



PICKFORD CONTRACTING LTD

Middlecliffe Quarry, Penistone

Noise Assessment

May 2020

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PICKFORD CONTRACTING LTD

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Noise Assessment

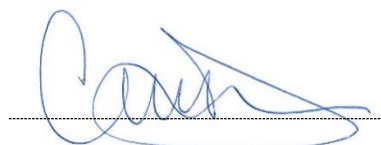
April 2020

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Appendix A Noise Monitoring Results

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SH12283/011A	Noise Monitoring Locations	1:3,500
SH12283/002A	Phase 1 – Worst Case Temporary operations – ESR 1	1:2500
SH12283/003A	Phase 2 – Long Term Operations in the Northern Area	1:2500
SH12283/004A	Phase 3 - Long Term Operations in the Southern Area	1:2500
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1 INTRODUCTION

- 1.1.1 Wardell Armstrong LLP (WA) was commissioned by Pickford Contracting Ltd to undertake a noise assessment for a proposed restoration of Middlecliffe Quarry, Penistone.
- 1.1.2 Middlecliffe Quarry lies to the north east of the A616 and Middlecliffe Drive, Crow Edge. Approximately 60m to the east of the existing void of the quarry lies Middlecliffe farmhouse.
- 1.1.3 This noise assessment has been prepared to accompany the planning application for the restoration of Middlecliffe Quarry. The report assesses the results of baseline noise monitoring and noise modelling carried out in accordance with current guidance and includes noise mitigation where appropriate.
- 1.1.4 The proposed restoration operations will be undertaken during the daytime period between 07:30 and 19:00. The operations will be relatively short term as the quarry will not be used for mineral extraction and will be restored only with inert material. It is possible that the restoration works might be undertaken in less than eight weeks, however this depends on the availability of inert materials, and the process could take longer.

1.2 Planning policy and guidance

Noise standards for normal operations

- 1.2.1 The Planning Practice Guidance suggests that mineral planning authorities should aim to establish a noise limit through a planning condition. The noise level limit should be set so as to not exceed the background noise level ($L_{A90,1 \text{ hour}}$) by more than 10dB(A) between 0700 and 1900 hours. However, where this is difficult without imposing unreasonable burdens on the operator the limit set should be as near that level as practicable.
- 1.2.2 In any event, the total noise from the operations should not exceed 55dB $L_{Aeq, 1 \text{ hour}}$ free field, at the existing sensitive receptors.
- 1.2.3 Where the site noise has a tonal or impulsive characteristic, for example, from a reversing alarm, it may be appropriate to set a specific limit which is independent of the background noise limit (e.g. L_{Amax} in a specific octave or third octave frequency band).

- 1.2.4 Care should be taken, however, to avoid the noise limits being taken as absolute fixed thresholds. A particular wind direction, or temperature inversion may cause the noise at some receptors to increase above any noise level limits for a day, or a few hours. Any noise limits should be considered over a broader time period, weeks or months for example.

Noise standards for noisy short-term activities

- 1.2.5 Some site activities, such as soil stripping, construction and removal of baffle mounds etc, may cause a short-term increase in the noise at existing sensitive receptors.
- 1.2.6 An increase in the daytime noise limit of up to 70 dB $L_{Aeq, 1hour}$ for periods of up to 8 weeks in a year should be considered to allow for essential site preparation and restoration works where it is clear that the works will bring longer term benefits.
- 1.2.7 Where works will continue for longer than 8 weeks, then a lower noise limit should be considered. In addition, in exceptional cases, a higher noise limit, above 70dB $L_{Aeq, 1hour}$ may be appropriate for a very short time period where there is no viable alternative.

2 BASELINE CONDITIONS

2.1 Existing sensitive receptors (ESRs)

- 2.1.1 The ESRs nearest to the proposed quarry were identified through a desktop study of the surrounding land using available maps and aerial photography. The existing noise sensitive receptors identified in Table 1, and shown on Drawing SH12283-011A, are those receptors most likely to be affected by noise from each phase of the proposed quarry. The locations chosen as existing sensitive receptors are those likely to experience the greatest impact due to noise emissions from the operations.

Table 1: Noise Sensitive Receptors				
Receptor	Representative Monitoring Location	Grid Co-ordinates		Bearing from Site
		Easting	Northing	
ESR 1 – Middlecliffe Farm	ML1	419733	404146	East
ESR 2 – Middlecliffe Drive	ML2	418870	404211	South West

Noise Survey

- 2.1.2 On the 17th and 22nd of January 2020, Wardell Armstrong LLP carried out a noise survey to measure ambient and background noise levels at locations representative of the existing noise sensitive receptors. Attended noise monitoring was carried out between 1400 and 1606 hours on the 17th and between 1038 and 1238 hours on the 22nd of January.

2.1.3 Noise measurements were carried out at two monitoring locations which are considered to be representative of the ESRs. The monitoring locations are shown on Drawing SH12283-011A. The noise monitoring survey are detailed below;

- Monitoring Location ML1: Access to Middlecliffe Farm was not possible during the survey therefore a representative location was chosen approximately 170m the south of the farm on the quarry access road. This location was considered to be representative of the noise level at Middlecliffe Farm as both locations are a considerable distance from any significant noise sources.
- Monitoring Location ML2: A measurement was undertaken approximately 10m from the nearside carriageway of the A616. This location was chosen to be representative of the existing residential dwellings on Fox Holes Grove and Middlecliffe Drive.

2.1.4 Noise monitoring was undertaken over 2-hour periods during the daytime to establish the representative background noise level during the proposed operational hours of the quarry.

2.1.5 The noise measurements were made using a Class 1, integrated sound level meter. The meter was mounted vertically on a tripod 1.5m above the ground and more than 3.5 metres from any other reflecting surfaces.

2.1.6 Weather conditions on the 17th of January were as follows:

- Wind speeds were measured between 4 m/s and 5 m/s
- No rain occurred during the measurements
- 80% cloud cover
- Temperatures ranged between 2°C and 7 °C

2.1.7 Weather conditions on the 22nd of January were as follows:

- Wind speeds were approximately 1 m/s
- No rain occurred during the measurements
- Temperatures ranged between 2°C and 3°C

2.1.8 The sound level meter was calibrated to a reference level of 94dB at 1kHz both before, and on completion of, the noise survey. No drift in calibration greater than 0.5dB was evident during the survey.

2.1.9 A-weighted¹ L_{eq}^2 and L_{90}^3 noise levels have been measured to comply with the requirements of the Planning Practice Guidance.

2.2 Existing Measured Noise Levels

2.2.1 Two 2-hour measurements were undertaken at each of the monitoring locations during the weekday. The background noise level is not necessarily the mean or lowest measured L_{90} , therefore the results have been plotted onto a graph, from this a representative L_{A90} has been. The results for each of the monitoring locations are presented in Table 2 and Table 3. The noise monitoring results are provided in full in Appendix A.

Table 2: Weekday Daytime Noise Levels (Figures in dB (A))		
Monitoring Location (ML)	Ambient Noise Level L_{eq}	Background Noise Level L_{90}
ESR 1 - Middlecliffe Farm	49	43
ESR 2 – Middlecliffe Drive	59	39

2.3 Setting of noise limits

2.3.1 Planning Practice Guidance states that a noise level limit should be set which does not exceed the background noise level limit by more than 10dB(A). In addition, the Planning Practice Guidance also suggests a site noise limit at existing sensitive receptors of 55dB $L_{Aeq\ 1\ hour}$ for standard operations and 70 dB $L_{Aeq\ 1\ hour}$ for temporary operations.

2.3.2 Table 3 set out the noise limits based on the noise monitoring carried out for this assessment, in February 2017.

Table 3: Weekday Daytime Noise Limits (figures in dB(A))			
Existing Sensitive Receptor	Measured Background Noise Level	PPG Recommended Noise Limit $L_{Aeq\ 1\ hour}$ for Standard Operations	PPG Recommended Noise Limit $L_{Aeq\ 1\ hour}$ For Temporary Operations
ESR 1 - Middlecliffe Farm	43	53	70
ESR 2 – Middlecliffe Drive	39	49	70

¹ A' Weighting An electronic filter in a sound level meter which mimics the human ear's response to sounds at different frequencies under defined conditions

² L_{eqs} Equivalent continuous noise level; the steady sound pressure which contains an equivalent quantity of sound energy as the time-varying sound pressure levels.

³ L_{90} The noise level which is exceeded for 90% of the measurement period.

3 ASSESSMENT OF IMPACTS

3.1 Introduction

- 3.1.1 The operational activities associated with the quarry during the site restoration phases have the potential to generate noise which could have a significant noise impact at the existing sensitive receptors.
- 3.1.2 The noise emissions from the on-site operations have been modelled using SoundPLAN 8.2 environmental noise prediction software. The noise model calculates the propagation of noise in accordance with the methodologies contained within ISO 9613-2 'Acoustics – Attenuation of sound during propagation outdoors'. This gives a level of accuracy for the level of attenuation provided by intervening topography and barriers.
- 3.1.3 Noise models have been created for the following scenarios:
- Scenario 1 – Temporary Operations in the north eastern part of the site. - Considers soil spreading in the north eastern part of the site closest to the ESR 1.
 - Scenario 2 – Standard restoration operations in the northern half of the site. – Considers soil spreading and backfilling at a typical location in the northern part of the site.
 - Scenario 3 – Standard restoration operations in the southern half of the site. - Considers soil spreading and backfilling at a typical location in the northern part of the site.
 - Scenario 4 – Temporary Operations – Worst case location to the south western part of the site. – Considers soil spreading in the south western part of the site closest to ESR2
- 3.1.4 Details of the activities proposed at the site and the noise levels associated with these activities have been used to calculate likely levels of noise at the sensitive receptors.
- The proposed operational hours of the quarry are 0700 to 1800 hours Monday to Friday
- 3.1.5 The following equipment and processes have been included for each phase modelled. Table 4 below, identifies the equipment, an example of the plant, the source type, the predicted on-time of equipment, and sound power levels used in the assessment.

Table 4: Plant List					
Equipment	Example of type	Number	Source on time/ vehicle movements	Source Type	Sound power level dB(A)
Restoration Works					
ADT	Cat 725C2	1	2 movements per hour	Moving Point Source	122.7
Dozer	Cat D6	1	100% On-time	Moving Point Source	121
Front Loader	Volvo L260H	1	100% On-time	Moving Point Source	113
Excavator	JCB 220X	1	100% on-time	Point Source	117
All source data is from SoundPLAN's Library					

3.2 Main site restoration operations

3.2.1 Throughout the restoration of the quarry there is a potential for adverse noise impacts to occur at existing sensitive receptors. To be robust, each phase has been modelled and assessed separately. The restoration of the quarry has been modelled with operations taking place at their closest location to each receptor, which has been considered to be the worst-case location in each case. In addition to this additional modelling has been undertaken to represent the typical plant locations during the majority of the works. All scenarios have been modelled at the restored surface level, with no noise mitigation afforded by plant being located in the void, to provide a worst-case situation.

3.3 Noise predictions

3.3.1 The results of the modelled scenarios are included in Drawings SH12283-002A – 005A. The assessment considers long-term and short-term operations separately. Long term operations consider the backfilling of the void and soil spreading which are considered to be typical operations on a day to day basis. Temporary operations consider soil spreading near to the site boundary. The same fleet of plant will be used for all restoration phases. They show the results for each temporary operation, and for each phase of the long-term operations, as described above. The modelled outputs are summarised in Table 5 and Table 6.

Table 5: Temporary - Worst case location			
	Phase 1	Phase 4	Criterion
ESR 1	51	42	70
ESR 2	42	54	70

Table 6: Long term operations			
	Phase 2	Phase 3	Criteria
ESR 1	44	39	53
ESR 2	44	42	49

3.3.2 Table 5 and Table 6 show that noise from both the long term and temporary operations during the restoration of Middlecliffe Quarry will not exceed the noise criteria recommended by the Planning Practice Guidance at the existing sensitive receptors.

3.3.3 It is likely that the temporary operations near to the site boundary will not require the full eight weeks to be completed. They will be near to each receptor for only a short period of time. The operations are significantly below to noise criterion for short-term operations.

3.3.4 It is considered that the daytime noise levels should be acceptable, and therefore, specific noise mitigation measures should not be required. However, to minimise any possible noise impact from quarry operations, possible mitigation measures are discussed in section 3.4 below.

3.4 Mitigation measures

3.4.1 The plant noise levels used for the predictions are based on estimates from BS5228 for similar types of equipment and from manufacturers' data. Actual noise levels during the period of restoration of the site would depend on the condition of equipment, the way in which it is used, and the care taken by the operator to minimise noise emissions.

3.5 Residual effects

3.5.1 Provided that compliance with the above measures is maintained, in particular the proper maintenance of equipment and of the haul road surface, there will not be any significant residual impact of noise on nearby existing sensitive receptors.

3.6 Cumulative impacts

3.6.1 There are no other quarries in sufficiently close proximity to Middlecliffe Quarry for cumulative noise impacts to occur at the existing sensitive receptors.

3.7 Limitations of study

3.7.1 This noise assessment is based upon a noise model which has been prepared using SoundPLAN 8.2 environmental noise prediction software which calculates noise

propagation to the methodologies contained within ISO 9613-2 'Acoustics – Attenuation of sound during propagation outdoors'. This methodology provides a higher degree of accuracy than the method provided by BS5228.

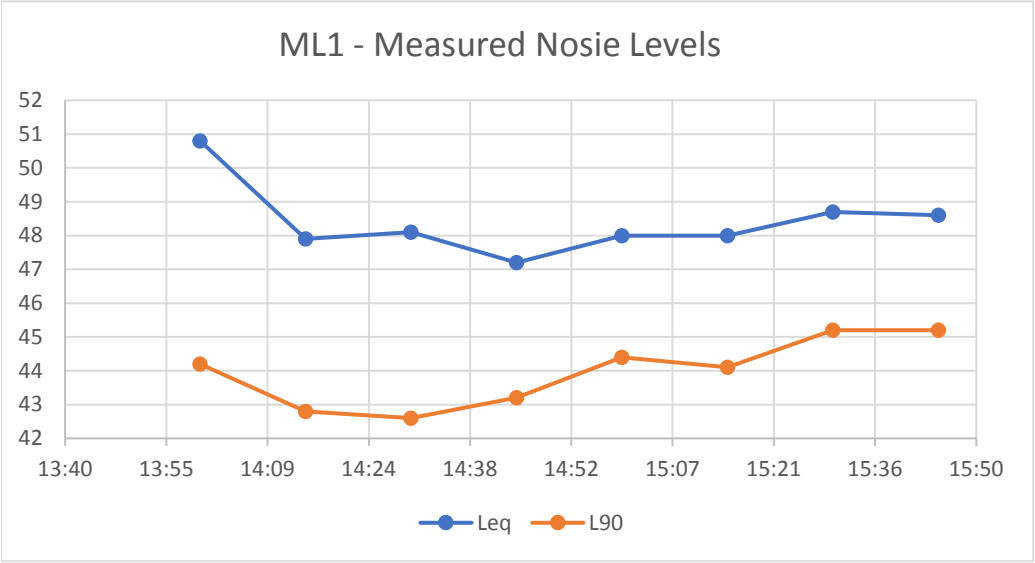
- 3.7.2 All noise level predictions are based on simplified models of sound generation and propagation; some conditions such as bursts of turbulence in the air are too complex to be factored into the algorithms; therefore, the models may be subject to some minor uncertainties. However, the prediction software assumes down-wind propagation of noise in all directions and so the noise model is more likely to over-predict than under-predict the noise level at all receptors.
- 3.7.3 The primary factor that governs the validity of the output of the noise model is the quality of the input data. Consequently, all practicable means have been explored to ensure that the data used in the noise model is as accurate as possible.

3.8 Summary and Conclusions

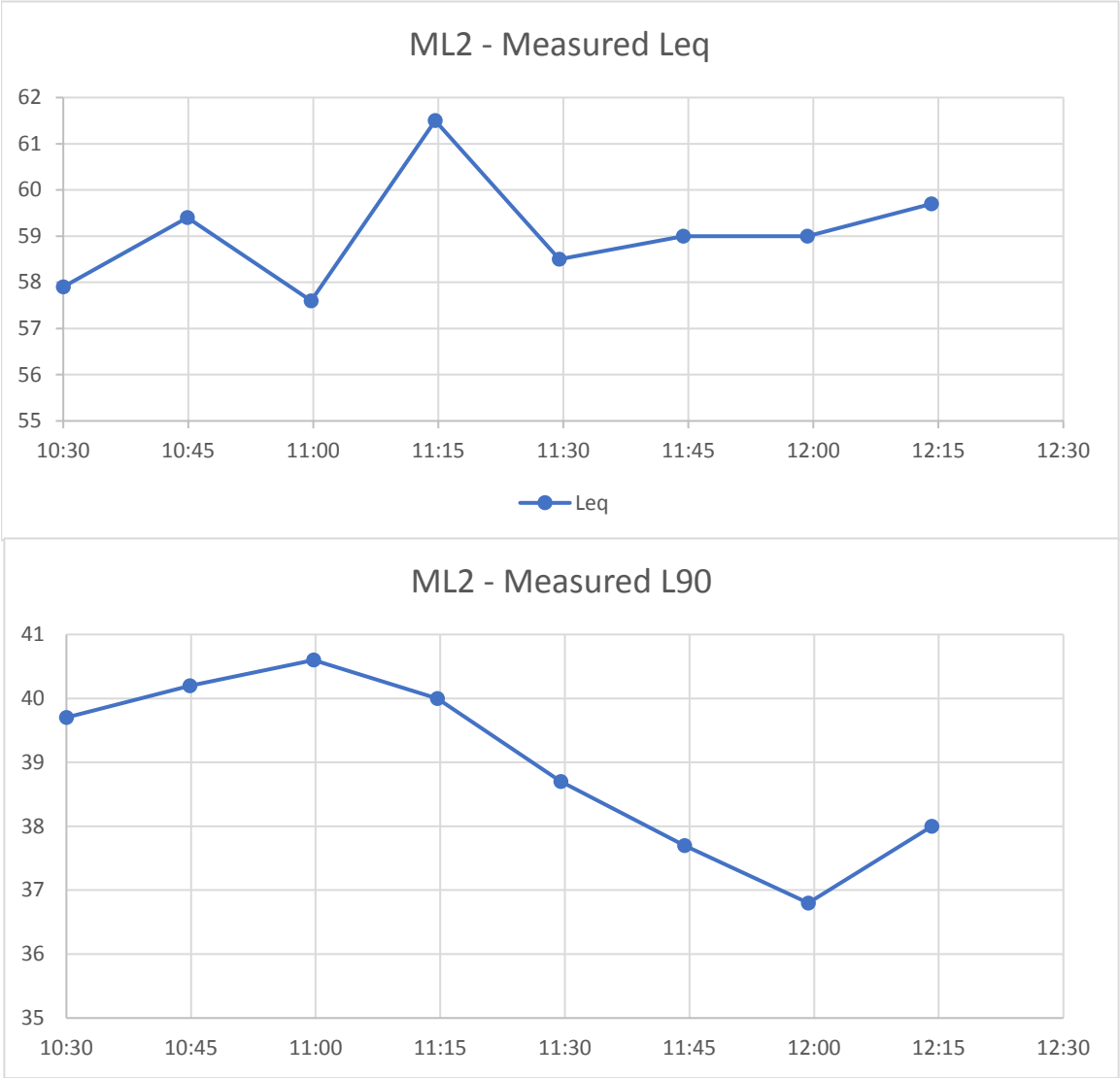
- 3.8.1 Predicted noise levels have been calculated for temporary and long-term operations at Middlecliffe Quarry. The assessment is based upon a computer noise model which has been prepared to present the potential worst-case scenarios, for site preparation and mineral extraction.
- 3.8.2 It has been shown that the noise from worst case long-term operations will comply with the proposed noise limits derived from the existing background noise level at the existing sensitive receptors.
- 3.8.3 The assessment also shows that noise from short term operations will be less than the 70dB(A) $L_{Aeq,1h}$ (free field) criterion for short duration activities at existing sensitive receptors.
- 3.8.4 It is concluded that the site can operate in accordance with the guidance on noise as set out in the PPG and NPPF.

Appendix A Noise Monitoring Results

ML1 - Middlecliffe Farm - Measurement results		
Time	Leq	L90
14:00	50.8	44.2
14:15	47.9	42.8
14:30	48.1	42.6
14:45	47.2	43.2
15:00	48	44.4
15:15	48	44.1
15:30	48.7	45.2
15:45	48.6	45.2
Average	48.5	43.8



Time	Leq	L90
10:30	57.9	39.7
10:45	59.4	40.2
11:00	57.6	40.6
11:15	61.5	40
11:30	58.5	38.7
11:45	59	37.7
12:00	59	36.8
12:15	59.7	38
Overall	59.3	38.9



DRAWINGS



KEY

Site Boundary

Existing Sensitive Receptor

Monitoring Location

Notes:

Boundaries are indicative.

Aerial imagery shown for context purposes only.

REVISION	DETAILS	DATE	DRAWN	CHKD	APPD
CLIENT					
PICKFORD CONTRACTING LTD					
PROJECT					
MIDDLECLIFFE QUARRY					
DRAWING TITLE					
NOISE MONITORING LOCATIONS					
DRG No.		SH12283/011		REV A	
DRG SIZE		SCALE		DATE	
A3		1:3,500		01/05/2020	
DRAWN BY		CHECKED BY		APPROVED BY	
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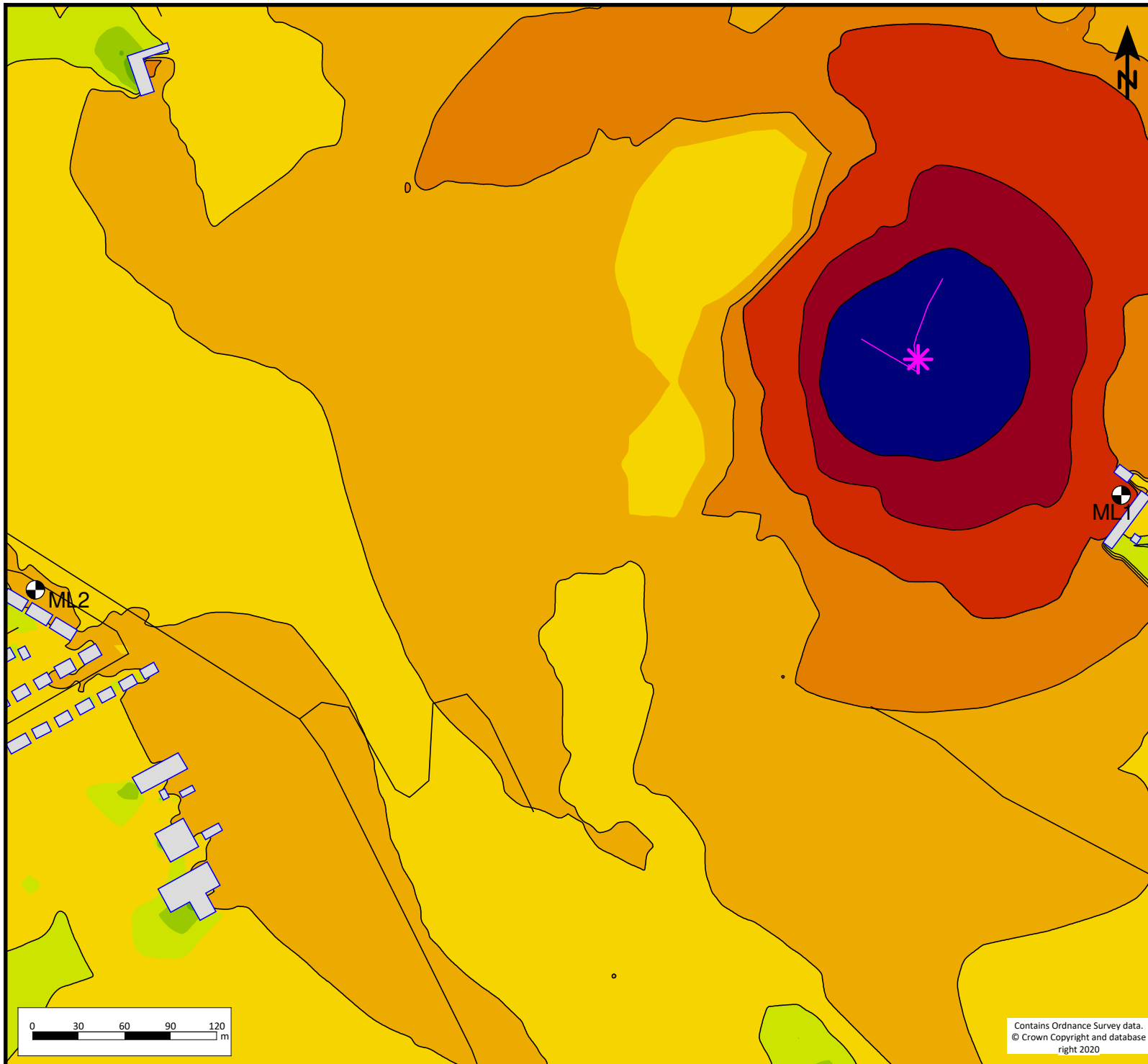
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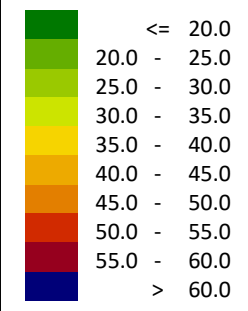
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Key

- Site Boundary
- Existing Buildings
- Line source
- Point source
- Receiver

Daytime L_{Aeq} dB



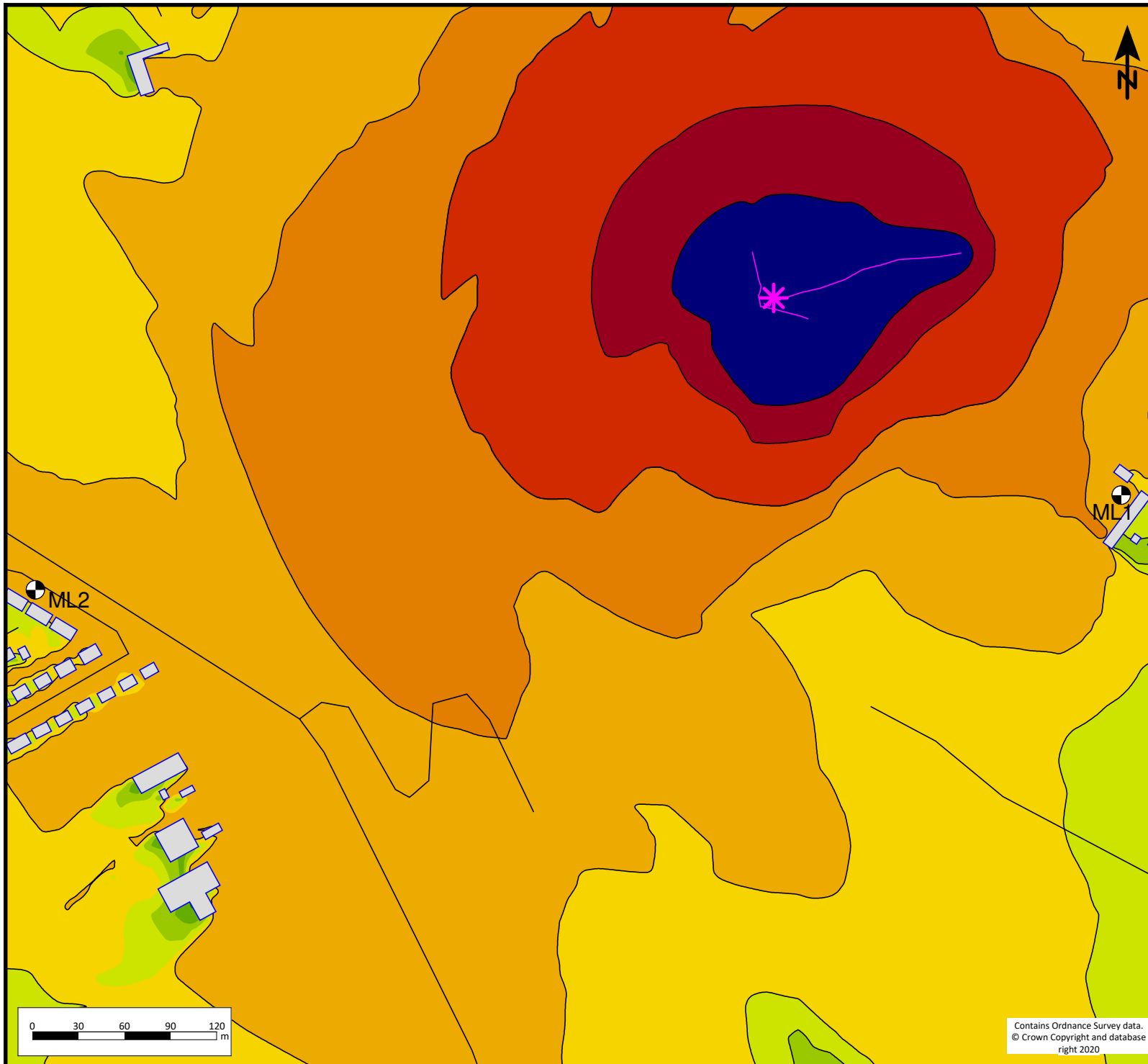
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DRG SIZE: A3	SCALE: 1:2500	DATE: 30/04/2020
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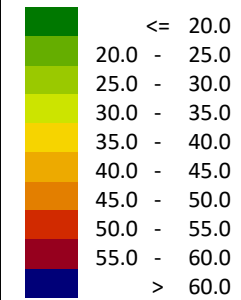
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-  Existing Buildings
-  Line source
-  Point source
-  Receiver

Daytime L_{Aeq} dB



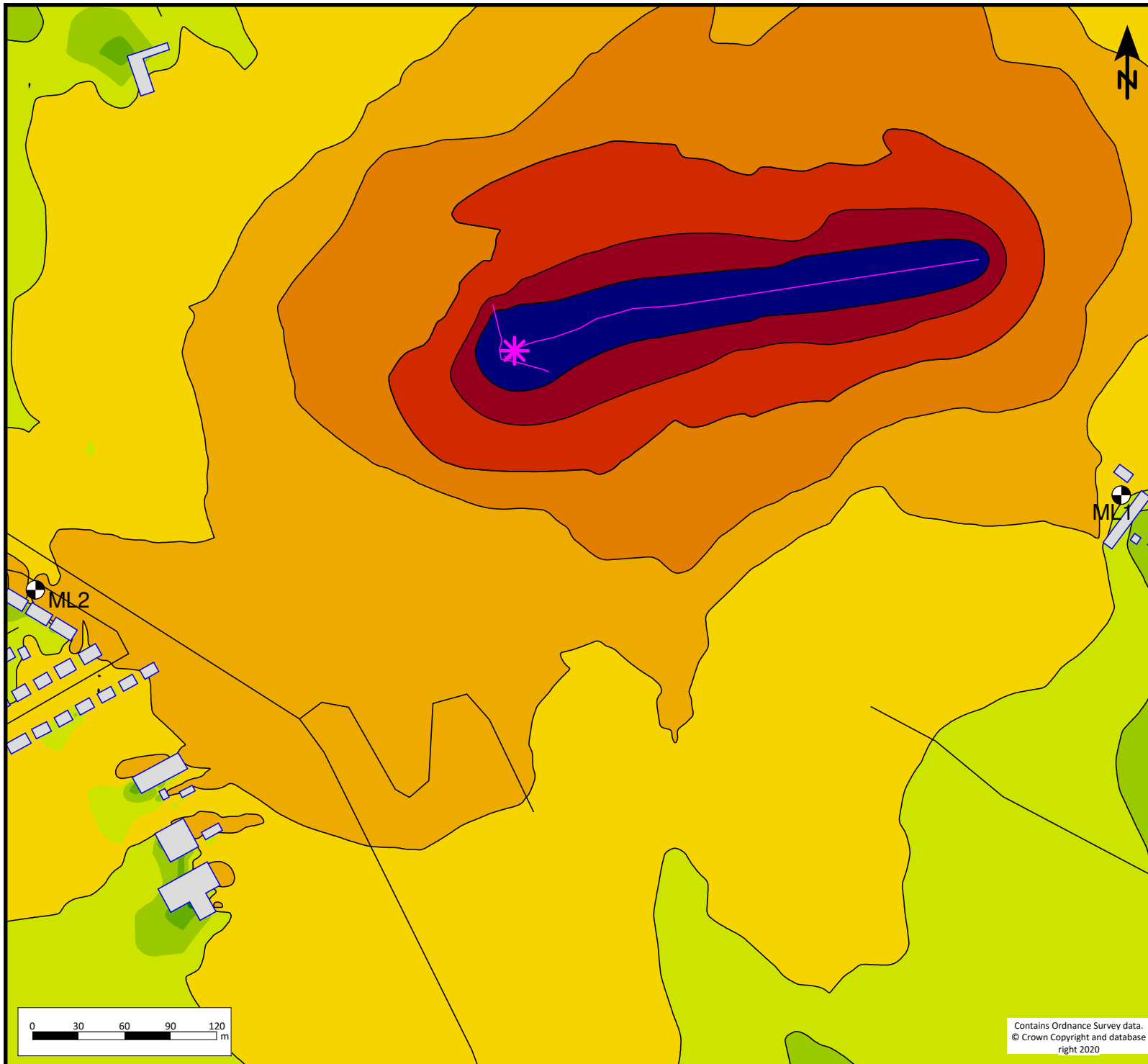
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DRG SIZE: A3	SCALE: 1:2500	DATE: 30/04/2020
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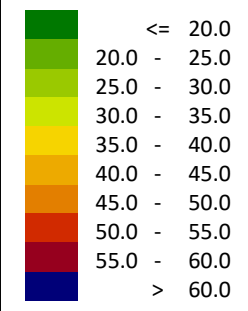
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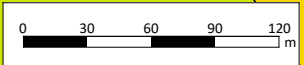
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Daytime L_{Aeq} dB



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TITLE:			Phase 3 - Long Term Operations in the Southern Area
DRG NO:		REV:	A
DRG NO:		SH12283/004	
DRG SIZE:	A3	SCALE:	1:2500
DATE:	30/04/2020		
DRAWN BY:	LW	CHECKED BY:	MD
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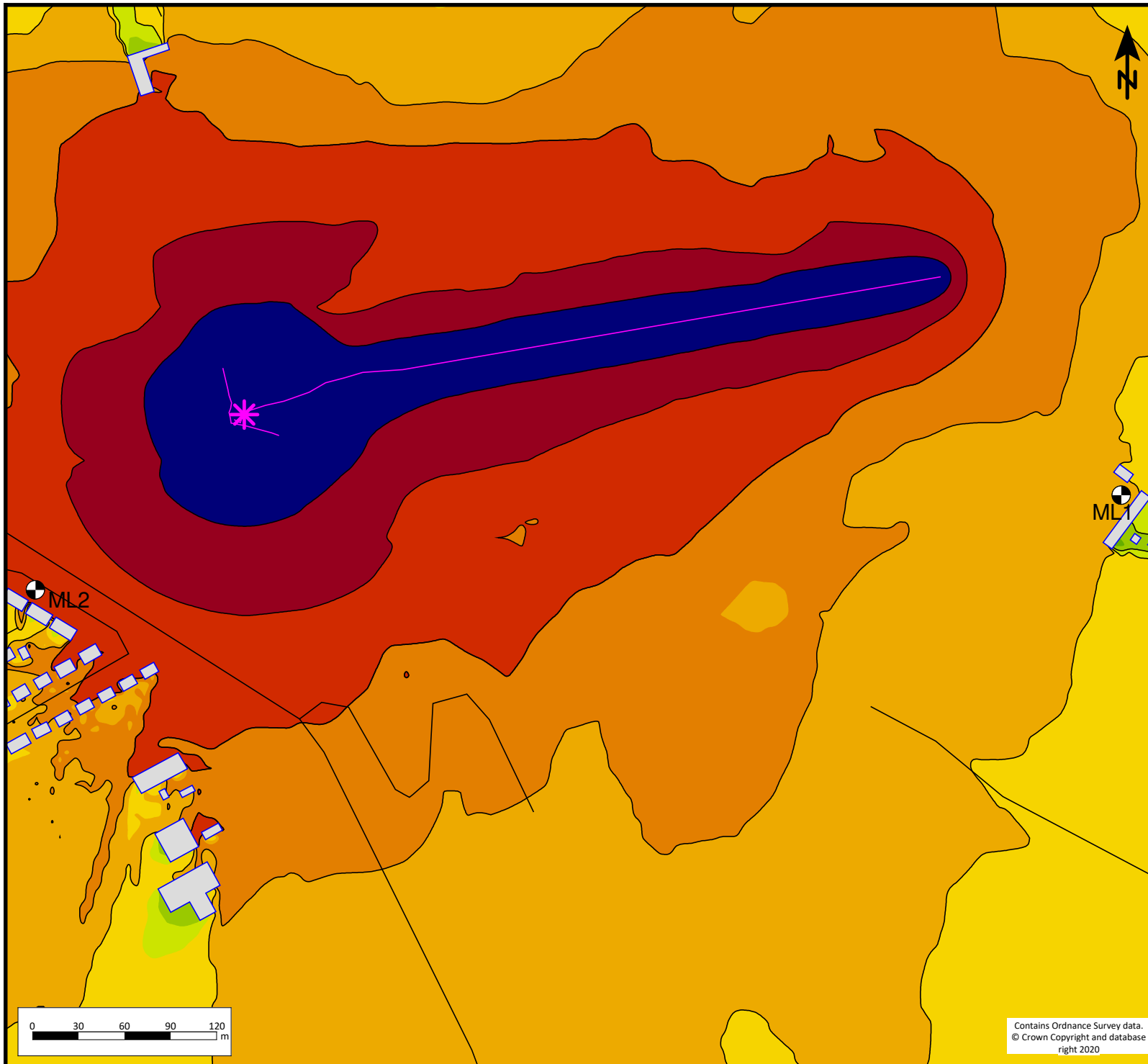
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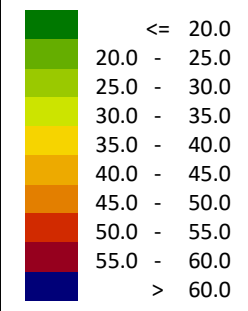
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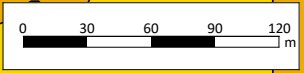
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-  Point source
-  Receiver

Daytime L_{Aeq} dB



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TITLE:			Phase 4 - Worst Case Temporary operations - ESR 2
DRG NO:		SH12283/005	REV: A
DRG SIZE:	A3	SCALE:	1:2500
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