Pen-rhiw-glais        | 32                                                      |
| D Glenview              | 30                                                      |
| E Llansay               | 30                                                      |
| F Former Pontsarn Hotel | 30                                                      |
| G Aberglais             | 30                                                      |
| H Sweetwater Park 1     | 34                                                      |
| I Sweetwater Park 2     | 40                                                      |
| J Sweetwater Park 3     | 35                                                      |

### 5 Years to 10 Years (Scenario 2)

| Location                | Calculated Site Noise Level<br>dB L <sub>Aeq,1 hr</sub> |
|-------------------------|---------------------------------------------------------|
| A Llwynsilanws Farm 1   | 41                                                      |
| B Llwynsilanws Farm 2   | 41                                                      |
| C Pen-rhiw-glais        | 52                                                      |
| D Glenview              | 50                                                      |
| E Llansay               | 50                                                      |
| F Former Pontsarn Hotel | 48                                                      |
| G Aberglais             | 49                                                      |
| H Sweetwater Park 1     | 45                                                      |
| I Sweetwater Park 2     | 46                                                      |
| J Sweetwater Park 3     | 43                                                      |

## Appendix 10.7 (continued)

### 10 Years to 15 Years (Scenario 1)

| Location                | Calculated Site Noise Level<br>dB L <sub>Aeq,1 hr</sub> |
|-------------------------|---------------------------------------------------------|
| A Llwynsilanws Farm 1   | 34                                                      |
| B Llwynsilanws Farm 2   | 34                                                      |
| C Pen-rhiw-glais        | 38                                                      |
| D Glenview              | 38                                                      |
| E Llansay               | 37                                                      |
| F Former Pontsarn Hotel | 36                                                      |
| G Aberglais             | 36                                                      |
| H Sweetwater Park 1     | 39                                                      |
| I Sweetwater Park 2     | 44                                                      |
| J Sweetwater Park 3     | 35                                                      |

### 10 Years to 15 Years (Scenario 2)

| Location                | Calculated Site Noise Level<br>dB L <sub>Aeq,1 hr</sub> |
|-------------------------|---------------------------------------------------------|
| A Llwynsilanws Farm 1   | 45                                                      |
| B Llwynsilanws Farm 2   | 44                                                      |
| C Pen-rhiw-glais        | 52                                                      |
| D Glenview              | 50                                                      |
| E Llansay               | 50                                                      |
| F Former Pontsarn Hotel | 48                                                      |
| G Aberglais             | 48                                                      |
| H Sweetwater Park 1     | 44                                                      |
| I Sweetwater Park 2     | 46                                                      |
| J Sweetwater Park 3     | 43                                                      |

### 15 Years to 30 Years (Scenario 1)

| Location                | Calculated Site Noise Level<br>dB L <sub>Aeq,1 hr</sub> |
|-------------------------|---------------------------------------------------------|
| A Llwynsilanws Farm 1   | 43                                                      |
| B Llwynsilanws Farm 2   | 46                                                      |
| C Pen-rhiw-glais        | 51                                                      |
| D Glenview              | 51                                                      |
| E Llansay               | 50                                                      |
| F Former Pontsarn Hotel | 49                                                      |
| G Aberglais             | 49                                                      |
| H Sweetwater Park 1     | 45                                                      |
| I Sweetwater Park 2     | 47                                                      |
| J Sweetwater Park 3     | 44                                                      |

## Appendix 10.7 (continued)

### 15 Years to 30 Years (Scenario 2)

| Location                | Calculated Site Noise Level<br>dB L <sub>Aeq,1 hr</sub> |
|-------------------------|---------------------------------------------------------|
| A Llwynsilanws Farm 1   | 40                                                      |
| B Llwynsilanws Farm 2   | 41                                                      |
| C Pen-rhiw-glais        | 49                                                      |
| D Glenview              | 49                                                      |
| E Llansay               | 49                                                      |
| F Former Pontsarn Hotel | 48                                                      |
| G Aberglais             | 47                                                      |
| H Sweetwater Park 1     | 41                                                      |
| I Sweetwater Park 2     | 45                                                      |
| J Sweetwater Park 3     | 41                                                      |

### 30 Years to 60 Years (Scenario 1)

| Location                | Calculated Site Noise Level<br>dB L <sub>Aeq,1 hr</sub> |
|-------------------------|---------------------------------------------------------|
| A Llwynsilanws Farm 1   | 38                                                      |
| B Llwynsilanws Farm 2   | 39                                                      |
| C Pen-rhiw-glais        | 48                                                      |
| D Glenview              | 47                                                      |
| E Llansay               | 47                                                      |
| F Former Pontsarn Hotel | 46                                                      |
| G Aberglais             | 46                                                      |
| H Sweetwater Park 1     | 41                                                      |
| I Sweetwater Park 2     | 45                                                      |
| J Sweetwater Park 3     | 43                                                      |

### 30 Years to 60 Years (Scenario 2)

| Location                | Calculated Site Noise Level<br>dB L <sub>Aeq,1 hr</sub> |
|-------------------------|---------------------------------------------------------|
| A Llwynsilanws Farm 1   | 40                                                      |
| B Llwynsilanws Farm 2   | 40                                                      |
| C Pen-rhiw-glais        | 49                                                      |
| D Glenview              | 49                                                      |
| E Llansay               | 49                                                      |
| F Former Pontsarn Hotel | 48                                                      |
| G Aberglais             | 48                                                      |
| H Sweetwater Park 1     | 42                                                      |
| I Sweetwater Park 2     | 45                                                      |
| J Sweetwater Park 3     | 42                                                      |

### Appendix 10.7 (continued)

#### 60 Years to End (Scenario 1)

| Location                | Calculated Site Noise Level<br>dB L <sub>Aeq,1 hr</sub> |
|-------------------------|---------------------------------------------------------|
| A Llwynsilanws Farm 1   | 37                                                      |
| B Llwynsilanws Farm 2   | 38                                                      |
| C Pen-rhiw-glais        | 48                                                      |
| D Glenview              | 48                                                      |
| E Llansay               | 47                                                      |
| F Former Pontsarn Hotel | 46                                                      |
| G Aberglais             | 46                                                      |
| H Sweetwater Park 1     | 43                                                      |
| I Sweetwater Park 2     | 46                                                      |
| J Sweetwater Park 3     | 44                                                      |

#### 60 Years to End (Scenario 2)

| Location                | Calculated Site Noise Level<br>dB L <sub>Aeq,1 hr</sub> |
|-------------------------|---------------------------------------------------------|
| A Llwynsilanws Farm 1   | 37                                                      |
| B Llwynsilanws Farm 2   | 37                                                      |
| C Pen-rhiw-glais        | 47                                                      |
| D Glenview              | 43                                                      |
| E Llansay               | 43                                                      |
| F Former Pontsarn Hotel | 43                                                      |
| G Aberglais             | 43                                                      |
| H Sweetwater Park 1     | 36                                                      |
| I Sweetwater Park 2     | 43                                                      |
| J Sweetwater Park 3     | 38                                                      |