

Ref **5500**

For **Tarmac**

**Application for Environment Agency Permit
For Tarmac Lower Wasing
BS 4142 Noise Assessment**

Date 03 March 2025

Author Dr Robert Storey

The Author

Robert Storey BEng PhD MIOA (Senior Consultant) obtained his degree in Mining Engineering from the University of Leeds in 1993 before going on to complete a PhD in “The Acoustic Response of Structures to Blast Induced Ground Vibration” in 1998. He joined WBM in 2007 after working in acoustic consultancy and environmental health since 1999. Robert is involved mainly in environmental noise, working on mineral extraction, waste and industrial projects, including surveys, routine noise monitoring and assessments. He is experienced in noise modelling using SoundPLAN for transportation, industrial and environmental sources.

WBM

WBM (the trading name of Walker Beak Mason Limited) is an established independent acoustic consultancy specialising in architectural & building acoustics, environmental noise, planning issues and expert work. WBM is a member of the Association of Noise Consultants and is also a Corporate Member of the Institute of Environmental Management & Assessment. The consultants are members of the Institute of Acoustics.

This report has been prepared with all reasonable skill, care and diligence as appropriate for an acoustic consultancy practice under the terms and brief agreed with our Client. The document is the copyright of WBM and no third party may rely upon this document without the prior and express written agreement of WBM.

Document Control

Revision	Description	Date	Prepared by	Checked by
-	Draft	28/01/2025	R Storey	S Large
1	Second Draft	26/02/2025	R Storey	L Sumner/D Walker
2	Final	03/03/2025	R Storey	L Sumner/D Walker

Contents

The Author.....	2
WBM.....	2
1 Introduction.....	4
2 Environment Agency Permit and Requirements.....	5
3 British Standard 4142: 2014+A1:2019.....	6
4 Description of Site and Noise Climate.....	8
5 Summary of Background Sound Level Data.....	9
6 Calculation of Site Noise Levels.....	12
7 Comparison of Calculated Site Noise with Existing Background Sound Levels	12
8 BS 4142: 2014+A1:2019 Assessment.....	13
9 Cumulative Impact of Proposals.....	17
10 Summary and Conclusions.....	17
Appendix A – Glossary of Acoustic Terms.....	22
Appendix B – Plan Showing Site Layout.....	24
Appendix C – WBM Noise Survey and Assessment Locations.....	25
Appendix D – Survey Details.....	26
Appendix E – Sample Survey Results.....	27
Appendix F – SoundPLAN Noise Mapping Assumptions.....	31
Appendix G – SoundPLAN Plots.....	32
Appendix H – BS4142 : 2014 + A1: 2019 Assessment.....	48

1 Introduction

Tarmac have submitted an application to the Environment Agency for the importation of inert material for the purpose of infilling for restoration at their site at Lower Wasing in Berkshire.

Planning permission was granted by West Berkshire Council for progressive mineral extraction with restoration using imported inert materials to agriculture, lakes and grassland, the construction of a new access onto A340, together with ancillary buildings and internal roads on 12 August 2013 (Application No. 12/01220/MINMAJ).

This report sets out the calculated sound levels arising from the operations on the site (including the importation and placement of inert material for restoration purposes) at locations representative of the nearest dwellings to the site.

The calculated sound levels are compared with representative background sound levels at the nearest dwellings to the site. These have been determined using data from attended sample measurements taken over two days at the nearest dwellings to the site in December 2024 with observations relating to the daytime noise climate made during the surveys.

This comparison of the calculated sound levels arising from the proposed operations on the site with the background sound levels established in December 2024 forms the basis for the BS 4142:2014+A1:2019 assessment method for the nearest dwellings to the site.

To aid comprehension, a glossary of acoustic terms is presented in Appendix A .

A plan showing the site phasing is presented in Appendix B. The locations used by WBM for the attended sample measurements are shown on a plan which also shows the corresponding assessment locations in Appendix C.

The details of the noise surveys/installation conducted by WBM in December 2024 (including instrumentation and calibration) are provided in Appendix D with the full results of the attended sample measurements (including detailed weather observations during each measurement) presented in Appendix E.

The assumptions included in the creation of the SoundPLAN noise model for the site noise calculations are detailed in Appendix F. SoundPLAN noise contour plots displaying the calculated noise levels from the proposed operations (daytime) are presented in Appendix G.

The full breakdown of the BS 4142 assessment is included as Appendix H.

2 Environment Agency Permit and Requirements

Tarmac are submitting an application to the Environment Agency for an inert deposit for recovery permit for their site at Lower Wasing in Berkshire to allow for the importation of inert material to restore the site post mineral extraction.

To support the application, the Environment Agency require a Noise Impact Assessment (NIA) conducted in line with the requirements of BS4142: 2014 + A1:2019.

The information that must be submitted to the Environment Agency in a noise impact assessment that uses computer modelling or spreadsheet calculations is provided in GOV.UK Guidance "*Noise impact assessments involving calculations or modelling*" and "*Guidance – Noise and vibration management: environmental permits*". The information requested in the document "*Noise impact assessments involving calculations or modelling*" is summarised in Appendix E.

The Environment Agency generally require the overall site noise and BS 4142:2014+A1:2019 Rating Level to be no more than 5 dB above the representative background sound level, although this is dependent on context. Additional guidance on the use of BS 4142:2014+A1:2019 when applying for a permit is provided in the Environment Agency "*Method implementation document (MID) for BS 4142*".

The methods outlined in BS 4142:2014+A1:2019 are appropriate for the noise assessment of the proposed operations including HGV movements within the site. The assessment does not cover noise from HGV movements outside the application/site boundary.

3 British Standard 4142: 2014+A1:2019

British Standard (BS) 4142:2014+A1:2019 "*Methods for rating and assessing industrial and commercial sound*" describes methods for assessing the likely effects of sound of an industrial and/or commercial nature on residential properties. It includes the assessment of sound from industrial and manufacturing processes, M&E plant and equipment, loading and unloading of goods and materials, and mobile plant/vehicles on the site. It can be used to assess sound from proposed, new, modified or additional industrial / commercial sources, at existing or new premises used for residential purposes.

The standard describes methods to measure and determine ambient, background and residual sound levels, and the rating levels of industrial / commercial sound.

BS 4142:2014+A1:2019 is not intended to be used for the derivation or assessment of internal sound levels, or for the assessment of non-industrial / commercial sources such as recreational activities, motorsport, music and entertainment, shooting grounds, construction and demolition, domestic animals, people, and public address systems for speech.

Ambient sound is defined in BS 4142: 2014+A1:2019 as "*totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far*". It comprises the residual sound and the specific sound when present.

Residual sound is defined in BS 4142: 2014+A1:2019 as "*ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound*".

The background sound level is the $L_{A90,T}$ of the residual sound level, and is the underlying level of sound. Measurements of background sound level should be undertaken at the assessment location where possible or at a comparable location.

The measurement time interval should be sufficient to obtain a representative value (normally not less than 15 minutes) and the monitoring duration should reflect the range of background sound levels across the assessment period. The background sound level used for the assessment should be representative of the period being assessed.

The specific sound level is the L_{Aeq,T_r} of the sound source being assessed over the reference time interval, T_r . BS 4142:2014+A1:2019 advises that T_r should be 1 hour during the day and 15 minutes at night.

The rating level is the specific sound level plus any adjustment for the characteristics of the sound (tone, impulse, intermittent or other acoustic feature).

The standard describes subjective and objective methods to establish the appropriate adjustment. The adjustments for the different features and assessment methods are summarised in the table below.

Acoustic Feature	Adjustment for Acoustic Feature		
	Subjective Methods	Objective Methods	
Tonality	+2 dB if just perceptible	Third Octave Analysis	Narrow Band Analysis
	+4 dB if clearly perceptible +6 dB if highly perceptible	+6 dB if tones identified	Sliding scale of 0 to +6 dB depending on audibility of tone
Impulsivity	+3 dB if just perceptible +6 dB if clearly perceptible +9 dB if highly perceptible	Sliding scale of 0 to +9 dB depending on prominence of impulsive sound	
Intermittency	+ 3 dB if intermittency is readily distinctive	n/a	
Other	+ 3 dB if neither tonal nor impulsive, but otherwise readily distinctive	n/a	

Where tonal and impulsive characteristics are present in the specific sound within the same reference period then these two corrections can both be taken into account. If one feature is dominant, it might be appropriate to apply a single correction. The rating level is equal to the specific sound level if there are no features present.

The level of impact is assessed by comparing the rating level of the specific sound source with the background sound level. Other factors that may require consideration include the absolute level of sound, the character and level of the residual sound compared to the specific sound, and the sensitivity of the receptor and scope for mitigation.

When the rating level is above the background sound level, a difference of around +5 dB is likely to indicate an adverse impact and a difference of around +10 dB or more is likely to indicate a significant adverse impact, depending on the context.

The lower the rating level with respect to the background sound level, the less likely it is that the specific sound source will have an adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

4 Description of Site and Noise Climate

The Lower Wasing site is located in the vicinity of Wasing Park to the west and south-west of Aldermaston in Berkshire south of the A4. Planning permission was granted by West Berkshire Council for progressive mineral extraction with restoration using imported inert materials to agriculture, lakes and grassland, the construction of a new access onto A340, together with ancillary buildings and internal roads on 12 August 2013 (Application No. 12/01220/MINMAJ). The consent has been implemented.

Access to the site for the importation of inert material is to be gained using an access road off the A340 with egress via the same point. A general site phasing plan showing the proposed operational areas is provided in Appendix B.

The hours of operation for the site would be as follows:

Monday to Friday: 07:00 to 18:00 hours
Saturday: 07:00 to 13:00 hours
No operations on Sundays or Public/Bank Holidays.

For this reason with regard to BS 4142:2014+A1:2019, the assessment period is therefore 1 hour for daytime (07:00 to 23:00 hours).

There are scattered residential properties outside the application boundary of the site as well as commercial wedding venues at The Old Mill and Wasing Park. This report sets out the data from the attended sample measurements (with observations) at seven locations representative of the eight nearest noise sensitive receptors to the site.

The nearest noise sensitive properties to the site are those listed below, the locations of which are shown on the plan in Appendix C.

The residential locations (1, 2, 3, 4, 5, 6, 7 and 7a) selected for the BS 4142:2014+A1:2019 assessment are:

Assessment Location		Assessment Location OS Grid Reference
1	Bottle Cottage	E: 457388 N: 165954
2	Shalford Farm	E: 457022 N: 164899
3	Wasing Park	E: 457637 N: 164337
4	Lower Wasing Farm	E: 457977 N: 165023
5	Wasing Lodge	E: 458366 N: 165231
6	Dolphin Close	E: 458751 N: 165345
7	Frouds Bridge Marina	E: 458853 N: 166305
7a	The Old Mill	E: 459101 N: 166238

These locations were chosen for the purposes of this assessment as they are representative of the closest residential properties to the site. These locations correspond with the properties used in the ANV noise assessment report referred to in Condition 27 “Daytime noise levels” of the planning permission for the site dated August 2013 with some additional receptors included to represent other noise sensitive premises close to the site.

The noise climate in the area in December 2024 was affected by distant and some local road traffic, birdsong, wind in the trees, and frequent jet and light aircraft. These external influences are common with other phases of noise sampling undertaken at the site overtime.

This BS 4142:2014+A1:2019 assessment concentrates on the nearest residential properties to the site described above, however the SoundPLAN noise maps include a visual representation of the calculated site noise levels across the wider area in the vicinity of the site. SoundPLAN noise contour plots displaying the calculated noise levels from the proposed operations (daytime) are presented in Appendix G.

5 Summary of Background Sound Level Data

WBM Noise Surveys (December 2024)

Attended baseline sample measurements were undertaken at seven locations on two days (Tuesday 03 December 2024 and Friday 06 December 2024).

The details of these surveys are presented in Appendix D with the full results of the attended sample measurements including weather conditions during each measurement presented in Appendix E.

During the attended daytime noise surveys in December 2024, the noise climate was affected by distant and some local road traffic, birdsong, wind in the trees, and frequent jet and light aircraft.

A summary of the average background $L_{A90,15 \text{ minute}}$ and residual $L_{Aeq, 15 \text{ minute}}$ levels at each position, is presented in the following table.

Position	07:00 to 18:00	
	Average Background Level dB $L_{A90,15 \text{ minutes}}$	Average Residual Level dB $L_{Aeq, 15 \text{ minutes}}$
1. Bottle Cottage	32(*)	50(*)
2. Shalford Farm	38	60
3. Wasing Park	35	39
4. Lower Wasing Farm	37	51
5. Wasing Lodge	39	64
6. Dolphin Close	36	51
7. Frouds Bridge Marina	41	47

(*) At the time of the surveys the road past Bottle Cottage was restricted to access only and these levels are therefore likely to be an underestimation of the typical levels.

It should be noted that the road past Location 1, Bottle Cottage, was restricted to access only at the time of the baseline surveys and based on the lack of traffic on that road and the adjacent roads as well as the data presented in the ANV report (dated November 2011) submitted to support the August 2013 permission, the measured levels at this location are likely to be an underestimate of typical conditions.

The average measured background sound level for Bottle Cottage in the ANV report was 38 dB $L_{A90, 15 \text{ min}}$ with a range of 37 to 39 dB $L_{A90, 15 \text{ min}}$.

Based on the data at the other similar properties at which baseline measurements were undertaken by WBM in December 2024, the levels presented by ANV appear to be in line with the levels measured by WBM at other similar properties unaffected by the road closure.

Representative Background Sound Levels

Guidance on establishing a typical background sound level value for use in assessments is provided in BS 4142:2014+A1:2019 section 8.1:

“In using the background sound level in the method for rating and assessing industrial and commercial sound it is important to ensure that values are reliable and suitably represent both the particular circumstances and periods of interest. For this purpose, the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods.”

The advice in Chapter 5.0 entitled “Establishing the Baseline” of the IEMA “Guidelines for Environmental Noise Impact Assessment” (2014) states within paragraph 5.39:

“when establishing a baseline against which to assess a specific noise impact, a typical value such as the mode average (the most commonly occurring noise level), or where a value biased towards worst case is desired, the mean average -1 standard deviation normally should be used. It is not often appropriate to use the absolute worst case or lowest measured value.”

The following table presents representative daytime ambient ($L_{Aeq,T}$) and background ($L_{A90,T}$) sound levels at the eight residential assessment locations based on the data obtained by WBM in December 2024.

Daytime (07:00 – 18:00)	Representative Residual Sound Level dB $L_{Aeq,1\text{ hour}}$	Representative Background Sound Level dB $L_{A90,1\text{ hour}}$
Location		
1. Bottle Cottage	50	38(*)
2. Shalford Farm	60	38
3. Wasing Park	39	35
4. Lower Wasing Farm	51	37
5. Wasing Lodge	64	39
6. Dolphin Close	51	36
7. Frouds Bridge Marina	47	41
7a. The Old Mill		

(*) Based on the November 2011 ANV data due to road closure during the 2024 surveys and the levels measured by WBM at other similar properties unaffected by the road closure in December 2024.

6 Calculation of Site Noise Levels

Site noise calculations of the proposed operations were undertaken using SoundPLAN noise mapping software.

A digital ground model (DGM) was created using local ground heights to cover the area including both the site and the nearest residential properties in the vicinity of the site.

The calculations were undertaken as a worst case scenario with the operation of the mobile plant items as taking place for 100% of the assessment period.

The importation and placement of inert materials in support of site restoration is included as taking place for a conservative 10% of the time.

As a worst case, based on information provided by the operator, HGV movements have been included as 7 two-way movements into and out of the site per hour for mineral export and 7 two-way movements into and out of the site per hour for importation of inert material.

The calculations include hard ground and soft ground based on a visual inspection of the areas of hard standing and grassed/unsurfaced areas.

The calculations include the proposed mineral extraction operations using an excavator, dump truck movements associated with mineral extraction, a loading shovel for the loading of HGVs with extracted mineral in the weighbridge area as well as HGV movements for the imported inert material, depositing such materials into the extraction void and grading with a dozer.

The sound power level data and assumptions used for the SoundPLAN sound model are presented in Appendix F.

The SoundPLAN daytime sound contour plots covering the assessment area relating to the proposed operations are presented in Appendix G.

7 Comparison of Calculated Site Noise with Existing Background Sound Levels

For the BS 4142:2014+A1:2019 assessment, the eight receiver locations representative of the nearest residential dwellings to the site have been used for site noise calculations.

A comparison of the calculated daytime sound levels at the eight selected residential assessment locations closest to the site with the representative daytime background and residual sound levels at those locations is as follows.

Receiver Location Daytime (07:00-18:00)	Calculated Site Sound Level dB L _{Aeq,1 hour}	Representative Background Sound Level dB L _{A90,15 min}	Average Residual Sound Level dB L _{Aeq,15 min}
1. Bottle Cottage	46	38	50
2. Shalford Farm	35	38	60
3. Wasing Park	32	35	39
4. Lower Wasing Farm	42	37	51
5. Wasing Lodge	41	39	64
6. Dolphin Close	40	36	51
7. Frouds Bridge Marina	40	41	47
7a. The Old Mill	37	41	47

Note that the highest calculated site sound levels for each assessment location are presented in the table based on the various different stages of the potential operations on site that have been considered in the SoundPLAN sound model (Years 1 to 16).

An assessment has been undertaken in accordance with BS 4142:2014+A1:2019 “*Methods for Rating and assessing industrial and commercial sound*” for the nearest dwellings to the operation on the site as examined above.

8 BS 4142: 2014+A1:2019 Assessment

The information to be reported, as specified in Section 12 of BS 4142:2014+A1:2019, is set out in full in Appendix H (where relevant) and the findings are summarised on the following pages.

For the BS4142 assessment, when the rating level is above the background sound level, a difference of around +5 dB is likely to indicate an adverse impact and a difference of around +10 dB or more is likely to indicate a significant adverse impact, depending on the context.

The lower the rating level with respect to the background sound level, the less likely it is that the specific sound source will have an adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

Considering the existing ambient and background sound environment in the area during the daytime operating hours, the normal character of the sound generated from mineral extraction and importation operations and the level of the calculated site sound levels at the dwellings, one would not expect any acoustic features of the noise from the site operations to be readily distinguishable at the dwellings and an acoustic feature correction would not be appropriate. In this assessment the Specific Sound Level used is therefore the same as the Rating Level for normal daytime operations.

Daytime (07:00-18:00) Operations:

The calculated daytime site noise levels are:

- 8 dB(A) above the representative daytime background sound levels at Bottle Cottage;
- 3 dB(A) below the representative daytime background sound levels at Shalford Farm;
- 3 dB(A) below the representative daytime background sound levels at Wasing Park;
- 5 dB(A) above the representative daytime background sound levels at Lower Wasing Farm;
- 2 dB(A) above the representative daytime background sound levels at Wasing Lodge;
- 4 dB(A) above the representative daytime background sound levels at Dolphin Close;
- 1 dB(A) below the representative daytime background sound levels at Frouds Bridge Marina; and
- 4 dB(A) below the representative daytime background sound levels at The Old Mill.

The calculated daytime site noise levels are below the representative daytime residual sound levels by:

- 4 dB(A) at Bottle Cottage;
- 25 dB(A) at Shalford Farm;
- 7 dB(A) at Wasing Park;
- 9 dB(A) at Lower Wasing Farm;
- 23 dB(A) at Wasing Lodge;
- 11 dB(A) at Dolphin Close;
- 7 dB(A) at Frouds Bridge Marina; and
- 10 dB(A) at The Old Mill.

The baseline daytime residual levels at these locations were between 39 and 60 dB $L_{Aeq,T}$.

The difference between the rating levels and the representative daytime background sound levels presented are below the level that indicates an adverse impact (depending on context) in BS4142: 2014 + A1: 2019 at six of the eight residential locations considered.

At the remaining two locations, one (Lower Wasing Farm) the difference between the rating level and the representative daytime background sound level is at the level that may indicate an adverse impact, i.e. +5 dB(A) depending on context and the other (Bottle Cottage) is above the level indicating an adverse impact, being at +8dB(A).

Guidance in the Environment Agency "*Method implementation document (MID) for BS 4142*" states that context includes "local attitudes" and "intrinsic links between the source and receptor". Lower Wasing Farm is in the ownership of the landowner and as such, the occupant has a vested interest in the infilling and restoration of the site. It is therefore considered that a difference of +5 dB(A) at this location is not considered an adverse impact when context is taken into account.

The calculations at Bottle Cottage indicate that it is only when mineral extraction and/or inert materials placement is taking place in the nearest field to the property that the representative background sound levels are exceeded. The potential difference of +8 dB(A) would therefore only be likely for a short period of time when operations are taking place at the highest ground height for extraction and restoration in those areas.

It is recommended that mineral extraction and restoration do not take place simultaneously in this area.

Bunding on the western boundary between the nearest working areas in Phase B1b and Bottle Cottage has been considered, but this is complicated by the presence of waterways and hedgerows.

Should additional mitigation be required, there could be scope to use a temporary barrier in the form of straw bales to break the line of sight from the property during the period of operations at the nearest location to the property.

The EA guidance "*Noise and vibration management: environmental permits*" states that "*The context in which a noise occurs is critical to assessing the severity of the pollution.*".

Whilst for short periods of the development noise is indicated to be above the point at which adverse impact might be expected to arise, there are several contextual elements identified by the EA guidance that render the situation less sensitive including:

Noise only on weekdays and Saturday mornings. Noise will not conflict with periods that residents typically treat as more noise sensitive. Noise occurs at times of the day when there are typically increased presence of other environmental noise.

The limited time at which operations would be at their highest noise level. Once the site operations are taking place outside the area nearest to Bottle Cottage (i.e. B1b on the site phasing plan in Appendix B), the rating level at Bottle Cottage will be at or below the representative background sound level at the property. As the operations move away from the nearest point or take place at a greater depth than the highest level of working considered, the calculated site noise levels at Bottle Cottage will reduce.

It is noted that significant adverse impact ('causing pollution') will be avoided at all times (the BS4142 assessment for all locations shows that noise will be below the point at which significant adverse impact arises).

Where noise is likely to be audible at dwellings there is a requirement to minimise noise. The following measures can be used to minimise noise impact during periods when operations are taking place closest to Bottle Cottage:

- Plant / machinery should not be left with engines idling for periods when not in use.
- Where practicable and safe, mobile plant movements can follow a one way system such that use of reversing alarms is not necessary / minimised
- Material can be placed and not dropped from height so that noise is minimised.
- Additional temporary barriers between the nearest workings and the property (in the form of straw bales) could potentially be utilised if the site sound levels require further reduction.

However, in the context of the representative residual sound levels in that area and the short period during which the site sound levels would be above the representative background sound levels, it is considered that the site operations during the majority of the development would not constitute an adverse impact at Bottle Cottage.

For the periods when the operations are taking place in the nearest areas to Bottle Cottage, it is also useful to consider the normal Environment Agency requirements for operations on a site, i.e. for a site to not be ‘causing pollution’ as well as the Environment Agency guidance “*Noise and vibration management: environmental permits*”, which states the following:

“Unacceptable level of audible or detectable noise

This level of noise means that significant pollution is being, or is likely to be, caused at a receptor (regardless of whether you are taking appropriate measures).

You must take further action or you may have to reduce or stop operations. The environment agencies will not issue a permit if you are likely to be operating at this level.

The closest corresponding BS 4142 descriptor is ‘significant adverse impact’ (following consideration of the context).”

The daytime noise climate at the dwellings considered would for the majority of the time continue to be controlled by distant and some local road traffic, birdsong, wind in the trees, and frequent jet and light aircraft. The site operations are likely to be audible at the property only during the periods when the works are at the closest point to Bottle Cottage and are taking place at the highest ground level of working.

9 Cumulative Impact of Proposals

During the attended sample measurements in December 2024, there were no other mineral operations noted and minimal farming activity.

There was no other industrial noise apart from minor power tool use at the Marina and at Wasing Park, it is therefore not expected that the proposed operations will have a significant cumulative impact on the noise climate at the dwellings.

10 Summary and Conclusions

Tarmac have submitted an application to the Environment Agency for the importation and deposit of inert material for the purpose of restoring their site at Lower Wasing in Berkshire.

Planning permission was granted by West Berkshire Council for progressive mineral extraction with restoration using imported inert materials to agriculture, lakes and grassland, the construction of a new access onto A340, together with ancillary buildings and internal roads on 12 August 2013 (Application No. 12/01220/MINMAJ).

This report sets out the calculated sound levels arising from the proposed operations, for use in a BS 4142:2014+A1:2019 assessment at the nearest dwellings to the site.

The calculated site sound levels are compared with representative background sound levels at the nearest dwellings to the site. These have been determined from attended sample measurements undertaken in December 2024 with observations made regarding the existing daytime sound climate in the area.

This comparison of the calculated site sound levels arising from the proposed operations with the background sound levels established in December 2024 forms the basis for the BS 4142:2014+A1:2019 assessment method for the nearest dwellings to the site.

Bottle Cottage:

The calculations demonstrate a highest daytime rating level of 46 dB $L_{Ar,Tr}$ at Bottle Cottage which is 8 dB(A) above the representative daytime background sound level of 38 dB $L_{A90,T}$ at that location. The representative daytime residual sound level at Bottle Cottage is 50 dB $L_{Aeq,T}$.

The difference between the rating level and the representative background sound level is above that indicating an adverse impact, but below the level indicating a significant adverse impact, i.e. 'causing pollution'.

When considering the context at this location, it is important to note the limited time at which operations would be at their highest noise level. Once the site operations are taking place outside the area nearest to Bottle Cottage (i.e. B1b on the site phasing plan in Appendix B), the rating level at Bottle Cottage will be at or below the representative background sound level at the property. As the operations move away from the nearest point or take place at a greater depth than the highest level of working considered, the calculated site noise levels at Bottle Cottage will reduce.

It is noted that significant adverse impact ('causing pollution') will be avoided at all times at Bottle Cottage.

The conclusion of the assessment for Bottle Cottage is that the proposed operations on the site have been demonstrated to be not causing pollution at the property and if the context relating to duration and residual sound levels is taken into account (or a temporary barrier could potentially be utilised) will, for the majority of the development, be of no adverse impact at that location during the normal daytime operating hours (07:00 to 18:00 hours).

Shalford Farm:

The calculations demonstrate a daytime rating level of 35 dB $L_{Ar,Tr}$ at Shalford Farm which is 3 dB(A) below the representative daytime background sound level of 38 dB $L_{A90,T}$ at that location. The representative daytime residual sound level at Shalford Farm is 60 dB $L_{Aeq,T}$.

The conclusion of the assessment for Shalford Farm is that the proposed operations on the site have been demonstrated to be of no adverse impact at that location during the normal daytime operating hours (07:00 to 18:00 hours).

Wasing Park:

The calculations demonstrate a daytime rating level of 32 dB $L_{Ar,Tr}$ at Wasing Park which is 3 dB(A) below the representative daytime background sound level of 35 dB $L_{A90,T}$ at that location. The representative daytime residual sound level at Wasing Park is 39 dB $L_{Aeq,T}$.

The conclusion of the assessment for Wasing Park is that the proposed operations on the site have been demonstrated to be of no adverse impact at that location during the normal daytime operating hours (07:00 to 18:00 hours).

Lower Wasing Farm:

The calculations demonstrate a daytime rating level of 42 dB $L_{Ar,Tr}$ at Lower Wasing Farm which is 5 dB(A) above the representative daytime background sound level of 37 dB $L_{A90,T}$ at that location. The representative daytime residual sound level at Lower Wasing Farm is 51 dB $L_{Aeq,T}$.

Once context has been taken into account, which includes the representative residual sound levels and the ownership of the property by the site landowner, the conclusion of the assessment for Lower Wasing Farm is that the proposed operations on the site have been demonstrated to be of no adverse impact at that location during the normal daytime operating hours (07:00 to 18:00 hours).

Wasing Lodge:

The calculations demonstrate a daytime rating level of 41 dB $L_{Ar,Tr}$ at Wasing Lodge which is 2 dB(A) above the representative daytime background sound level of 39 dB $L_{A90,T}$ at that location. The representative daytime residual sound level at Wasing Lodge is 64 dB $L_{Aeq,T}$.

The conclusion of the assessment for Wasing Lodge is that the proposed operations on the site has been demonstrated to be of no adverse impact at that location during the normal daytime operating hours (07:00 to 18:00 hours).

Dolphin Close:

The calculations demonstrate a daytime rating level of 40 dB $L_{Ar,Tr}$ at Dolphin Close which is 4 dB(A) above the representative daytime background sound level of 36 dB $L_{A90,T}$ at that location. The representative daytime residual sound level at Dolphin Close is 51 dB $L_{Aeq,T}$.

The conclusion of the assessment for Dolphin Close is that the proposed operations on the site have been demonstrated to be of no adverse impact at that location during the normal daytime operating hours (07:00 to 18:00 hours).

Frouds Bridge Marina:

The calculations demonstrate a daytime rating level of 40 dB $L_{Ar,Tr}$ at Frouds Bridge Marina which is 1 dB(A) below the representative daytime background sound level of 41 dB $L_{A90,T}$ at that location. The representative daytime residual sound level at Frouds Bridge Marina is 47 dB $L_{Aeq,T}$.

The conclusion of the assessment for Frouds Bridge Marina is that the proposed operations on the site have been demonstrated to be of no adverse impact at that location during the normal daytime operating hours (07:00 to 18:00 hours).

The Old Mill:

The calculations demonstrate a daytime rating level of 37 dB $L_{Ar,Tr}$ at The Old Mill which is 4 dB(A) below the representative daytime background sound level of 41 dB $L_{A90,T}$ at that location. The representative daytime residual sound level at The Old Mill is 47 dB $L_{Aeq,T}$.

The conclusion of the assessment for The Old Mill is that the proposed operations on the site have been demonstrated to be of no adverse impact at that location during the normal daytime operating hours (07:00 to 18:00 hours).

Overall Summary

It is expected that the proposed operations on the site will be generally inaudible at all the receiver locations during the normal daytime operating hours, but could be audible at times at a few locations, particularly Bottle Cottage, Lower Wasing Farm and possibly Dolphin Close on occasion when the operations are at their closest point to each property.

The daytime soundscape for the eight receiver locations considered will continue to be generally affected by distant and some local road traffic, birdsong, wind in the trees, and frequent jet and light aircraft.

The comparison of the calculated noise levels arising from the proposed operations has been compared to existing background and residual sound levels in the area and once context has been taken into account, it is concluded that there will be no adverse impact at the nearest residential receptors arising from the proposed operations during the normal daytime operating hours.

Robert Storey

BEng PhD MIOA

Senior Consultant

(This document has been generated electronically and therefore bears no signature)

Appendix A – 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 (2×10^{-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 A (continued)

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.

Rating Level (BS 4142) $L_{Ar,T}$

With regard to BS 4142, the rating level is the specific sound plus any adjustment for the characteristics of the sound.

Residual Sound (BS 4142)

With regard to BS 4142, the residual sound is the ambient sound remaining at the assessment location when the specific source is suppressed to such a degree that it does not contribute to the ambient sound.

Specific Sound Level (BS 4142) $L_{Aeq,T}$

With regard to BS 4142, the specific sound level is the sound pressure level (in terms of $L_{Aeq,T}$) produced by the specific sound source at the assessment location.

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.

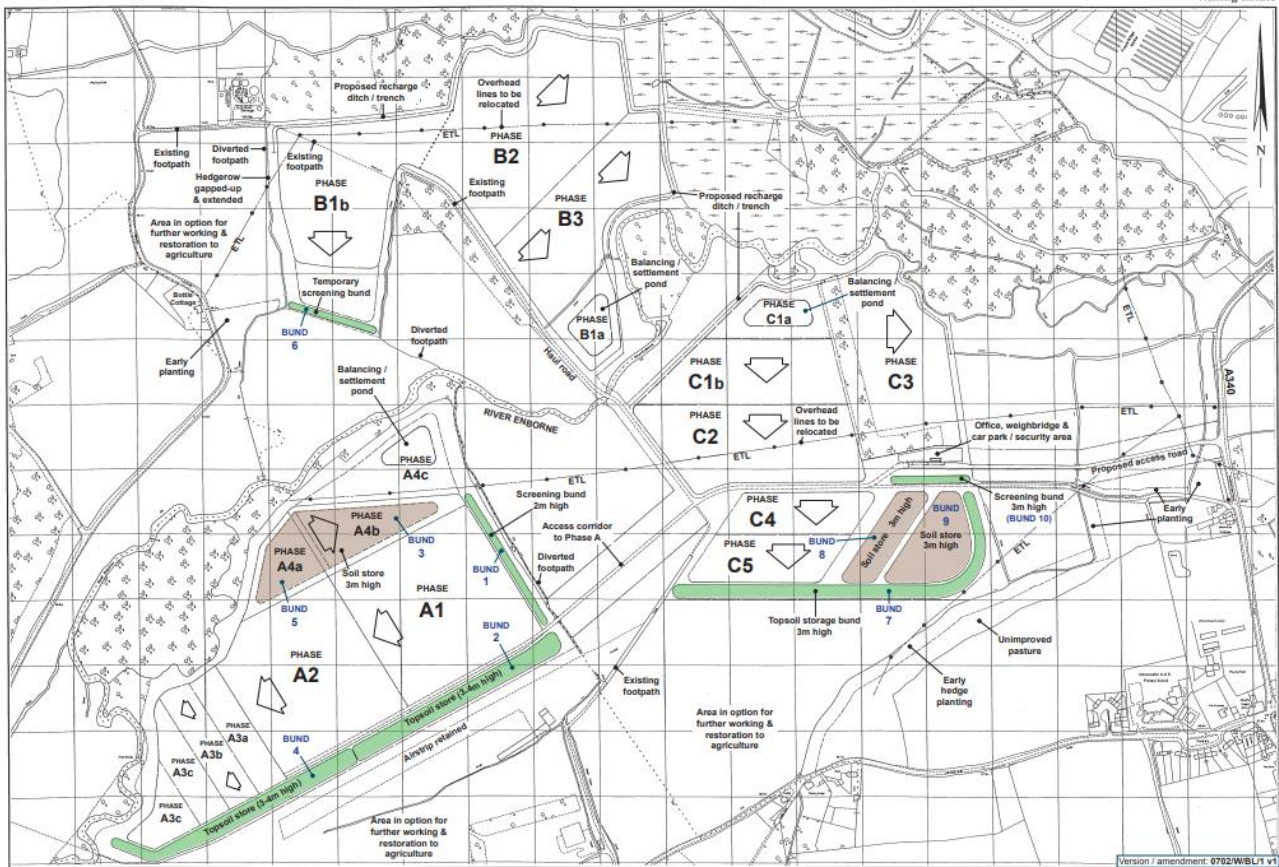
$L_{A10,T}$ is the 'A'-weighted level exceeded for 10% of the time interval T and is often used to describe road traffic noise. It gives an indication of the upper level of a fluctuating noise signal. For high volumes of continuous traffic, the $L_{A10,T}$ unit is typically 2–3 dB(A) above the $L_{Aeq,T}$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

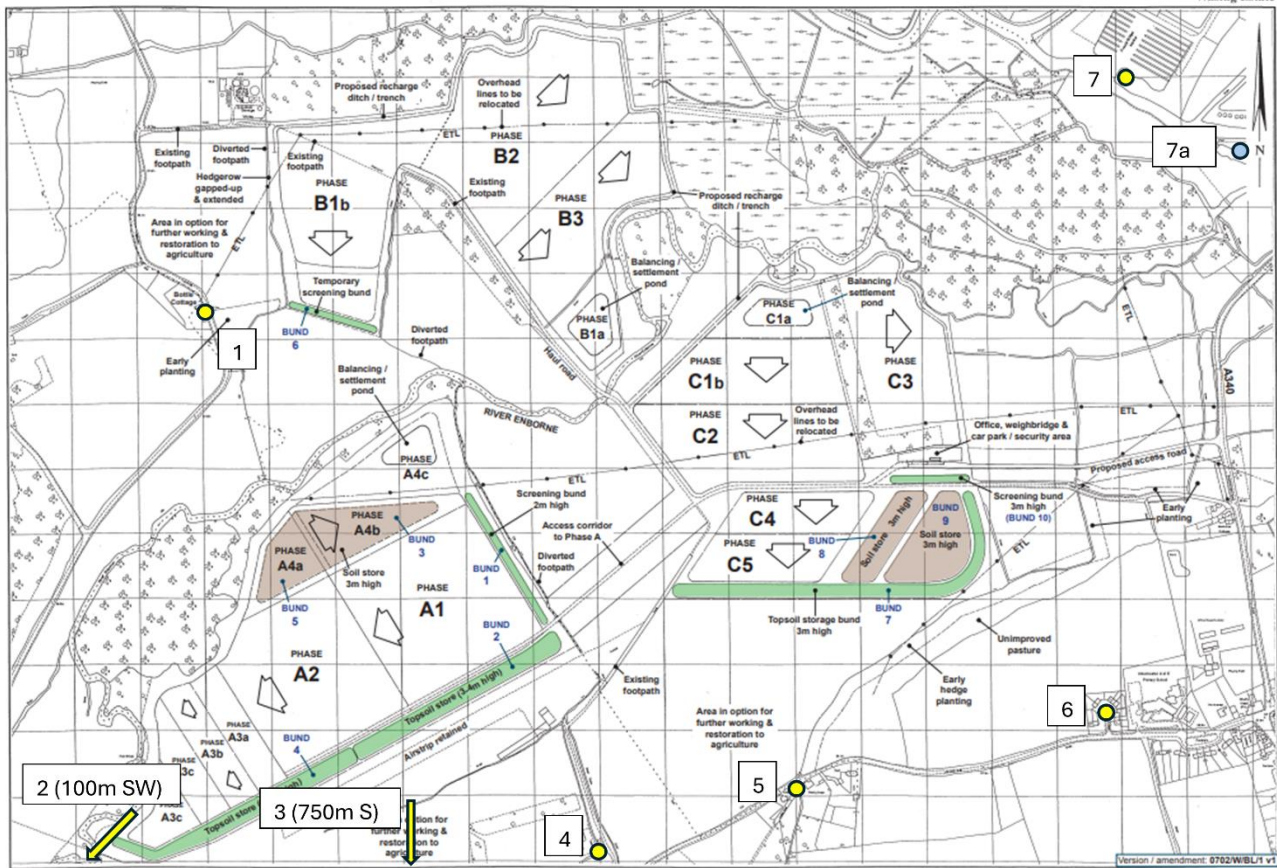
With regard to BS 4142, the $L_{A90,T}$ of the residual sound is used to describe the background sound level.



Appendix B – Plan Showing Site Layout

Site Phasing Plan:



Appendix C – WBM Noise Survey and Assessment Locations



	Measurement locations
	Additional assessment location

Location	Survey/Install Location Description
1 Bottle Cottage	Free field location directly east of Bottle Cottage, beside an unnamed road approximately 250m west of site
2 Shalford Farm	Free field location at the junction of Wasing Lane and Back Lane, approximately 100m west of site
3 Wasing Park	Free field location directly north of Wasing Park, approximately 750m south of site
4 Lower Wasing Farm	Free field location beside access track for Brimpton airfield, approximately 300m south of site
5 Wasing Lodge	Free field location in entrance splay of eastern access track to Wasing Park, east of Wasing Lodge, approximately 300m south of site.
6 Dolphin Close	Free field location in turning area of Dolphin Close, approximately 250m south of site
7 Frouds Bridge Marina	Free field location on eastern spit beside marina entrance, approximately 450m east of site

Appendix D – Survey Details

Dates and Locations of Attended Sample Measurements

10:20-15:40, Tuesday 03 December 2024; and

10:40-16:25, Friday 06 December 2024.

At Locations 1 to 7 as shown in the plan and described in Appendix C

Surveys carried out by

Johan Beavis Berry

Weather Conditions

Date	Summary of Conditions
Tuesday 03 December 2024	Dry, partly cloudy, ~6°C, WNW breeze 0-1 m/s.
Friday 06 December 2024	Dry, partly cloudy, ~8°C, W breeze 0-2 m/s.

Instrumentation used

Serial Number	Dates
Norsonic 140 Sound Level Meter (1403136)	Tuesday 03 December 2024
Norsonic 1251 Calibrator (31992)	Friday 06 December 2024

Calibration

The sensitivity of the meter was verified on site immediately before and after the surveys. The measured calibration levels were as follows:

Survey Date	Start Cal	End Cal
10:20-15:40, Tuesday 03 December 2024	113.7 dB(A)	113.7 dB(A)
10:40-16:25, Friday 06 December 2024	113.6 dB(A)	113.7 dB(A)

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

Survey Details

Attended sample measurements of 15 minute duration were taken at seven locations. The microphone of the meter, positioned on a tripod, was at a height of between 1.2 and 1.5 metres above local ground level away from reflecting surfaces other than the ground, with a windshield used throughout.

Appendix E – Sample Survey Results

Tuesday 03 December 2024, 10:20-15:40

Location	Start Time	Results dB (T = 15 minutes)				Comments / Observations	Weather
		L _{Aeq,T}	L _{Amax,f}	L _{A10,T}	L _{A90,T}		
Shalford Farm	10:28	60	76	64	38	Birdsong, frequent local road traffic, distant jet aircraft. Occasional distant impacts from vehicles over cattle grid. Occasional cattle lowing. Distant train horn (10:39)	6°C, dry, still (0m/s), cloud cover 30%
Bottle Cottage	10:49	37	55	39	33	Birdsong, distant road traffic noise, frequent distant light aircraft. Distant train (10:53). 'Road ahead closed' signs noted so perhaps less local road traffic than usual?	6°C, dry, still (0m/s), cloud cover 60%
Wasing Park	11:23	39	67	40	35	Birdsong, distant aircraft, distant road traffic noise, distant cattle lowing. Unidentified distant tonal noise throughout sample (38dBA) possibly hedge trimmer or pressure washer. Nearby light aircraft (11:36). Vehicle movements in car park including doors slamming (11:35)	6°C, dry, still (0m/s), cloud cover 60%
Lower Wasing Farm	11:47	51	70	56	33	Birdsong, running water, distant road traffic noise, distant jet aircraft. Occasional local road traffic (1-2 cars/min). Loud motorbike (11:58). Car passes on track (11:55, 12:01)	6°C, dry, still (0m/s), cloud cover 80%
Wasing Lodge	12:05	63	80	64	38	Birdsong, running water, frequent distant and nearby aircraft. Passing road traffic dominant (1-2 cars/min)	6°C, dry, still (0m/s), cloud cover 80%
Dolphin Close	12:23	53	74	55	36	Birdsong, children playing/shouting nearby, frequent local road traffic (1-2 cars/min). Loud aircraft (12:30, loud motorbike (12:36)	6°C, dry, still (1m/s S), cloud cover 80%
Frouds Bridge Marina	12:49	50	69	50	39	Birdsong, distant road traffic noise, idling boat engine, general activity and voices in marina, ducks, blowtorch/extractor sounds and radio in marquee (SE of position). Distant train (12:50, 12:52) Helicopter 60dB(A) (12:56), police siren (13:00), light aircraft (13:00).	6°C, dry, still (0.5m/s SE), cloud cover 70%
Bottle Cottage	13:14	50	75	40	31	Birdsong, distant road traffic noise, distant siren (13:24), light aircraft (13:29) Passing car (13:20, 13:26) raising L _{Aeq} significantly.	6°C, dry, still (0m/s), cloud cover 80%

Appendix E (continued)

Location	Start Time	Results dB (T = 15 minutes)				Comments / Observations	Weather
		L _{Aeq,T}	L _{Amax,f}	L _{A10,T}	L _{A90,T}		
Shalford Farm	13:33	59	75	63	34	Birdsong, distant jet and light aircraft, distant road traffic noise, frequent passing road traffic dominant (2-3 cars/min). Occasional distant impacts from vehicles over cattle grid. Distant quad bike (13:35). Military helicopter 65dB(A) (13:42).	6°C, dry, still (0m/s), cloud cover 80%
Wasing Park	13:54	39	59	41	32	Birdsong, distant road traffic noise, distant military aircraft (13:56). Unidentified tonal noise (hedge trimmer or pressure washer) commences (13:58 onwards).	6°C, dry, still (0m/s), cloud cover 90%
Lower Wasing Farm	14:15	49	63	54	36	Birdsong, running water, occasional light aircraft, frequent passing road traffic (1-2 cars/min). Car passes on track (14:18). Distant military helicopter (14:22). Same unidentified tonal noise on estate distantly audible.	7°C, dry, still (0m/s), cloud cover 80%
Wasing Lodge	14:32	65	81	66	38	Birdsong, running water, frequent passing road traffic (1-2 cars/min), frequent distant aircraft.	7°C, dry, still (0m/s), cloud cover 80%
Dolphin Close	14:50	49	74	49	33	Birdsong (starlings), distant aircraft. Frequent passing road traffic (1-2 cars/min). Car horn (14:52)	6°C, dry, still (0m/s), cloud cover 80%
Frouds Bridge Marina	15:16	44	56	46	42	Birdsong, ducks, distant road traffic noise, extractor noise from marquee, whistling and voices, general quiet DIY. Distant train and aircraft (15:21). Overhead light aircraft (15:30).	6°C, dry, still (0m/s), cloud cover 50%

Appendix E (continued)

Friday 06 December 2024, 10:40-16:30

Location	Start Time	Results dB (T = 15 minutes)				Comments / Observations (including weather conditions)	Weather
		L _{Aeq,T}	L _{Amax,f}	L _{A10,T}	L _{A90,T}		
Wasing Park	10:42	41	55	43	36	Birdsong, distant road traffic noise, distant jet aircraft, distant train horn (10:44), Occasional distant impacts (NW), Nearby aircraft (10:45, 10:47)	8°C, 1-2m/s NW, cloud cover 30%
Shalford Farm	11:03	60	77	64	35	Birdsong, frequent passing road traffic (2-3 cars/min), distant jet aircraft, distant impacts of cars over cattle grid (11:09). Dogs barking (11:16)	8°C, 1m/s NW, cloud cover 40%
Bottle Cottage	11:23	50	75	40	31	Birdsong, crows, distant road traffic noise, distant jet aircraft (occasional). Passing car (11:28, 11:34), distant light aircraft (11:36)	8°C, <1m/s W, cloud cover 30%
Frouds Bridge Marina	11:52	46	56	48	41	Birdsong, wind in trees, distant road traffic noise. Music, voices and DIY from marquee (SE). Distant helicopter (11:55-11:58), Occasional distant passing trains (11:57, 11:59), distant light aircraft (12:02). Sander type noise (12:05 onwards)	8°C, 1-3m/s W, cloud cover 70%
Dolphin Close	12:17	51	70	55	34	Birdsong, distant road traffic noise, distant aircraft, frequent passing road traffic (2-3 cars/min), motorbike (12:22), car arrives (12:22), door slam and wheelie bin movement (12:23).	9°C, 1m/s W, cloud cover 70%
Wasing Lodge	12:35	63	81	63	39	Birdsong, running water, distant road traffic noise, distant impacts/mobile plant (digger), frequent passing road traffic (2-3 cars/min). Light aircraft (12:38)	9°C, 1m/s W, cloud cover 70%
Lower Wasing Farm	12:52	51	65	55	38	Birdsong, distant road traffic noise, distant jet aircraft. Digger operating in field (E) with engine noise and impacts dominant - ceased (12:54). Frequent passing road traffic (2 cars/min). Car arrives on track (12:54). Horse snorting (12:57).	9°C, 1m/s W, cloud cover 50%
Wasing Park	13:16	39	61	42	35	Birdsong, light aircraft, distant jet aircraft, distant road traffic noise. Mobile plant in courtyard. Distant small engine - leaf blower?	9°C, 1-2m/s SW, cloud cover 30%

Appendix E (continued)

Location	Start Time	Results dB (T = 15 minutes)				Comments / Observations	Weather
		L _{Aeq,T}	L _{Amax,f}	L _{A10,T}	L _{A90,T}		
Bottle Cottage	14:01	53	80	42	33	Birdsong, distant road traffic noise, distant jet aircraft. Passing car (14:02, 14:09, 14:11). Distant tractor engine and impacts). Delivery van paused.	9°C, 1m/s W, cloud cover 80%
Frouds Bridge Marina	14:32	45	71	47	41	Birdsong, distant road traffic noise, ducks, distant jet aircraft. Voices, whistling and DIY in marina and marquee. Overhead light aircraft (14:37)	9°C, 1m/s W, cloud cover 90%
Dolphin Close	14:57	49	68	52	39	Birdsong, distant road traffic noise, distant aircraft, frequent local road traffic (2-3 cars/min)	8°C, 2-3m/s SW, cloud cover 70%
Wasing Lodge	15:14	64	80	65	41	Birdsong, running water, light aircraft, distant jet aircraft. Frequent passing road traffic, (1-2 cars/min)	8°C, 1m/s SW, cloud cover 80%, drizzle from 15:28
Lower Wasing Farm	15:49	52	68	56	40	Birdsong, helicopter, distant road traffic noise, frequent passing road traffic (2-3 cars/min). Distant broadband machinery (later determined to be tractor with hedge trimmer). Light aircraft (15:53), helicopter (15:56). Burglar alarm paused. Gunshot (15:58, 16:01) Distant crash (16:01).	8°C, 2m/s SW, cloud cover 100%, Light rain shower prior to sample (wet road)
Shalford Farm	16:09	61	79	65	46	Birdsong, jet aircraft, distant road traffic noise, frequent local road traffic (2-3 cars/min). Hedge trimmer throughout sample raising levels (51dB(A)). Loud car (16:14), helicopter (16:23)	8°C, 1m/s SW, cloud cover 100%, wet road.

Appendix F – SoundPLAN Noise Mapping Assumptions

Calculations were undertaken using SoundPLAN 8.2 (updated 18 October 2024).

Calculations were undertaken using the methods described in ISO 9613.

Noise calculations were made on a 5 metre grid at a calculation height of 1.5 metres above local ground level to represent ground floor level.

The calculations assume soft ground and hard ground across the calculation area based on a visual inspection of aerial photographs.

Sound Power Level data has been included based on plant noise data contained within the WBM plant noise database of measurements of other similar plant items to those to be on site.

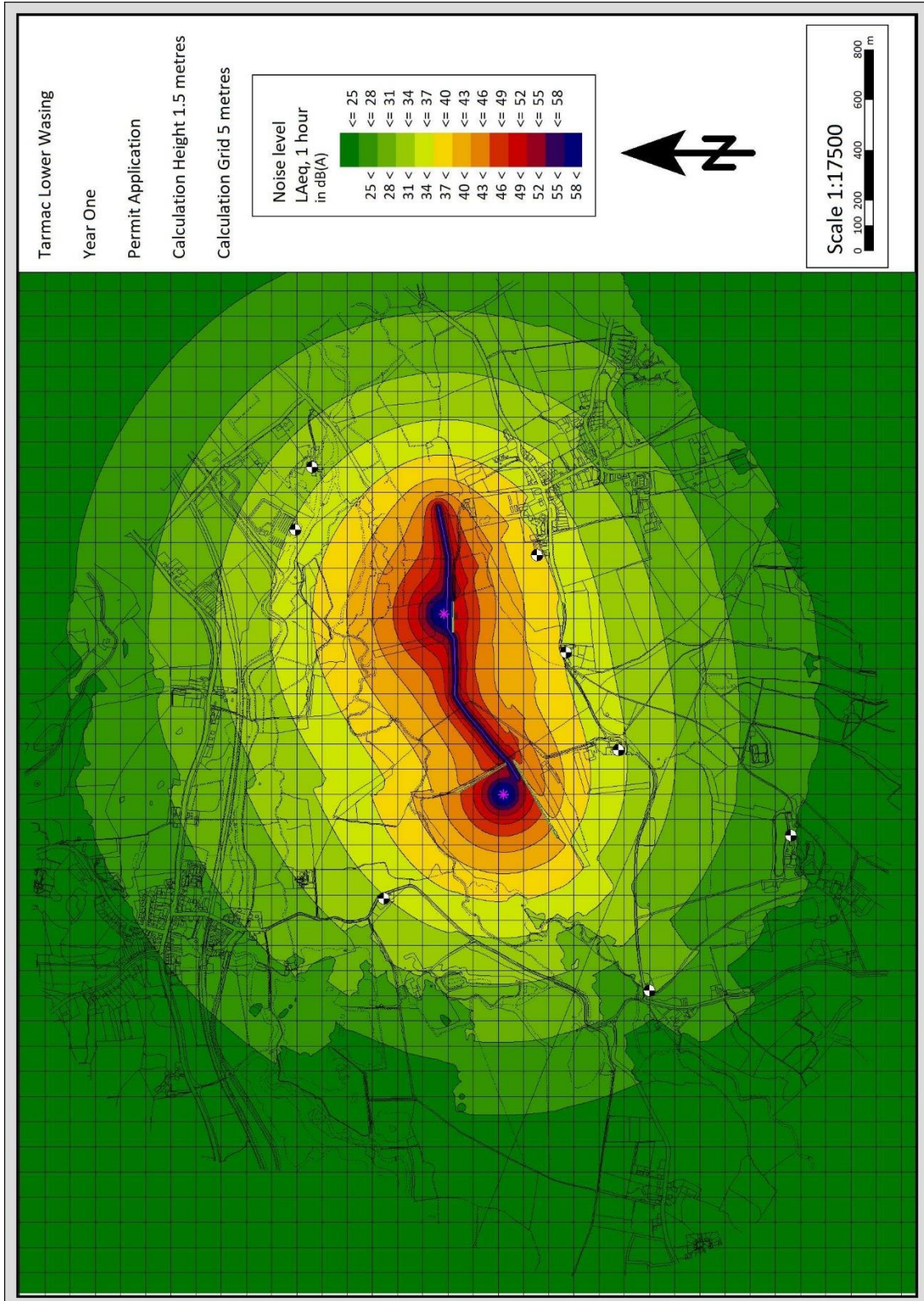
A summary of the data input into the SoundPLAN calculations is presented in the following table.

Plant Item	Sound Power Level dB L _{WA}	Source Height (m)	On time (Daytime)
Infilling Operations			
HGVs within site	104	2	7/hour @ 15kph
Tipping	110	0.2	10%
Dozer for grading	106	2	100%
Mineral Extraction Operations			
Excavator	103	2	100%
Dump Trucks	105	2	8/hour @ 15kph
Stocking Area by Weighbridge			
Loading Shovel loading HGVs	104	2	100%
Access Road			
HGVs on access road	104	2	14/hour @ 20kph

The SoundPLAN model and/or the co-ordinates of the plant items within each scenario can be provided on request.

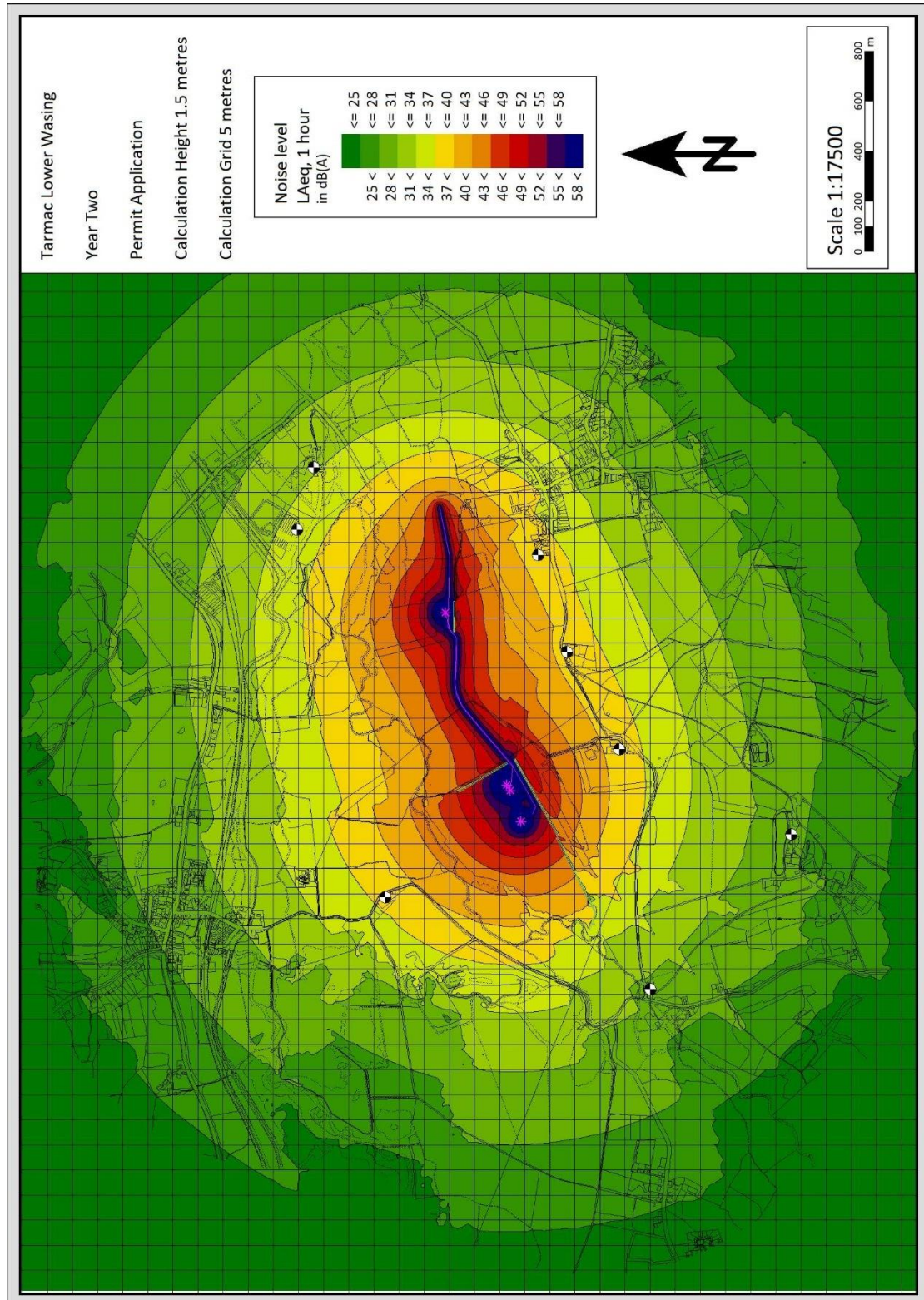
Appendix G – SoundPLAN Plots

Daytime Operations Year 1 (07:00-18:00):



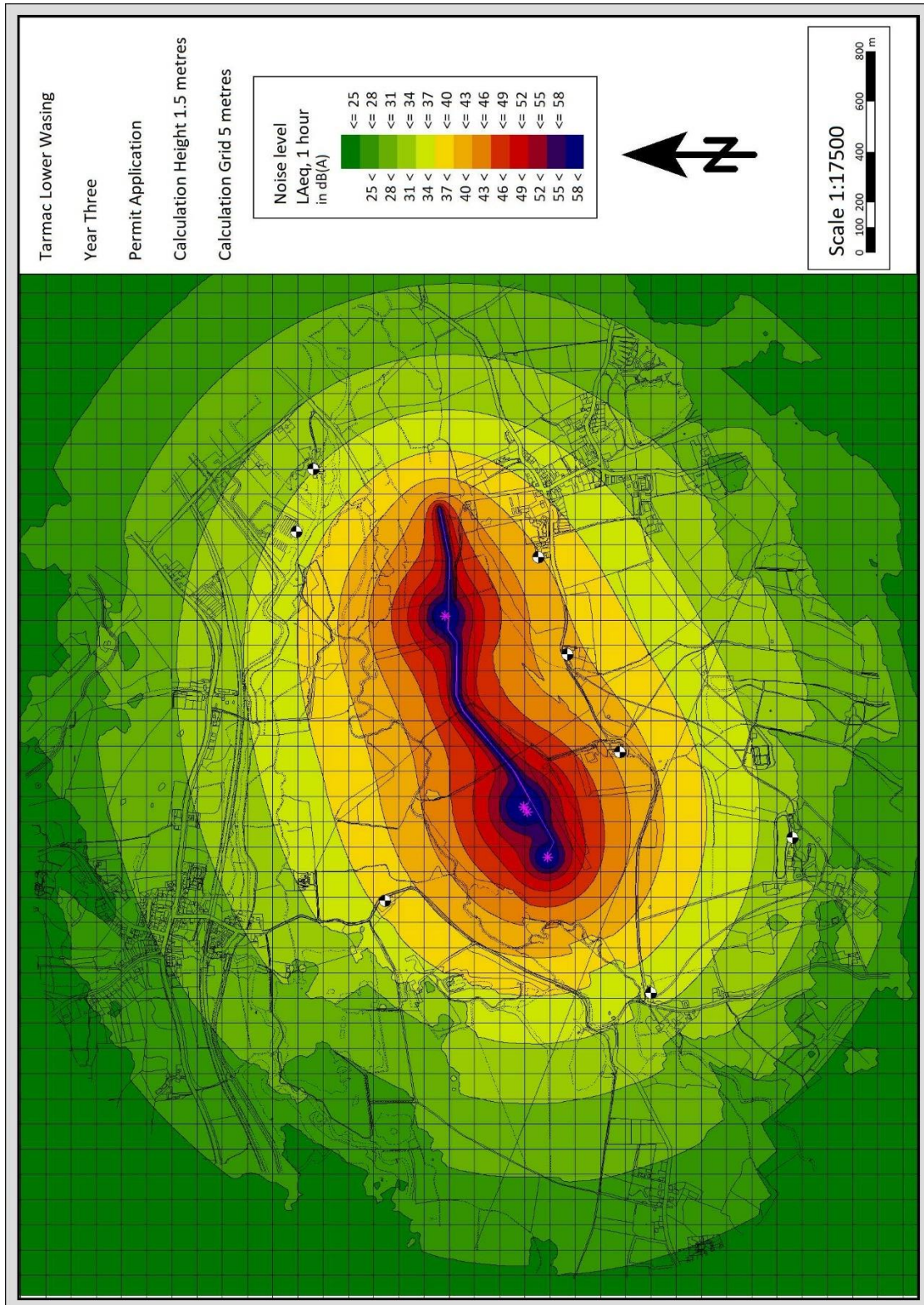
Appendix G (continued)

Daytime Operations Year 2 (07:00-18:00):



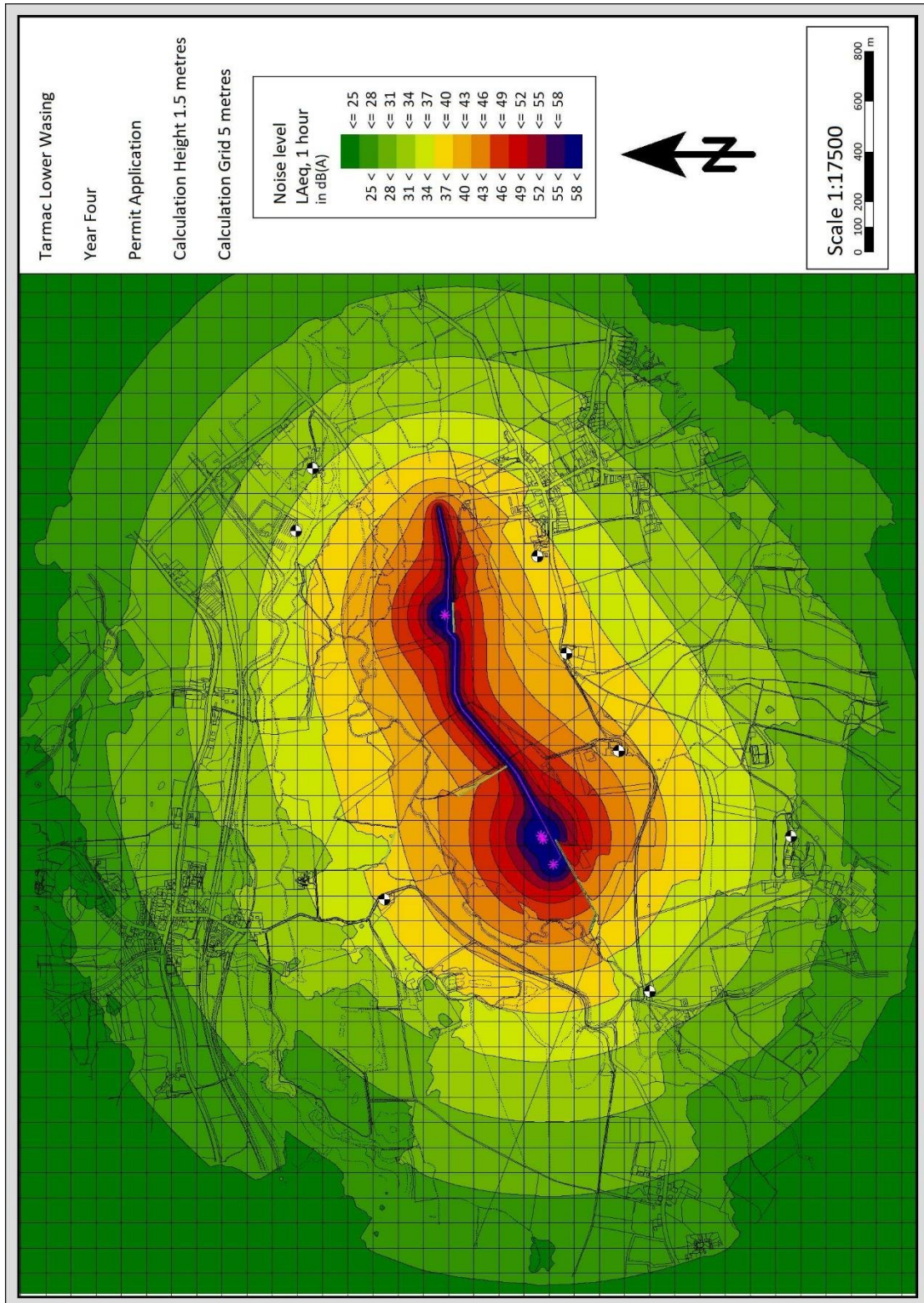
Appendix G (continued)

Daytime Operations Year 3 (07:00-18:00):



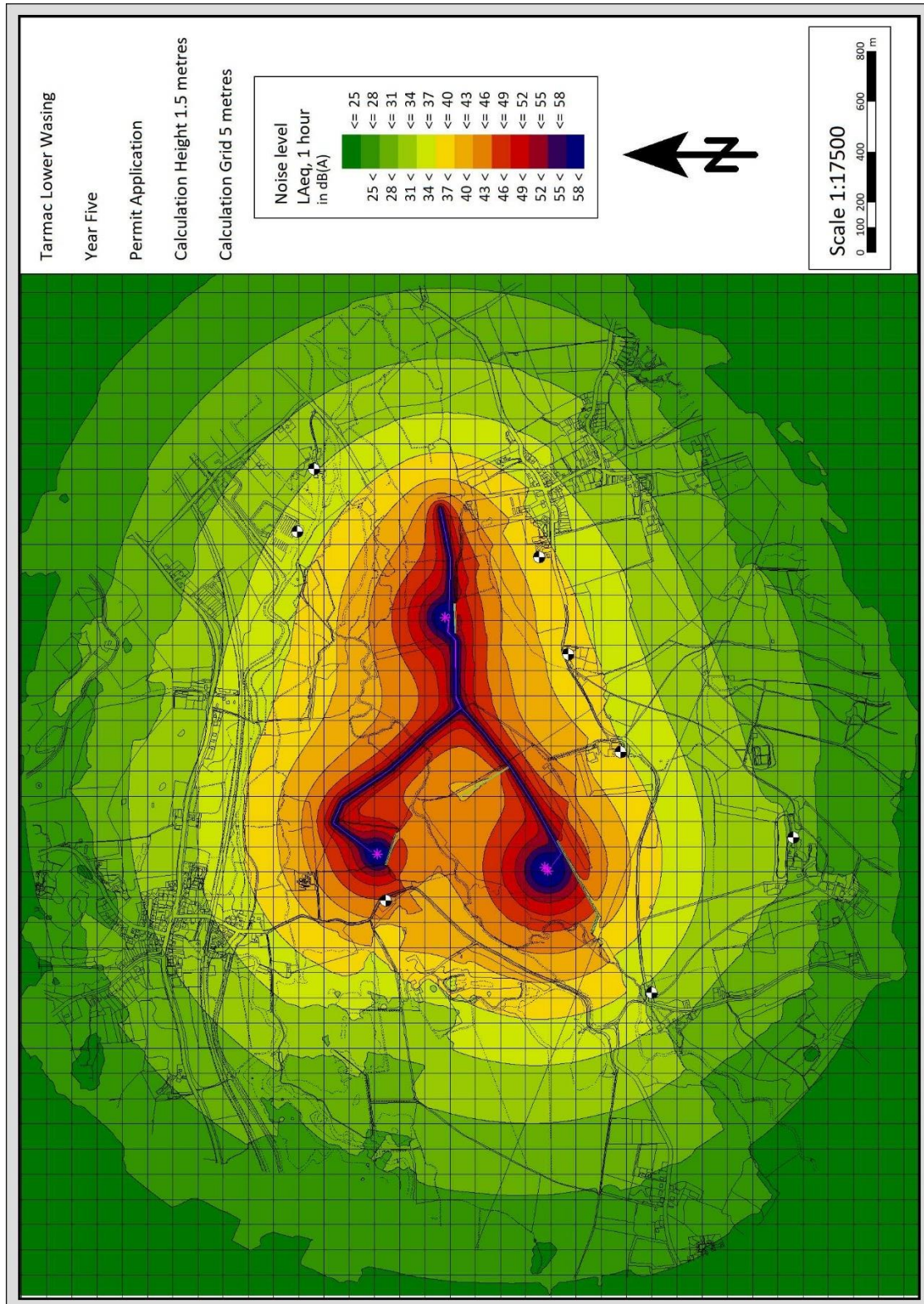
Appendix G (continued)

Daytime Operations Year 4 (07:00-18:00):



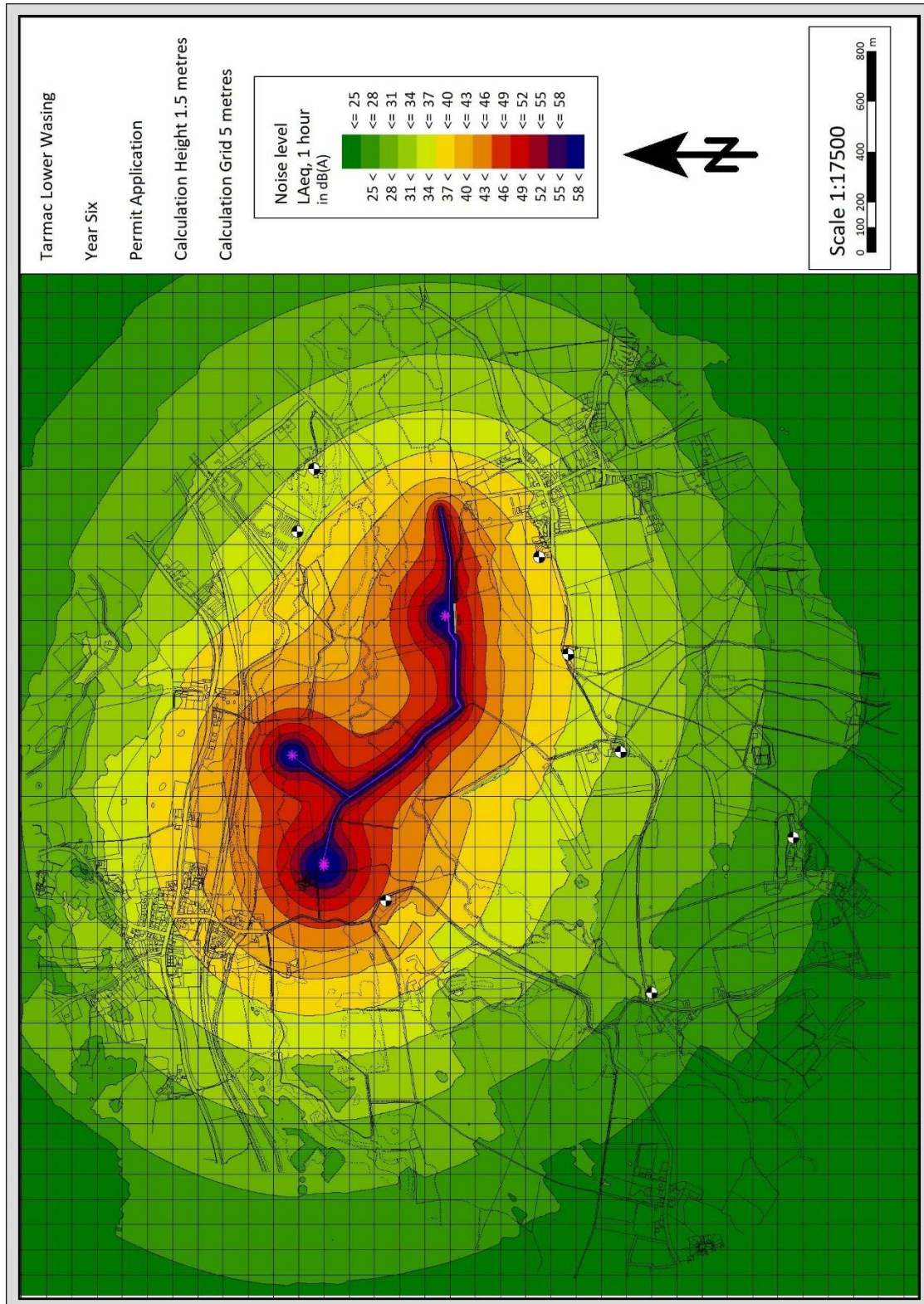
Appendix G (continued)

Daytime Operations Year 5 (07:00-18:00):



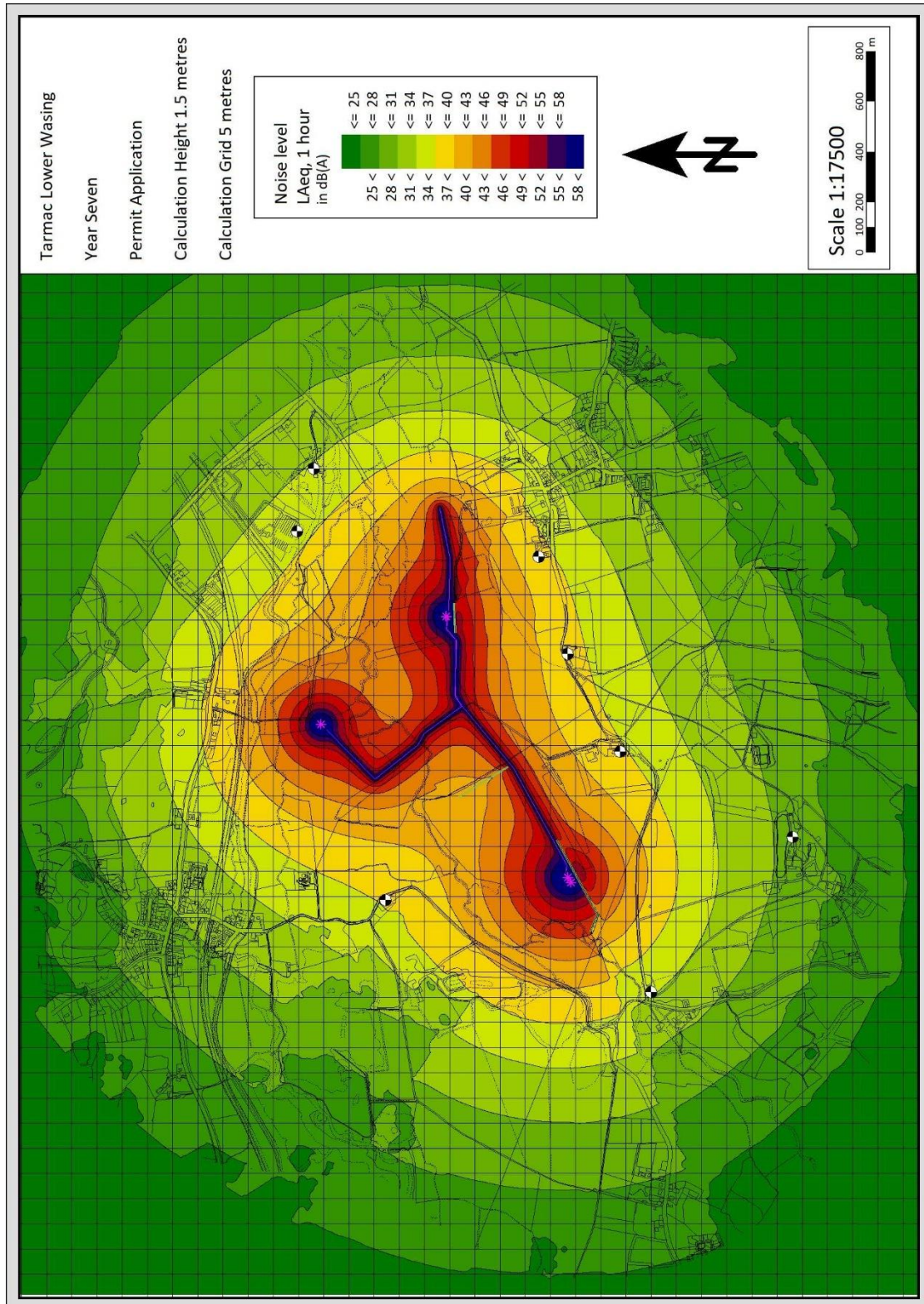
Appendix G (continued)

Daytime Operations Year 6 (07:00-18:00):



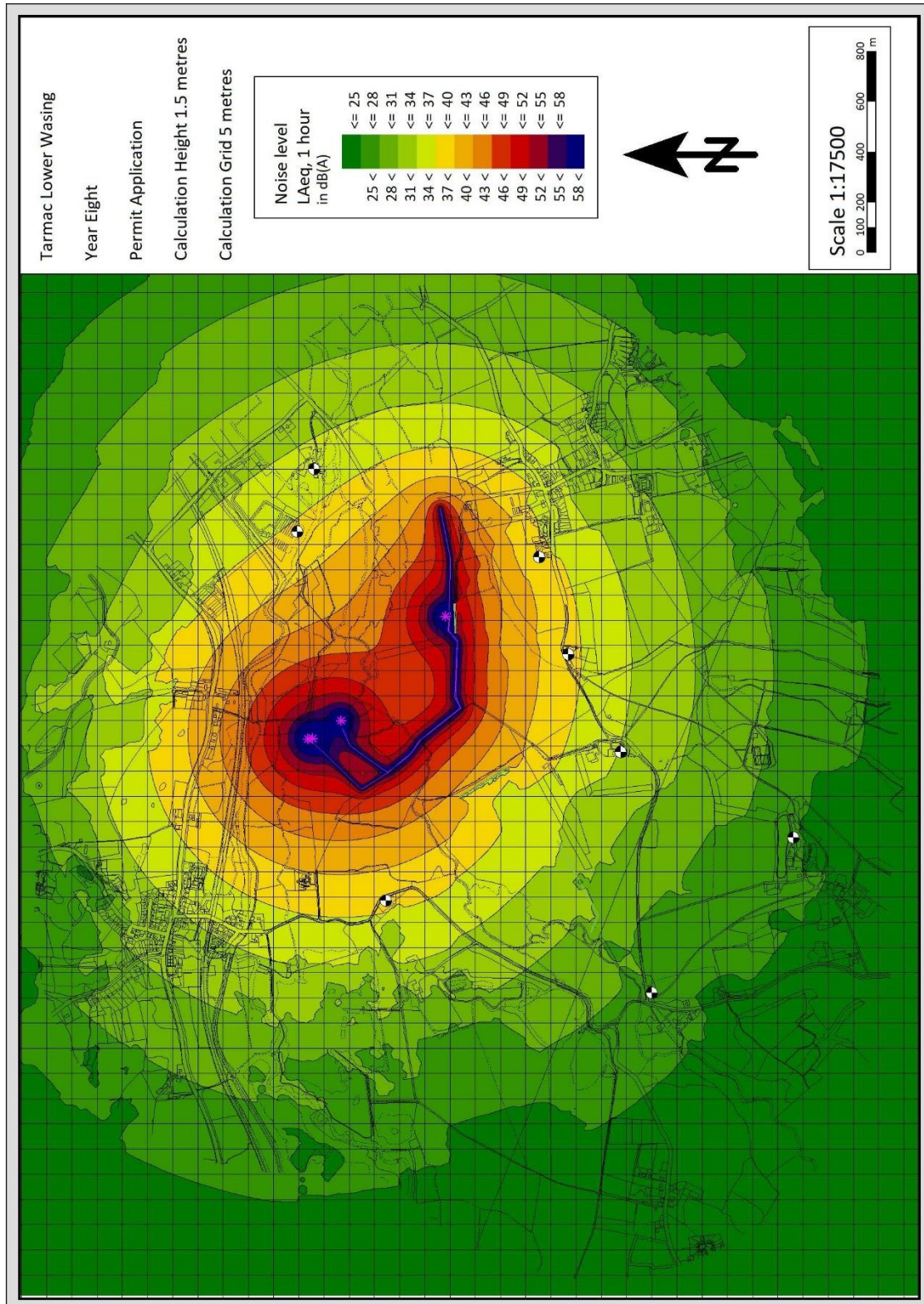
Appendix G (continued)

Daytime Operations Year 7 (07:00-18:00):



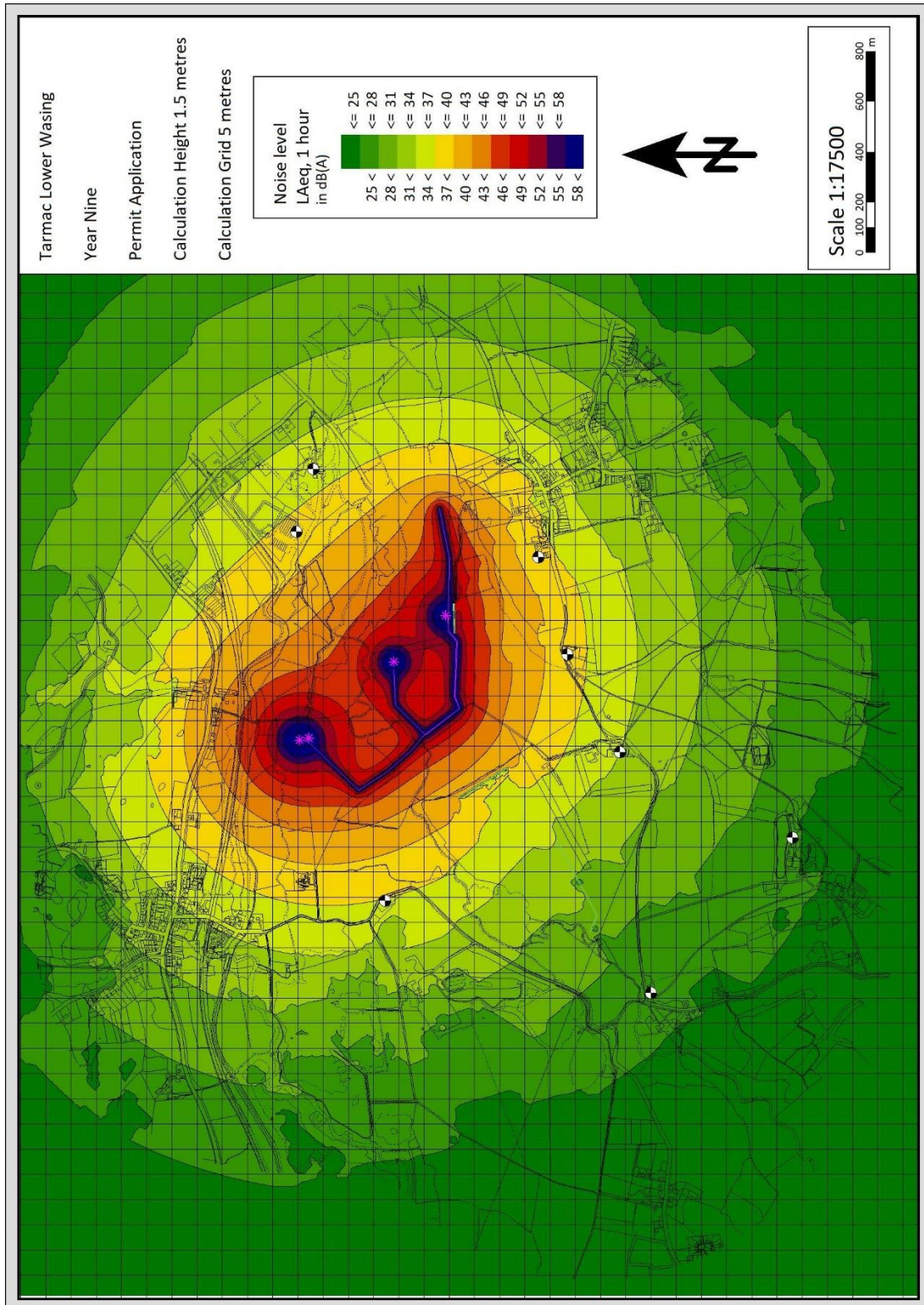
Appendix G (continued)

Daytime Operations Year 8 (07:00-18:00):



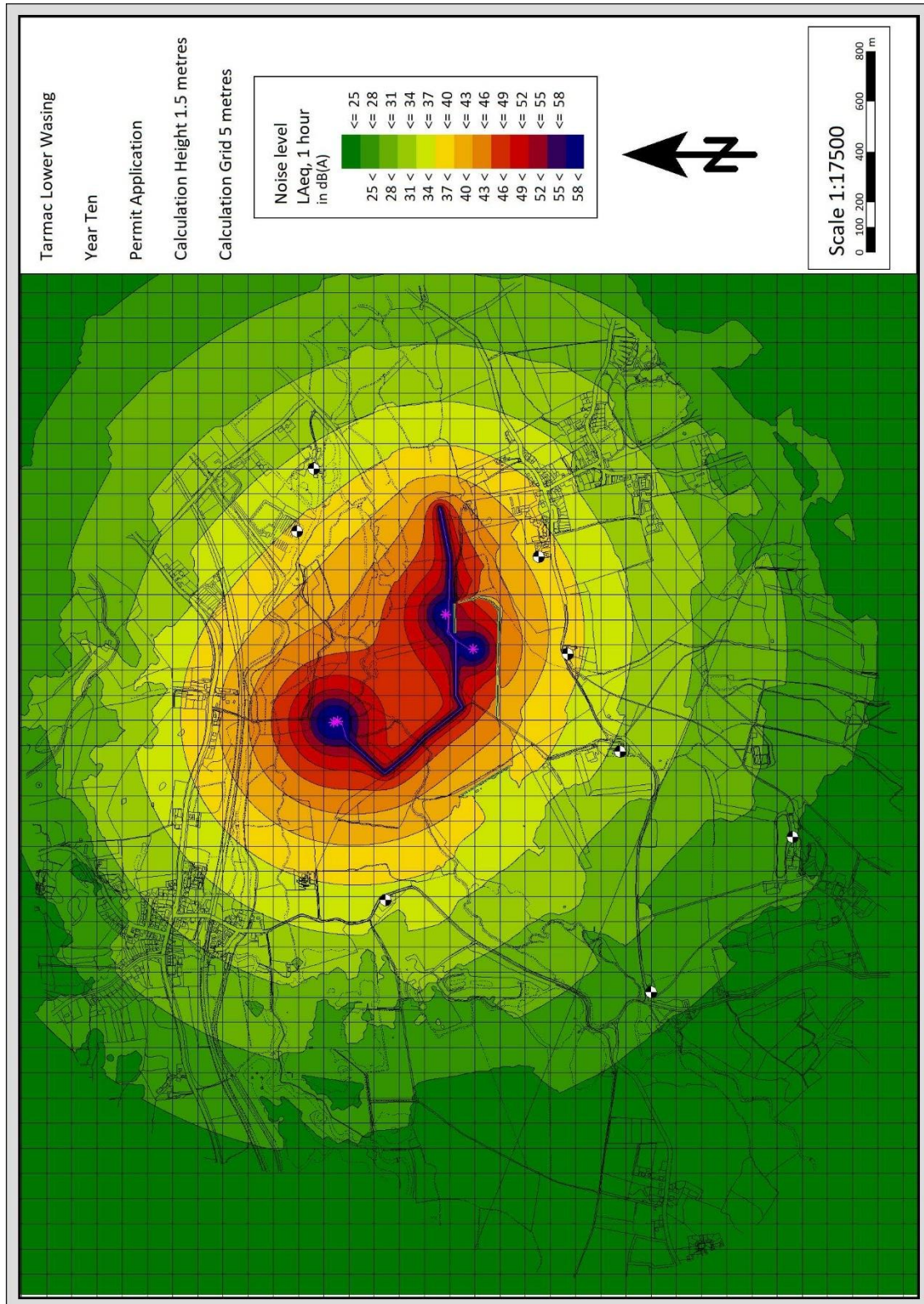
Appendix G (continued)

Daytime Operations Year 9 (07:00-18:00):



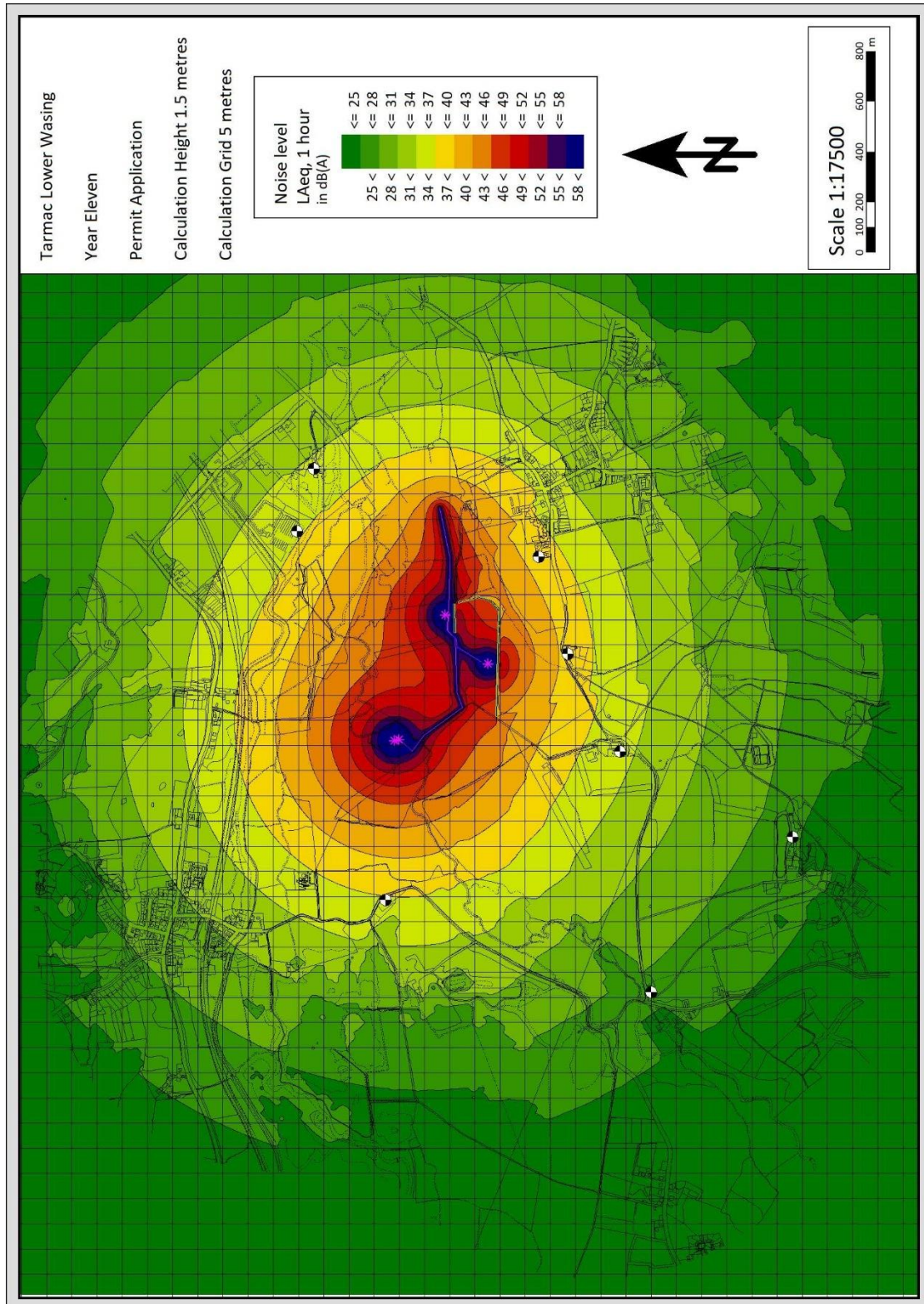
Appendix G (continued)

Daytime Operations Year 10 (07:00-18:00):



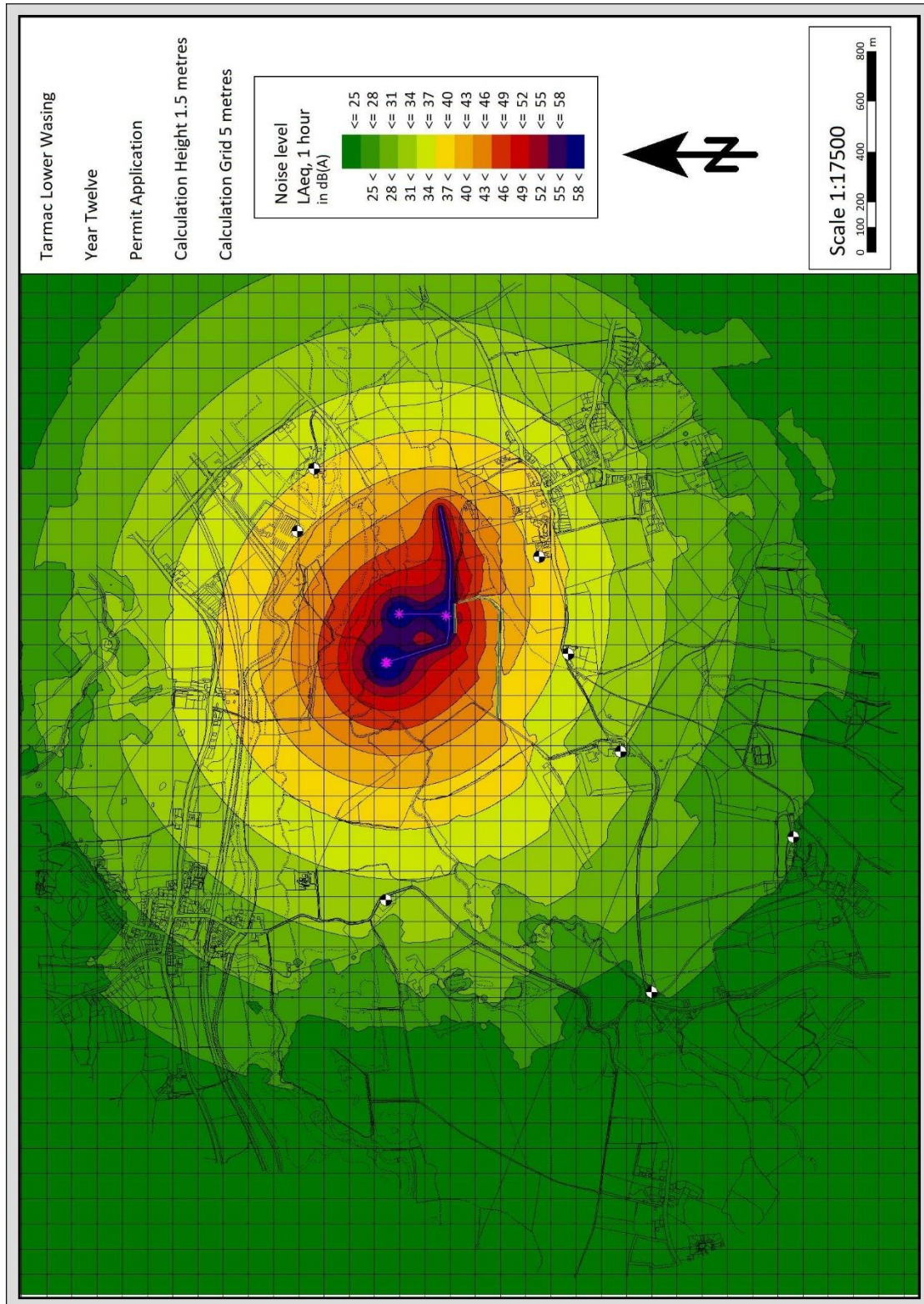
Appendix G (continued)

Daytime Operations Year 11 (07:00-18:00):



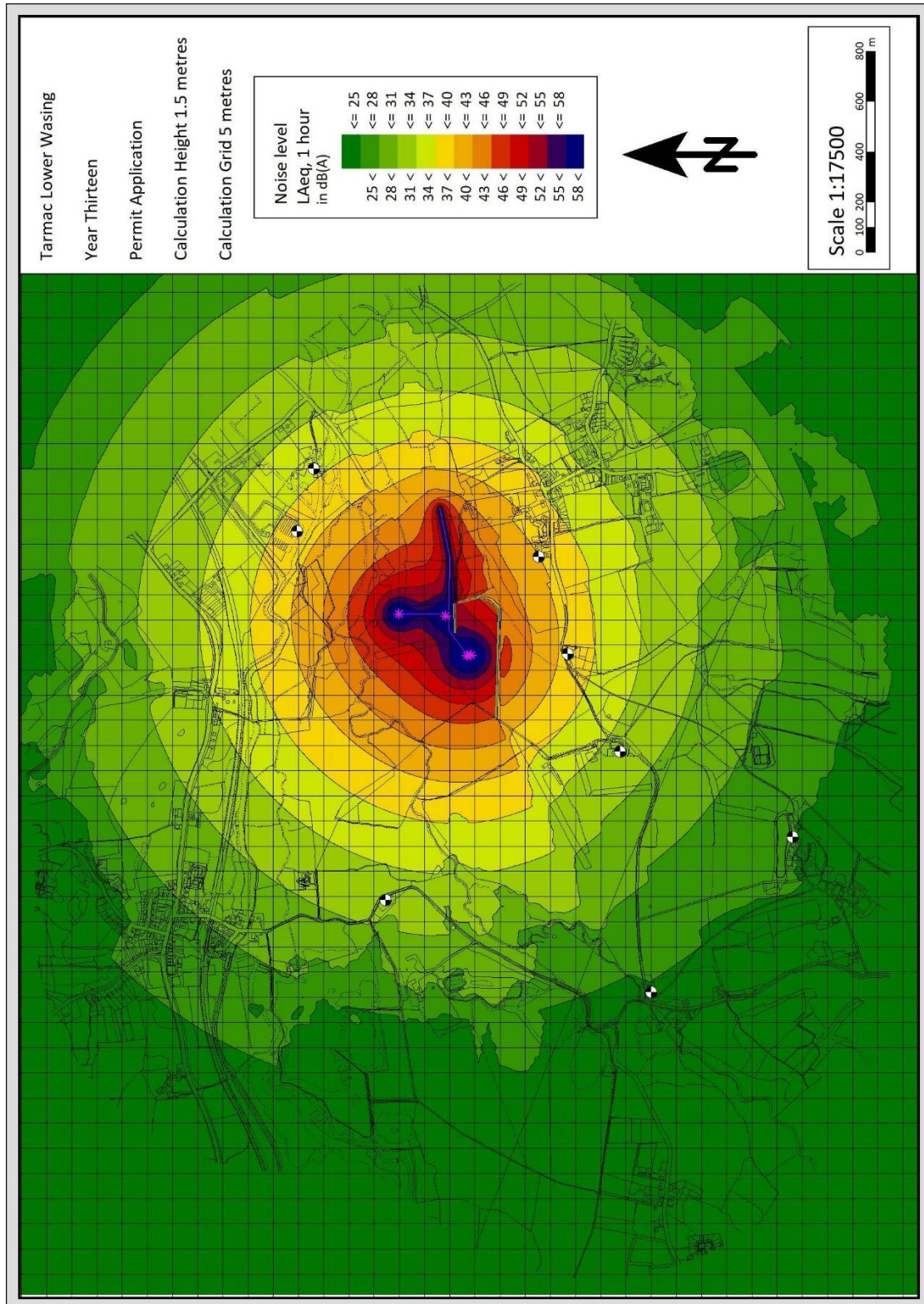
Appendix G (continued)

Daytime Operations Year 12 (07:00-18:00):



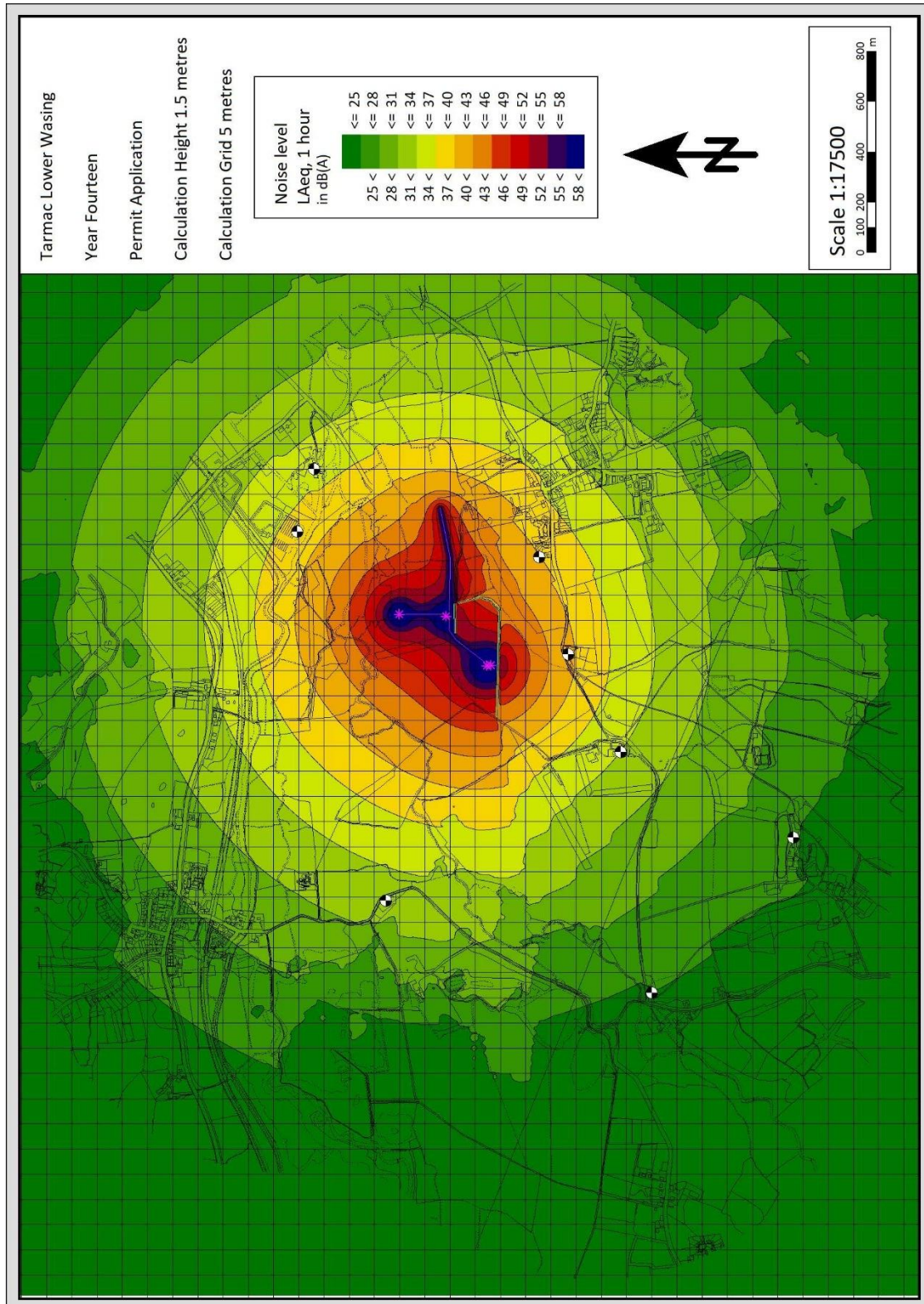
Appendix G (continued)

Daytime Operations Year 13 (07:00-18:00):



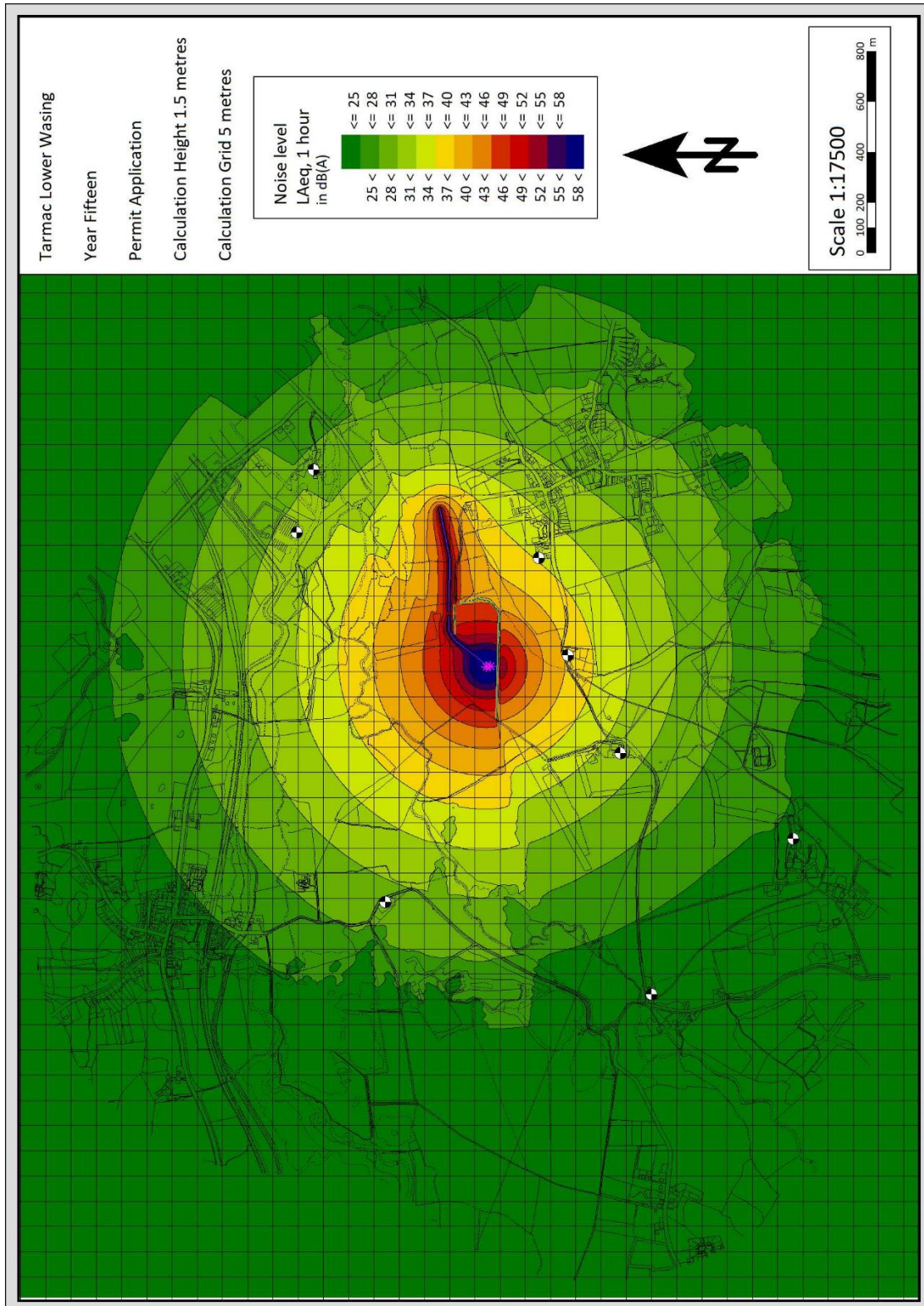
Appendix G (continued)

Daytime Operations Year 14 (07:00-18:00):



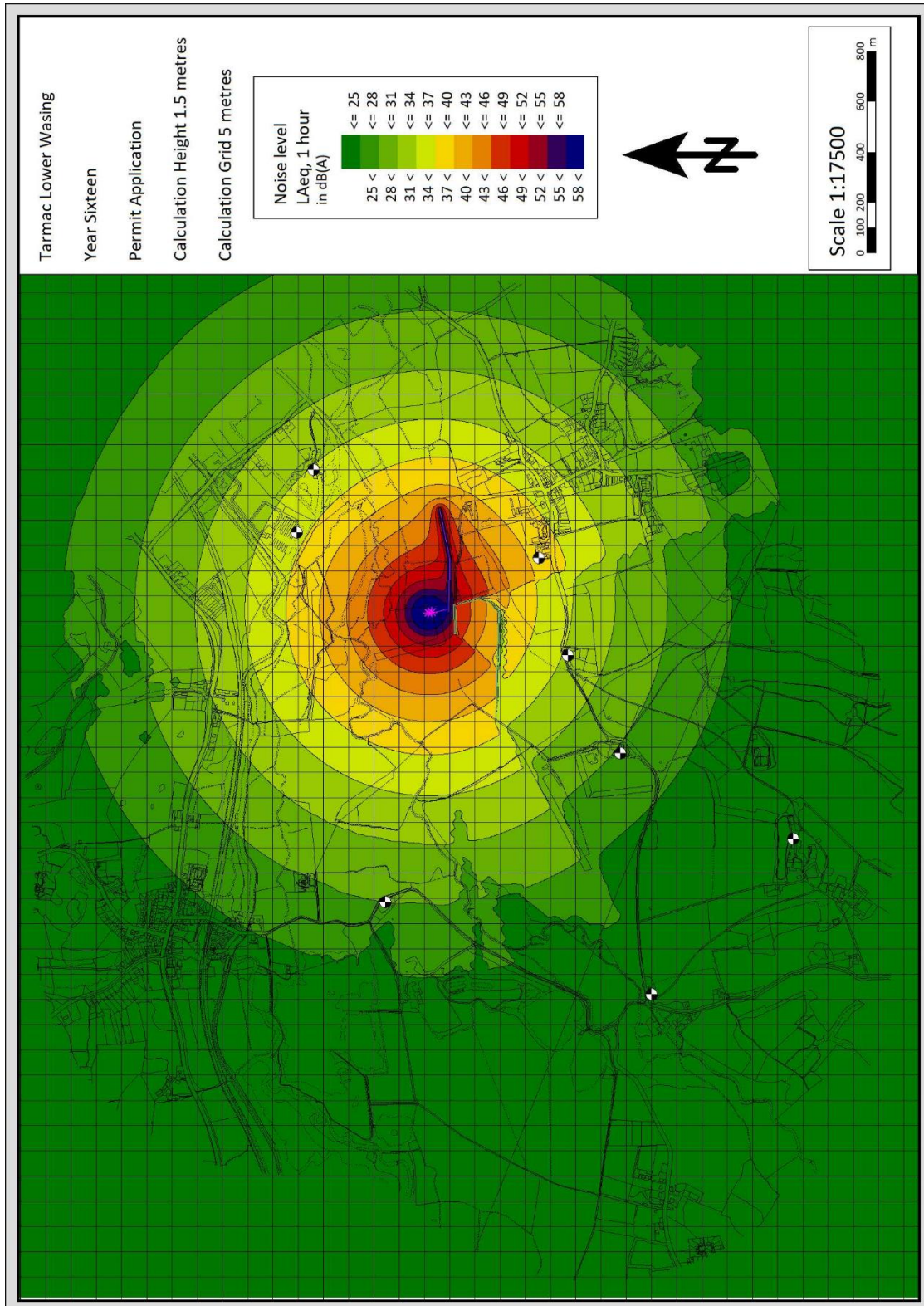
Appendix G (continued)

Daytime Operations Year 15 (07:00-18:00):



Appendix G (continued)

Daytime Operations Year 16 (07:00-18:00):



Appendix H – BS4142 : 2014 + A1: 2019 Assessment

(a) Statement of Qualifications

See details about The Authors on page 2 of this report.

(b) Source Being Assessed

1) *Description of the main sound sources and of the specific sound*

The sources under investigation relate to the proposed importation and placement of inert material by means of HGVs with grading using a dozer, once placed (daytime only). The main noise sources are listed in Appendix G and would give rise to the specific sound levels at the off-site receiver locations.

The mineral extraction and associated dump trucks, loading and HGV movements have also been considered as part of the overall site sound levels.

2) *Hours of operation*

The normal hours of operation are expected to be between 07:00 and 18:00 hours (07:00 to 13:00 on Saturdays) with no operation on Sundays or Bank/Public Holidays.

3) *Mode of operation (e.g. continuous, twice a day, only in hot weather)*

The operations will only take place during the hours stipulated above.

4) *Statement of operational rates of the main sound sources (e.g. maximum load setting, 50% max rate, low load setting)*

The assessment has been based on a “*maximum load setting*” i.e. with the mobile plant operating throughout the assessment period for daytime hours only with the tipping of the imported material being included as taking place for 10% of the assessment period.

The calculated site noise levels are therefore likely to be an overestimate.

HGV movements associated with the infilling operations have been included as 7 one-way movements per hour for normal daytime operations to represent a worst case scenario.

HGV movements on the access road (for both importation of inert infill material and export of raised mineral are included as 12 one-way movements per hour.

5) *Description of premises in which the main sound sources are situated (if applicable).*

The material will be imported via the access road and in the areas shown on the plan presented in Appendix B.

Tipping of the imported material will be direct from the HGVs used for importation and the site will use a dozer for the grading of the placed material.

A plan showing the proposed site phasing including the access road is provided in Appendix B.

Appendix H (continued)

(c) Subjective Impressions

1) *Dominance or audibility of the specific sound*

The specific source is not yet in place, but is expected to be generally inaudible at the nearest dwellings to the site during the normal daytime operating hours apart from short periods at Bottle Cottage and Lower Wasing Farm.

2) *Main sources contributing to the residual sound.*

The noise climate in the area during the surveys undertaken by WBM in December 2024 was affected by distant and some local road traffic, birdsong, wind in the trees, and frequent jet and light aircraft.

(d) The Existing Context and Sensitivity of Receptor

The noise climate during the daytime at the chosen assessment locations is characterised by distant and some local road traffic, birdsong, wind in the trees, and frequent jet and light aircraft as noted as taking place during the daytime. With regard to sensitivity, the receptor locations are residential properties and are therefore considered to be of “High” sensitivity.

The area is also characterised by frequent light air traffic due to the proximity to Brimpton Airfield, as well as frequent distant jet aircraft. Sound levels at Shalford Farm, Lower Wasing Farm, Wasing Lodge and Dolphin Close were controlled by frequent passing road traffic. Road closure signage was noted on the road past Bottle Cottage so there is likely to have been decreased road traffic at this location. Wasing Park was least affected by road traffic, though as an active wedding venue it may at times be a contributor to the noise climate.

(e) Measurement Locations and Justification

Measurement locations, their distance from the specific sound source, the topography of the intervening ground and any reflecting surface other than the ground, including a photograph, or a dimensioned sketch with a north marker. A justification for the choice of measurement locations should also be included.

The measurement locations used for the consideration of the baseline noise data were near to existing residential properties to the site. The data were used to determine the acoustic environment and to measure residual (ambient) and background sound levels in the vicinity of the dwellings.

The topography of the ground between the site and the nearest residential locations (and in the locality in general) has been modelled using LiDAR data to create a Digital Ground Model.

(f) Sound Measuring Systems, Including Calibrator / Pistonphone

1) *Type*

See Appendix D

2) *Manufacturer*

See Appendix D

3) *Serial number*

See Appendix D

4) *Details of the latest verification test including dates*

See Appendix D

Appendix H (continued)

(I) Specific Sound Level

1) *Measured sound level(s)*

The specific sound level for the importation and placement/grading of inert material (i.e. the operation of mobile plant and HGV movements on the access road and within the site) was determined by means of calculation as the plant to be used is not yet on site.

The Sound Power Levels used for the various elements of the operation have been determined from calculation based on sound level data contained within the WBM plant noise database of similar plant items/processes to those proposed.

2) *Residual sound level(s) and method of determination*

The representative residual sound levels (daytime) were determined from the attended sample measurements at Locations 1 to 7. The measurements were undertaken in December 2024.

The residual sound levels were controlled by distant and some local road traffic, birdsong, wind in the trees, and frequent jet and light aircraft.

The representative daytime residual noise levels were as follows:

1. Bottle Cottage:	50 dB $L_{Aeq,15 \text{ min, free field}}$
2. Shalford Farm:	60 dB $L_{Aeq,15 \text{ min, free field}}$
3. Wasing Park:	39 dB $L_{Aeq,15 \text{ min, free field}}$
4. Lower Wasing Farm:	51 dB $L_{Aeq,15 \text{ min, free field}}$
5. Wasing Lodge:	64 dB $L_{Aeq,15 \text{ min, free field}}$
6. Dolphin Close:	51 dB $L_{Aeq,15 \text{ min, free field}}$
7. Frouds Bridge Marina/The Old Mill:	47 dB $L_{Aeq,15 \text{ min, free field}}$

3) *Ambient sound level(s) and method of determination*

The ambient sound levels are the same as the residual sound levels as the operation is not yet taking place. The representative residual and ambient sound levels were determined from the attended sample measurements at Locations 1 to 7. The measurements were undertaken in December 2024.

The representative daytime ambient noise levels were as follows:

1. Bottle Cottage:	50 dB $L_{Aeq,15 \text{ min, free field}}$
2. Shalford Farm:	60 dB $L_{Aeq,15 \text{ min, free field}}$
3. Wasing Park:	39 dB $L_{Aeq,15 \text{ min, free field}}$
4. Lower Wasing Farm:	51 dB $L_{Aeq,15 \text{ min, free field}}$
5. Wasing Lodge:	64 dB $L_{Aeq,15 \text{ min, free field}}$
6. Dolphin Close:	51 dB $L_{Aeq,15 \text{ min, free field}}$
7. Frouds Bridge Marina/The Old Mill:	47 dB $L_{Aeq,15 \text{ min, free field}}$

Appendix H (continued)

For the daytime sample measurements at the attended survey locations the following “Comments” were made:

- | | |
|---------------------------------------|---|
| 1. Bottle Cottage: | Distant road traffic, few local cars, aircraft, distant farming activity, birdsong, breeze in trees; |
| 2. Shalford Farm: | Distant and local road traffic, local activity, aircraft, birdsong, breeze in trees; |
| 3. Wasing Park: | Distant road traffic, occasional vehicles in car park, aircraft, birdsong, breeze in trees, some site maintenance activity; |
| 4. Lower Wasing Farm: | Distant and local road traffic, some farming activity, running water, aircraft, birdsong, breeze in trees; |
| 5. Wasing Lodge: | Distant and frequent local road traffic, aircraft, running water, birdsong, breeze in trees; |
| 6. Dolphin Close: | Distant and frequent local road traffic, aircraft, children playing, birdsong, breeze in trees; |
| 7. Frouds Bridge Marina/The Old Mill: | Distant road traffic, local vehicle movements, boat engines, maintenance activity at marina, distant trains, leisure activity at marina, aircraft, birdsong, breeze in trees. |

4) *Specific sound level(s) and method of determination*

The highest specific sound levels for the proposed operations at the eight assessment locations have been determined from calculation (see Sections 6 and 7 of this report) as follows:

Daytime (07:00 to 18:00):

- 46 dB $L_{Aeq,1 \text{ hour, free field}}$ for Bottle Cottage;
- 35 dB $L_{Aeq,1 \text{ hour, free field}}$ for Shalford Farm;
- 32 dB $L_{Aeq,1 \text{ hour, free field}}$ for Wasing Park;
- 42 dB $L_{Aeq,1 \text{ hour, free field}}$ for Lower Wasing Farm;
- 41 dB $L_{Aeq,1 \text{ hour, free field}}$ for Wasing Lodge;
- 40 dB $L_{Aeq,1 \text{ hour, free field}}$ for Dolphin Close;
- 40 dB $L_{Aeq,1 \text{ hour, free field}}$ for Frouds Bridge Marina; and
- 37 dB $L_{Aeq,1 \text{ hour, free field}}$ for The Old Mill.

5) *Justification of methods*

Calculation was used as the proposed operation is not yet taking place and therefore cannot be measured at the nearest dwellings.

6) *Details of any corrections applied*

See the Potential Impact of Uncertainty section (q) at the end of this appendix.

Appendix I (continued)

(m) Background Sound Level(s)

Background sound level(s) and measurement time interval(s) and, in the case of measurements taken at an equivalent location, the reasons for presuming it to be equivalent.

The data from the attended sample measurements in December 2024 at the seven residential locations gave a range of daytime background sound levels of:

1. Bottle Cottage:	37 to 39 dB L _{A90,15 min, free field} (*)
2. Shalford Farm:	34 to 46 dB L _{A90,15 min, free field} ;
3. Wasing Park:	32 to 36 dB L _{A90,15 min, free field} ;
4. Lower Wasing Farm:	33 to 40 dB L _{A90,15 min, free field} ;
5. Wasing Lodge:	38 to 41 dB L _{A90,15 min, free field} ;
6. Dolphin Close:	33 to 39 dB L _{A90,15 min, free field} ;
7. Frouds Bridge Marina/The Old Mill:	39 to 42 dB L _{A90,15 min, free field} .

(*) Data from the ANV November 2011 report and from other comparable locations used by WBM in 2024 was used for Bottle Cottage due to the road closure in December 2024

The data from the attended sample measurements in December 2024 at the seven residential locations gave representative daytime background sound levels of:

1. Bottle Cottage:	38 dB L _{A90,15 min, free field} (*)
2. Shalford Farm:	38 dB L _{A90,15 min, free field} ;
3. Wasing Park:	35 dB L _{A90,15 min, free field} ;
4. Lower Wasing Farm:	37 dB L _{A90,15 min, free field} ;
5. Wasing Park:	39 dB L _{A90,15 min, free field} ;
6. Dolphin Close:	36 dB L _{A90,15 min, free field} ;
7. Frouds Bridge Marina/The Old Mill:	41 dB L _{A90,15 min, free field} .

(*) Data from the ANV November 2011 report and from other comparable locations used by WBM in 2024 was used for Bottle Cottage due to the road closure in December 2024

Appendix I (continued)

(n) Rating Level(s)

1) *Specific sound level(s)*

The highest specific sound level(s) stated earlier are:

Daytime (07:00 to 18:00):

- 46 dB $L_{Aeq,1 \text{ hour, free field}}$ for Bottle Cottage;
- 35 dB $L_{Aeq,1 \text{ hour, free field}}$ for Shalford Farm;
- 32 dB $L_{Aeq,1 \text{ hour, free field}}$ for Wasing Park;
- 42 dB $L_{Aeq,1 \text{ hour, free field}}$ for Lower Wasing Farm;
- 41 dB $L_{Aeq,1 \text{ hour, free field}}$ for Wasing Lodge;
- 40 dB $L_{Aeq,1 \text{ hour, free field}}$ for Dolphin Close;
- 40 dB $L_{Aeq,1 \text{ hour, free field}}$ for Frouds Bridge Marina; and
- 37 dB $L_{Aeq,1 \text{ hour, free field}}$ for The Old Mill.

2) *Any acoustic features of the specific sound*

The potential adjustments for the different features and assessment methods are summarised in the table in Section 3 of this report.

Considering the existing ambient and background sound environment in the area during the daytime operating hours, the normal character of the sound generated from mineral extraction and infilling operations and the level of the calculated site sound levels at the dwellings, one would not expect any acoustic features of the noise to be readily distinguishable at the dwellings and an acoustic feature correction would not be appropriate. The Specific Sound Level used is therefore the same as the Rating Level for normal daytime operations.

3) *Rating level(s)*

The rating levels for daytime are therefore 0 dB above the specific noise levels stated above resulting in the following rating levels determined in accordance with BS 4142:2014+A1:2019:

- 46 dB $L_{Ar,Tr}$ for Bottle Cottage;
- 35 dB $L_{Ar,Tr}$ for Shalford Farm;
- 32 dB $L_{Ar,Tr}$ for Wasing Park;
- 42 dB $L_{Ar,Tr}$ for Lower Wasing Farm;
- 41 dB $L_{Ar,Tr}$ for Wasing Lodge;
- 40 dB $L_{Ar,Tr}$ for Dolphin Close;
- 40 dB $L_{Ar,Tr}$ for Frouds Bridge Marina; and
- 37 dB $L_{Ar,Tr}$ for The Old Mill.

Appendix H (continued)

(o) Excess of the rating level(s) over background sound level(s)

Excess of the rating level(s) over the measured background sound level(s) and the initial estimate of the impacts

The rating levels, the background sound levels and the excess of the rating levels over the representative background sound levels for the normal daytime operating hours of the site are presented in the following table:

Receiver Location Daytime (07:00-18:00)	Calculated Site Noise Level dB $L_{Aeq,1\text{ hour}}$	Representative Background Sound Level dB $L_{A90,15\text{ min}}$	Difference dB(A)
1. Bottle Cottage	46	38	+8
2. Shalford Farm	35	38	-3
3. Wasing Park	32	35	-3
4. Lower Wasing Farm	42	37	+5
5. Wasing Lodge	41	39	+2
6. Dolphin Close	40	36	+4
7. Frouds Bridge Marina	40	41	-1
7a. The Old Mill	37	41	-4

When the rating level is above the background sound level, a difference of around +5 dB is likely to indicate an adverse impact and a difference of around +10 dB or more is likely to indicate a significant adverse impact, depending on the context.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

(p) Conclusions of the assessment after taking context into account

Location 1. Bottle Cottage:

The calculations demonstrate a daytime rating level of 46 dB $L_{Ar,Tr}$ at Bottle Cottage which is 8 dB(A) above the representative daytime background sound level of 38 dB $L_{A90,T}$. The representative daytime residual sound level at Bottle Cottage is 50 dB $L_{Aeq,T}$.

Taking into account the context relating to existing residual/ambient sound levels in the vicinity of the property and the short term duration of the operations that are likely to generate site sound levels above the representative background sound level, the conclusion is that the assessment indicates that for the majority of the development there is no adverse impact at Bottle Cottage during the proposed daytime operations on the site. For a brief period when the works are in the closest area of the site to the property at the highest level of working, the operations will be above the level indicating an adverse impact, but below the level indicating a significant adverse impact, i.e. 'causing pollution'.

The daytime soundscape for Bottle Cottage will continue to be affected by distant and local road traffic, aircraft, wind in the trees, local activity and birdsong.

Appendix H (continued)

It is expected that the proposed operations on site would be inaudible at this location during the daytime apart from during periods when the operations are at the closest area to the property at which time, one would expect the site operations to be audible.

Location 2. Shalford Farm:

The calculations demonstrate a daytime rating level of 35 dB $L_{Ar,Tr}$ at Shalford Farm which is 3 dB(A) below the representative daytime background sound level of 38 dB $L_{A90,T}$. The representative daytime residual sound level at Shalford Farm is 60 dB $L_{Aeq,T}$.

The conclusion is that the assessment indicates no adverse impact at Shalford Farm during the proposed daytime operations on the site.

The daytime soundscape for Shalford Farm will continue to be affected by distant and local road traffic, aircraft, wind in the trees, local activity and birdsong.

It is expected that the proposed operations on site would be inaudible at this location during the daytime.

Location 3. Wasing Park:

The calculations demonstrate a daytime rating level of 32 dB $L_{Ar,Tr}$ at Wasing Park which is 3dB(A) below the representative daytime background sound level of 35 dB $L_{A90,T}$. The representative daytime residual sound level at Wasing Park is 39 dB $L_{Aeq,T}$.

The conclusion is that the assessment indicates no adverse impact at Wasing Park during the proposed daytime operations on the site.

The daytime soundscape for Wasing Park will continue to be affected by distant road traffic, aircraft, wind in the trees, local activity and birdsong.

It is expected that the proposed operations on site would be inaudible at this location during the daytime.

Location 4. Lower Wasing Farm:

The calculations demonstrate a daytime rating level of 42 dB $L_{Ar,Tr}$ at Lower Wasing Farm which is 5 dB(A) above the representative daytime background sound level of 37 dB $L_{A90,T}$. The representative daytime residual sound level at Lower Wasing is 51 dB $L_{Aeq,T}$.

Taking into account the context of the existing residual/ambient sound levels, the calculated difference between rating level and background sound level being just at the lowest level indicating an adverse impact and the ownership of the property, the conclusion is that the assessment indicates no adverse impact at Lower Wasing Farm during the proposed daytime operations on the site.

The daytime soundscape for Lower Wasing Farm will continue to be affected by distant and local road traffic, aircraft, wind in the trees, local farming activity and birdsong.

It is expected that the proposed operations on site would be audible at this location during the daytime when operations are taking place at the nearest areas to the property.

Location 5. Wasing Lodge:

The calculations demonstrate a daytime rating level of 41 dB $L_{Ar,Tr}$ at Wasing Lodge which is 2 dB(A) above the representative daytime background sound level of 39 dB $L_{A90,T}$. The representative daytime residual sound level at Wasing Lodge is 64 dB $L_{Aeq,T}$.

Appendix H (continued)

The conclusion is that the assessment indicates no adverse impact at Wasing Lodge during the proposed daytime operations on the site.

The daytime soundscape for Wasing Lodge will continue to be affected by distant and local road traffic, aircraft, wind in the trees, local activity and birdsong.

It is expected that the proposed operations on site would be possibly audible during lulls in ambient sound levels at this location during the daytime.

Location 6. Dolphin Close:

The calculations demonstrate a daytime rating level of 40 dB $L_{Ar,Tr}$ at Dolphin Close which is 4dB(A) above the representative daytime background sound level of 36 dB $L_{A90,T}$. The representative daytime residual sound level at Dolphin Close is 51 dB $L_{Aeq,T}$.

The conclusion is that the assessment indicates no adverse impact at Dolphin Close during the proposed daytime operations on the site.

The daytime soundscape for Dolphin Close will continue to be affected by distant and local road traffic, aircraft, wind in the trees, local activity and birdsong.

It is expected that the proposed operations on site would be possibly audible during lulls in ambient sound levels at this location during the daytime.

Location 7. Frouds Bridge Marina:

The calculations demonstrate a daytime rating level of 40 dB $L_{Ar,Tr}$ at Frouds Bridge Marina which is 1 dB(A) below the representative daytime background sound level of 41 dB $L_{A90,T}$. The representative daytime residual sound level at Frouds Bridge Marina is 47 dB $L_{Aeq,T}$.

The conclusion is that the assessment indicates no adverse impact at Frouds Bridge Marina during the proposed daytime operations on the site.

The daytime soundscape for Frouds Bridge Marina will continue to be affected by distant and occasional local road traffic, aircraft, wind in the trees, local activity at the marina and birdsong.

It is expected that the proposed operations on site would be generally inaudible at this location during the daytime.

Location 7a. The Old Mill:

The calculations demonstrate a daytime rating level of 37 dB $L_{Ar,Tr}$ at The Old Mill which is 4 dB(A) below the representative daytime background sound level of 41 dB $L_{A90,T}$. The representative daytime residual sound level at The Old Mill is 47 dB $L_{Aeq,T}$.

The conclusion is that the assessment indicates no adverse impact at The Old Mill during the proposed daytime operations on the site.

The daytime soundscape for The Old Mill will continue to be affected by distant and local road traffic, aircraft, wind in the trees, local activity and birdsong.

It is expected that the proposed operations on site would be inaudible at this location during the daytime.

Appendix H (continued)

(q) The potential impact of uncertainty

Section 10 of BS 4142:2014+A1:2019 states: “*Consider the level of uncertainty in the data and associated calculations. Where the level of uncertainty could affect the conclusion, take reasonably practicable steps to reduce the level of uncertainty. Report the level and potential effects of uncertainty.*”

One of the largest levels of uncertainty is whether the proposed activity gives rise to the calculated noise level at the receiver locations considered.

The measurements and assessment have been based on a realistic worst case scenario during the proposed daytime operating periods.

The calculations and assessment have been based on a “*maximum load setting*” i.e. with the mobile plant operating continuously and simultaneously for the entire assessment period (with the tipping of imported inert material included as taking place for a generous 10% of the assessment period) and is therefore likely to be an overestimate.

The modelled scenario is very much a worst case for when all plant is operating.

The model allows for a worst case scenario to provide a more robust assessment, but such a scenario is unlikely to occur as modelled in practice.

HGV movements associated with the site have been included as being 12 per hour during the day (of which 7 per hour continue on internal haul routes delivering imported inert infill material) which represents a predicted worst case scenario.

The Sound Power Level used is based on the maximum permitted noise output of HGVs rather than measured levels of HGV movements within a site (which is likely to be 10-11 dB lower) as this represents a worst case for a more robust assessment.

As stated above, for the majority of the time, the scenario as modelled will not occur because there will be some variability in the site operations and all mobile plant may not operate simultaneously for the proportion of the time used in the model.

Another element of uncertainty is the representative background sound level at Bottle Cottage which is based on historic data acquired by ANV as part of the planning application process due to the road closure in December 2024 at the time of the baseline surveys. However, the levels presented in the ANV report are similar to those at the other locations used by WBM in December 2024 which were not significantly affected by the road closure.

The site noise calculations do not include any allowance for air absorption but this is unlikely to have any significant outcome on the calculated sites noise levels and conclusions on impact.

The operation must be considered in the context of the existing ambient noise levels at the assessment locations which is primarily controlled by local road and air traffic during the proposed daytime operating hours.