1 BACKGROUND

In December 2017, Bengalla Mining Company (BMC) lodged MOD4 under Section 96(2) of the *Environmental Planning & Assessment Act 1979* (EPA Act) to Development Consent SSD 5170.

MOD4 was accompanied by a Statement of Environmental Effects (SEE) which generally seeks approval for:

- Amendments to the approved water management system;
- To temporarily store earthen materials associated with dam construction and other identified suitable clay material required for the future Dry Creek reinstatement;
- Increase the capacity of (and an additional location for) Run of Mine (ROM) coal stockpiles; and
- Additional storage locations for temporary emplacement of coal processing reject material.

The MOD 4 SEE was placed on public exhibition from 18 January to 2 February 2018. A total of eight submissions from regulatory agencies were received following the public exhibition. No other submissions were received.

A Response to Submissions (RTS) was prepared in May 2018.

A Residual Issues Report was prepared in July 2018.

In correspondence dated 19 June 2018, the Department of Planning and Environment (DPE) requested:

> *"… The Department considers this to be an appropriate opportunity to review the proportionate and cumulative impacts on these operations on sensitive receivers in the Muswellbrook Area.*
>
> *Consequently, the Department requires that Bengalla Mining Company works with MACH Energy to undertake a coordinated assessment of the proportionate air quality impacts of the two mining operations on surrounding and nearby receiver locations. This assessment should include focused consideration of key sensitive receivers and be completed in line with the contemporary air quality standards identified in the EPA's Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (2016). If the proportionality of impacts varies over the anticipated life of the two mines, this should also be identified. …"*

BMC commissioned Todoroski Air Sciences (TAS) to undertake revised modelling to respond to DPE's correspondence of 19 June 2018. This has culminated in a report titled '*Air Quality Impact Assessment Bengalla Modification 4 Additional Modelling 12 November 2018*' (TAS, 2018).

Section 2 of this letter report provides suggested changes to Tables 1 to 3 of SSD 5170 utilising the results of TAS, 2018 (additions are shown in red and deletions in ~~strikethrough~~). **Section 3** includes a justification for the suggested changes, whilst **Appendix A** lists references.

2 SSD 5170 ACQUISITION AND MITIGATION CONDITIONS

"ACQUISITION UPON REQUEST

1. Upon receiving a written request for acquisition from the owner of the land listed in Table 1, the Applicant must acquire the land in accordance with the procedures in conditions 5 and 6 of schedule 4.

Table 1: Land subject to acquisition upon request

***BMC* Acquisition Basis**	***Receiver No***
Noise	152, 153, ~~154,~~ 156E, 156S
Noise & Air	154

Note: To interpret the land referred to in Table 1, see the applicable figure in Appendix 4.

2. If the Applicant receives a written request for acquisition from the owner of the land listed in Table 2 and if that land is no longer subject to acquisition upon request under the relevant development consent or project approval shown in Table 2, then the Applicant must acquire the land in accordance with the procedures in conditions 5 and 6 of schedule 4.

Table 2: Land subject to acquisition upon request

***BMC* Acquisition Basis**	***Receiver No***	***Mine***
Noise	~~112, 113, 114,~~ 120	Mt Arthur
Noise & Air	112, 113, 114, 117, 118, 119, 155	
Noise & Air	~~166,~~ 168, 171	Mt Pleasant
~~Air~~	~~169~~	
Noise	166	

Note: To interpret the land referred to in Table 2, see the applicable figure in Appendix 4.

ADDITIONAL MITIGATION UPON REQUEST

3. Upon receiving a written request from the owner of any residence on the land listed in Table 1 (unless the landowner of that land has requested acquisition), Table 2 (if acquisition or additional mitigation by the mine listed in Table 2 is no longer available for the landowner of that land) and on the land listed in Table 3, the Applicant must implement additional:

   (a) noise mitigation measures (such as double-glazing, insulation and/or air conditioning); and/or

   (b) air quality mitigation measures (such as air filters, a first flush roof water drainage system and/or air conditioning).

   at any residence in consultation with the owner.

   These measures must be reasonable and feasible, and directed towards reducing the noise and/or air quality impacts of the development on any residence. The Applicant must also be responsible for the reasonable costs of ongoing maintenance of these additional mitigation measures until the cessation of mining operations.

   If within 3 months of receiving this request from the owner, the Applicant and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures then either party may refer the matter to the Secretary for resolution.

Table 3: Land subject to additional noise and/or air quality mitigation upon request

BMC Mitigation Basis	***Receiver***
Noise & Air Quality	109[4] ~~167~~
Noise	105, 106[3], 108, ~~109[3]~~, 110[3], 126N, ~~146, 156, 161[2],~~ 167, 169[2], 180, 184
Air Quality	66[3], 120[3], 152, 156E, 156S, ~~114[3]~~

Notes:
1. *To interpret the land referred to in Table 3, see the applicable figure in Appendix 4.*
2. *The Applicant is only required to provide additional mitigation for this property if these rights are no longer available under the development consent for the Mt Pleasant mine.*
3. *The Applicant is only required to provide additional mitigation for this property if these rights are no longer available under the project approval for the Mt Arthur mine.*
4. *The Applicant is only required to provide additional air quality mitigation for this property if these rights are no longer available under the project approval for the Mt Arthur mine."*

A discussion on how these recommendations has been reached is provided below.

3 DISCUSSION

AIR QUALITY

Figure 1 shows key air quality prediction contours from (TAS, 2018) for key air quality parameters (PM_{10} and $PM_{2.5}$). It indicates where receivers or blocks of land occur within an existing Zone of Acquisition (ZOA) or Zone of Management (ZOM) for each of Mt Pleasant Mine (MTP), Mt Arthur Coal (MAC) or BMC, as well as indicating contiguous blocks of private property held in single landownership.

As can be seen from **Figure 1**, the greatest air quality impacts are derived from:

- Cumulative PM_{10} 24 hr project alone (or "incremental") shown in magenta (ZOM);
- PM_{10} 24 hr project alone 6th highest (ZOM) shown in orange; or
- PM_{10} Annual Average Cumulative (or "total impact") shown in yellow (ZOA).

As such, only PM_{10} predictions are discussed further below.

Table A shows where air quality exceedances of PM_{10} are predicted at any private receiver for each of PM_{10} 24 hr (Columns C to E), number of days above PM_{10} 24hr criteria (Column F) and PM_{10} cumulative (Columns G to L) as provided by TAS, 2018. References for **Table A** are listed in **Appendix A**.

An assessment of greater than 25% of contiguous property in a single landownership as per the VLAMP is also included (see notes on **Table A**).

Year 4 has no predicted exceedances of any air quality criteria.

MAC's contribution to Year 8 is shown in 'Column J'; and MTP's contribution in 'Column I'.

Neither MAC nor MTP has approval to operate past BMC's Year 8 and as such percentage contributions have not been calculated.

For private receivers which are predicted to exceed air quality criteria in TAS, 2018, **Table A** also indicates where private receivers are within a ZOA or ZOM under the existing Mount Pleasant DA 92/97 MOD3 (Column S), Mount Arthur 09_0062 MOD1 (Column R) and BMC SSD-5170 MOD3 (Column T).

No changes to **Table A** are required as a result of DA 92-97 MOD4.

NOISE

Table A includes Project Specific Noise Criteria (PNSC) for night time noise exceedances from the sources as listed in **Appendix A**. Results in Columns M to Q are presented as the year of noise impact, PNSC for receiver (dBA LAeq 15min), and receiver PNSC exceedance (dBA LAeq 15min).

Bold values indicate where a private receiver is anticipated to be included in a ZOA due to noise impacts in accordance with the current *'Voluntary Land Acquisition Mitigation Policy'* (VLAMP) (DPE, 2018).

Table A further provides recommendations on how private receivers should be managed moving forward in accordance with the VLAMP. Where no values are shown, there are no predicted exceedances of criteria.

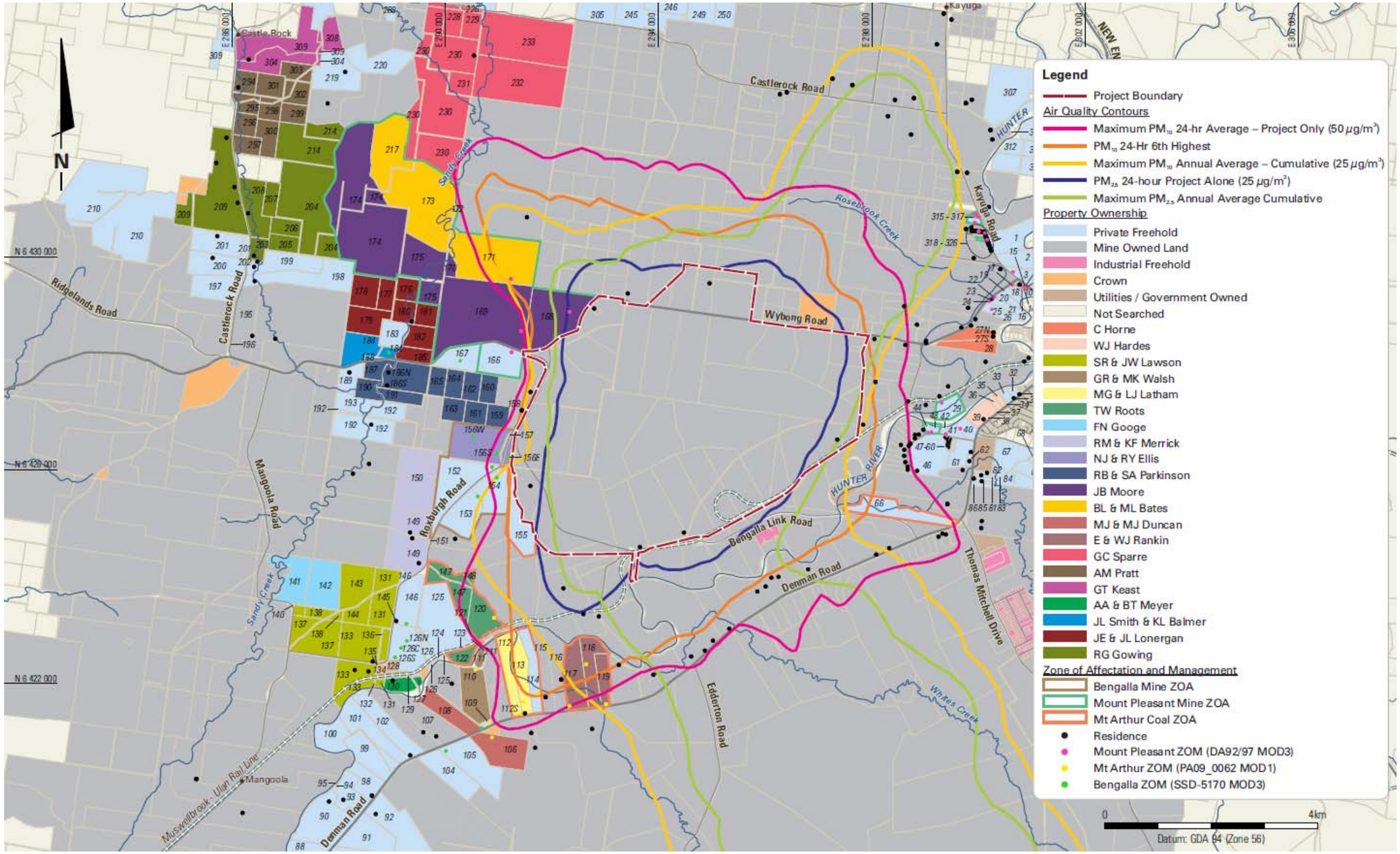

Figure 1
Revised Air Quality Contours (Internal)

Table A
Analysis for Properties Predicted to Exceed Air Quality Criteria as per TAS, 2018

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
MOD4 REVISED MODELLING – AIR QUALITY (µg/m^3)												NOISE (dBA LAeq (15 min) Night) (Year, PNSC/ Exceedance)								
ID	Owner Name	PM_{10} 24 Hour Incremental (Criteria 50)				PM_{10} Annual Average Total Impact (Criteria 25)						BMC EIS	BMC MOD4	MTP MOD 3 (2018 and 2025)	MTP MOD 4 (2021 only)	MAC MOD1	MAC Consent	MTP Consent	BMC Consent (N = Noise, A = Air, Consent Table No 1-3)	Recommendation to BMC SSD5170 Tables 1 to 3
		Y8	Y15	Y24	No. days above 50 µg/m^3	Y8				Y15	Y24									
						Result	Contribution (%)													
							BMC	MTP	MAC											
66	JR Scriven	**51.2**	39.1		Y8 – 1												ZOA – Air			Add to Table 3 AQ
109	EJ & CA Denton		26.3	**50.7**	Y24 – 1								Y4 (35/+2) Y24 (35/+5)				ZOM – Air		N3	Add to Table 3 AQ
112	MG & LJ Latham		35.8	**60.1**	Y24 – 1 Y**							Y15 (35/+3.4) **Y24 (35/+5.4)**				2026 (35/+1)	ZOA – Air		N2	Add into Table 2 for AQ
113	MG & LJ Latham		35.9	**67.7**	Y24 – 2 Y**							Y8 (35+3.7) Y15 (35+4.1) **Y24 (35+6.0)**				2022 (35/+2) 2026 (35/+3)	ZOA – Air ZOM – Noise		N2	Add into Table 2 for AQ
114	JM Wild			**74.5**	Y24 – 6 Y**							Y4 (35+3.6) Y8 (35+4.5) Y15 (35+4.9) **Y24 (35+6.7)**				2022 (35/+4) 2026 (35/+3)	ZOA – Air ZOM – Noise		N2 A3	Add into Table 2 for AQ Remove from Table 3
117	E Rankin – 25%				Y**	Y					Y	Y4 (35+4.5) **Y8 (35+5.2)** **Y15 (35+5.6)** **Y24 (35+7.1)**				No exceedances, contiguous with 118 and 119	ZOA – Air & Noise		N2 A2	No change
118	E & WJ Rankin		**69.9**	**76.9**	Y15 – 5 Y24 – 16 Y**	**30.4** Y	23	3	70			**Y4 (35+6.2)** **Y8 (35+6.9)** **Y15 (35+7.7)** **Y24 (35+9.4)**				**2022 (35/+6)** **2026 (35/+6)**	ZOA – Air & Noise		N2 A2	No change
119	E & WJ Rankin				Y**	**26.3** Y	21	4	69			**Y4 (35+6.5)** **Y8 (35+6.5)** **Y15 (35+6.4)** **Y24 (35+7.7)**				**2022 (35/+7)** **2026 (35/+6)**	ZOA – Air & Noise		N2 A2	No change
120	TW Roots		33.5	**69.8**	Y24 – 2							Y8 (35+3.3) Y15 (35+3.5) **Y24 (35+6.2)**				2022 (35/+2) 2026 (35/+3)	ZOA – Air ZOM – Noise		N2	Add to Table 3 AQ

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
MOD4 REVISED MODELLING – AIR QUALITY (µg/m³)												**NOISE (dBA LAeq (15 min) Night) (Year, PNSC/ Exceedance)**					**MAC Consent**	**MTP Consent**	**BMC Consent (N = Noise, A = Air, Consent Table No 1-3)**	**Recommendation to BMC SSD5170 Tables 1 to 3**
ID	**Owner Name**	**PM₁₀ 24 Hour Incremental (Criteria 50)**				**PM₁₀ Annual Average Total Impact (Criteria 25)**						**BMC EIS**	**BMC MOD4**	**MTP MOD 3 (2018 and 2025)**	**MTP MOD 4 (2021 only)**	**MAC MOD1**				
		Y8	**Y15**	**Y24**	**No. days above 50 µg/m³**	**Y8**				**Y15**	**Y24**									
						Result	**Contribution (%)**													
							BMC	**MTP**	**MAC**											
152	MR Peel		24.4	**54.5**	Y24 – 1							Y8 (35+3.3) Y15 (35+3.9) **Y24 (35+9.6)**						ZOM - Noise	N1	Add to Table 3 AQ
154	PSJ Murray		25.3	**57.6**	Y24 – 1	**25.1** Y	7	3	84			Y8 (35+3.0) **Y24 (35+7.6)**							N1	Add to Table 1 AQ
155	PG & CM Lane			**80.3**	6 Y**	**25.9** Y	9	3	84			Y4 (35+2) Y8 (35+4.7) Y15 (35+4.1) **Y24 (35+10.4)**					ZOA – Air	ZOM - Noise	N2 A2	No change
156 E	NJ & RY Ellis			**74.2**	Y24 – 4							Y4 (35+3.4) **Y8 (35+5.3)** **Y15 (35+7)** **Y24 (35+11.7)**						ZOM - Noise	N1 N3	Clarify 156E in Table 1 Add to Table 3 AQ
156 S	NJ & RY Ellis			**57.3**	Y24 – 1							Y8 (35+3.2) Y15 (35+4.5) **Y24 (35+10)**						ZOM - Noise	N1 N3	Clarify 156S in Table 1 Add to Table 3 AQ
168	JB Moore^#	**62.3**	**72.1**	**180.8**	YR8 – 2 YR15 – 17 YR24 – 188	21.9	50	6	31	**25.4**	**63.6**	Y8 (35+3.5) **Y24 (35+10.7)**		**2018 (35+6)** 2021 (35+5) 2025 (35+5)	Not re-assessed		ZOA – Air (after BMC)	ZOA – Noise and Air	N2 A2	No change
171	BL & ML Bates^			**69.4**	11	15.6	34	4	39	15.5	24.8	Y24 (35+4.8)*		2018 (35+5) 2021 (35+5) 2025 (35+5)	Not re-assessed			ZOA - Noise	N2 A2	No change

^ Predicted exceedances for Depositional dust and TSP also
 # Predicted exceedance in Year 24 for $PM_{2.5}$ Annual Average and $PM_{2.5}$ 24-hr (1 exceedance)
*Y = as greater than 25% contiguous land within 'PM10 annual average' on **Figure 1***

** Exceedances predicted for noise for day/evening Yr 15 and 24 (41.2 + 42.9 dBA)*
*Y** as greater than 25% contiguous land within 'PM10 24 hr 6th highest' on **Figure 1***

APPENDIX A - REFERENCES

- Columns C-L - *Air Quality Impact Assessment Bengalla Modification 4 Additional Modelling* (TAS, 2018) – Tables B-1, B-2, B-3, B-4, pages B1 - B12.
- Column M - *'Bengalla Continuation Acoustic Impact Assessment'* (Bridges Acoustics, 2013) – Table C1, pages 89-90.
- Column N - *'Bengalla MOD4 Acoustic Impact Assessment'* (Bridges Acoustics, 2017) – Tables 3 and 4, pages 10 - 12.
- Column O – *'Mount Pleasant Mine Optimisation MOD3 Noise and Blasting Assessment'* (Wilkinson Murray, 2017) – Appendix C-1.
- Column P - *'Mount Pleasant Mine Optimisation MOD4 Rail Modification Noise Assessment'* (Wilkinson Murray, 2017) – Appendix C-1.
- Column Q - '*Mt Arthur Coal Open Cut Modification MOD1 Noise and Blasting Assessment'* (Wilkinson Murray, 2013) – Appendix C.
- Hansen Bailey (17 July 2018). '*Development Consent MOD4 Residual Issues*'.