

24 May 2021

640.30198.00000-L01-v1.1-20210524 (HHRA Mod6 Addendum).docx

Broken Hill Operations Pty Ltd
130 Eyre Street
Broken Hill NSW 2880

Attention: Gwen Wilson

Dear Gwen

HHRA for RASP Mine, Mod6 Addendum

This is an addendum to the SLR report entitled "*Human Health Risk Assessment for RASP Mine, Modification 6*" (SLR Report Reference 640.12028-R01-v3.0, dated 14 December 2020) (termed 'the HHRA' or SLR 2020 in this addendum). Since issuing the HHRA, Broken Hill Operations Pty Ltd (BHOP) has made minor changes to the project description which relate to the location and alignment of the Tails Harvesting Haul Road¹.

In an addendum to the Air Quality Impact Assessment Report, ERM (2021) considered whether the changes are likely to impact the air quality predictions made which underpinned the data also used in the HHRA. ERM (2021) predicted that the minor changes to the project description may result in the following increases to annual emission rates from those originally predicted and used in the HHRA:

- For the construction scenario:
 - 1.6% for lead (Pb), 2.6% for TSP, 2.2% for PM₁₀ and 1.4% for PM_{2.5}.
- For the operational scenario:
 - 0.6% for Pb, 0.3% for TSP, 0.2% for PM₁₀, and 0.3% for PM_{2.5}.

BHOP have requested SLR to consider whether the changes to the air quality predictions impact on the conclusions made in the HHRA Report for the Mod6 construction and operations phases.

Construction

In the SLR (2020) HHRA Report, it was estimated that the predicted incremental increases in soil Pb potentially arising from the approximately 12-month Mod6 construction phase range from 0.03 – 2 mg/kg which represent only 0.005 – 0.43% of existing soil Pb concentrations. Conservatively assuming the annual Pb deposition rate at every receptor location would increase by 1.6% (i.e. the estimated increase in Pb emissions for the construction

¹ Tails harvesting haulage from TSF2 to TSF3 was previously proposed to be done using the current Mine Ore Haul Road. However, as TSF2 Embankment 3 was completed it was identified that the space for the roadway between the embankment and processing plant was insufficient for safe access and travel. This road has now been incorporated into the design of the box cut and will dissect the upper benches of the proposed box cut footprint. The Tails Harvesting Haul Road will commence on the western slope of TSF2 entering the northern corner of the box cut and exiting at its western corner before arriving at the current Mine Ore Haul Road on the other side of the entry to the portal. This removes the interaction of trucks hauling ore from those hauling tailings. In addition, there have been other minor alterations to the Mine Ore Haul Road to improve road intersections for visibility.

scenario) would result in negligible change to the soil Pb concentration attributable to the construction phase of the project, i.e. the incremental soil Pb from construction would still range from 0.03 to 2 mg/kg, and still equate to 0.005 – 0.43% of existing soil Pb concentrations (see Appendix A).

Thus, the minor changes to the project description do not change the HHRA conclusions with respect to the construction scenario.

Operations

Lead

In the SLR (2020) HHRA Report the Integrated Exposure Uptake Biokinetic (IEUBK) modelling undertaken for the operations scenarios predicted negligible change to blood Pb (BPb) levels of 1-2 year old children as a result of the Proposal. If it is conservatively assumed that the Pb deposition at every single receptor location would increase by 0.6% (the estimated increase in Pb emissions for the operations scenario), there would be negligible change to the additional soil Pb concentration after 5 years remaining mine life, i.e. the incremental soil Pb from operations would still range from 0.2 to 11.1 mg/kg, unchanged from the HHRA Report (see Appendix B). The total soil Pb concentrations and indoor dust Pb concentrations for the operational Mod6 scenarios would also remain unchanged (see Appendix B), thus there would be no change to the BPb predictions.

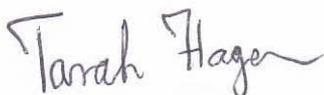
Other metals

The SLR (2020) HHRA Report found that the estimated exposures to metals other than Pb for the Mod6 operations scenario are well below their respective health guidelines. Hazard indices (which represent the sum of hazard quotients for all 13 metals/metalloids assessed apart from Pb)² ranged from 0.1 to 0.21, all markedly below the target of 1. Since only very small changes in metal deposition (i.e. 0.3%) and metal concentrations in air (0.2%) are predicted to result from the minor changes to the project description, this would not impact on the HHRA conclusions for the metals assessed.

Overall Conclusion

The minor changes to the project description do not change the HHRA conclusions. It is also noted the assessment undertaken for this addendum is likely conservative, since the amended Tails Harvesting Haul Road layout is now closer to the centre of the site. This means there is greater distance between the dust sources and receptor locations, which would likely translate to lower increases to Pb and other metals in dust at receptor locations than what has been assumed herein.

Yours sincerely



Checked/
Authorised by: GDN

TARAH HAGEN, MSC, DABT, RACTRA
Technical Discipline Manager - Toxicology & Risk Assessment

² Pb was considered separately from the other metals/metalloids in the report, as the health risk assessment methodology for Pb differs.

References

ERM (2021). MOD6 Air Quality Assessment Addendum. Reference 0476778, dated 7 May 2021.

SLR (2020). Human Health Risk Assessment for RASP Mine, Modification 6. SLR Report Reference 640.12028-R01-v3.0, dated 14 December 2020.

Appendix A: Change in construction Pb deposition and estimated soil Pb concentration due to minor changes in project description

District	ID	Annual metal deposition		Additional soil metal concentration after 12 months construction			Mod6 construction as % of existing soil Pb	Mod6 construction as % of existing soil Pb with 1.6% increased Pb emissions
		Mod6 construction	Mod6 construction with 1.6% increased Pb emissions	Mod6 construction	Mod6 construction with 1.6% increased Pb emissions	Existing soil metal concentration		
		$M_{ann\ dep} (g/m^2/yr)$	$M_{ann\ dep} (g/m^2/yr)$	$C_s (mg/kg)$	$C_s (mg/kg)$	$C_{s_existing} (mg/kg)$	%	%
D1	R6	0.01308	0.01329	0.4	0.4	370	0.12%	0.12%
D1	R11	0.00978	0.00994	0.3	0.3	370	0.09%	0.09%
D1	R18	0.00508	0.00516	0.2	0.2	370	0.05%	0.05%
D1	R46	0.00386	0.00392	0.1	0.1	2450	0.005%	0.005%
D1	R53	0.00477	0.00485	0.2	0.2	370	0.04%	0.04%
D2	R43	0.02586	0.02627	0.9	0.9	735	0.12%	0.12%
D2	R44	0.00344	0.00350	0.1	0.1	700	0.02%	0.02%
D2	R68	0.00726	0.00738	0.2	0.2	735	0.03%	0.03%
D2	R69	0.00591	0.00600	0.2	0.2	735	0.03%	0.03%
D2	R70	0.00487	0.00495	0.2	0.2	735	0.02%	0.02%
Other (D2)	R59	0.001	0.00102	0.03	0.03	735	0.005%	0.005%
D3	R3	0.04493	0.04565	1.5	1.5	370	0.40%	0.41%
D3	R4	0.01815	0.01844	0.6	0.6	370	0.16%	0.17%

District	ID	Annual metal deposition		Additional soil metal concentration after 12 months construction			Mod6 construction as % of existing soil Pb	Mod6 construction as % of existing soil Pb with 1.6% increased Pb emissions
		Mod6 construction	Mod6 construction with 1.6% increased Pb emissions	Mod6 construction	Mod6 construction with 1.6% increased Pb emissions	Existing soil metal concentration		
		$M_{ann\ dep}$ (g/m ² /yr)	$M_{ann\ dep}$ (g/m ² /yr)	C_s (mg/kg)	C_s (mg/kg)	$C_{s_existing}$ (mg/kg)	%	%
D3	R5	0.01405	0.01427	0.5	0.5	370	0.13%	0.13%
D3	R12	0.00811	0.00824	0.3	0.3	370	0.07%	0.07%
D3	R13	0.00695	0.00706	0.2	0.2	370	0.06%	0.06%
D3	R45	0.00812	0.00825	0.3	0.3	370	0.07%	0.07%
D4	R1	0.02151	0.02185	0.7	0.7	370	0.19%	0.20%
D4	R2	0.02363	0.02401	0.8	0.8	370	0.21%	0.22%
Other (D4)	R21	0.02511	0.02551	0.8	0.8	370	0.23%	0.23%
Other (D4)	R22	0.02666	0.02709	0.9	0.9	370	0.24%	0.24%
Other (D4)	R23	0.03141	0.03191	1.0	1.1	370	0.28%	0.29%
Other (D4)	R24	0.03565	0.03622	1.2	1.2	370	0.32%	0.33%
Other (D4)	R25	0.01781	0.01809	0.6	0.6	370	0.16%	0.16%
Other (D4)	R26	0.04744	0.04820	1.6	1.6	370	0.43%	0.43%
D5	R31	0.01905	0.01935	0.6	0.6	604	0.10%	0.11%
D5	R32	0.01742	0.01770	0.6	0.6	604	0.10%	0.10%
D5	R33	0.01958	0.01989	0.7	0.7	604	0.11%	0.11%
D5	R64	0.00479	0.00487	0.2	0.2	604	0.03%	0.03%

District	ID	Annual metal deposition		Additional soil metal concentration after 12 months construction			Mod6 construction as % of existing soil Pb	Mod6 construction as % of existing soil Pb with 1.6% increased Pb emissions
		Mod6 construction	Mod6 construction with 1.6% increased Pb emissions	Mod6 construction	Mod6 construction with 1.6% increased Pb emissions	Existing soil metal concentration		
		$M_{ann\ dep}$ (g/m ² /yr)	$M_{ann\ dep}$ (g/m ² /yr)	C_s (mg/kg)	C_s (mg/kg)	$C_{s_existing}$ (mg/kg)	%	%
D5	R65	0.01323	0.01344	0.4	0.4	604	0.07%	0.07%
D5	R66	0.00862	0.00876	0.3	0.3	604	0.05%	0.05%
D5	R67	0.00903	0.00917	0.3	0.3	604	0.05%	0.05%
D6	R10	0.01247	0.01267	0.4	0.4	1125	0.04%	0.04%
D6	R34	0.02376	0.02414	0.8	0.8	1125	0.07%	0.07%
D6	R35	0.02155	0.02189	0.7	0.7	1125	0.06%	0.06%
D6	R36	0.01968	0.01999	0.7	0.7	1125	0.06%	0.06%
D6	R37	0.01874	0.01904	0.6	0.6	1125	0.06%	0.06%
D6	R41	0.01756	0.01784	0.6	0.6	1125	0.05%	0.05%
D6	R42	0.02382	0.02420	0.8	0.8	1125	0.07%	0.07%
D6	R47	0.01131	0.01149	0.4	0.4	300	0.13%	0.13%
D6	R50	0.01449	0.01472	0.5	0.5	1125	0.04%	0.04%
Other (D6)	R27	0.05958	0.06053	2.0	2.0	1125	0.18%	0.18%
Other (D6)	R28	0.04832	0.04909	1.6	1.6	1125	0.14%	0.15%
Other (D6)	R29	0.04019	0.04083	1.3	1.4	1125	0.12%	0.12%
Other (D6)	R30	0.03353	0.03407	1.1	1.1	1125	0.10%	0.10%

District	ID	Annual metal deposition		Additional soil metal concentration after 12 months construction			Mod6 construction as % of existing soil Pb	Mod6 construction as % of existing soil Pb with 1.6% increased Pb emissions
		Mod6 construction	Mod6 construction with 1.6% increased Pb emissions	Mod6 construction	Mod6 construction with 1.6% increased Pb emissions	Existing soil metal concentration		
		M _{ann dep} (g/m ² /yr)	M _{ann dep} (g/m ² /yr)	C _s (mg/kg)	C _s (mg/kg)	C _{s_existing} (mg/kg)	%	%
D7	R7	0.00675	0.00686	0.2	0.2	1125	0.02%	0.02%
D7	R9	0.01221	0.01241	0.4	0.4	1125	0.04%	0.04%
D7	R38	0.00566	0.00575	0.2	0.2	1125	0.02%	0.02%
D7	R39	0.00599	0.00609	0.2	0.2	1125	0.02%	0.02%
D7	R40	0.01338	0.01359	0.4	0.5	1125	0.04%	0.04%
D7	R51	0.00728	0.00740	0.2	0.2	1125	0.02%	0.02%
D7	R52	0.0079	0.00803	0.3	0.3	1125	0.02%	0.02%
D7	R57	0.00402	0.00408	0.1	0.1	1125	0.01%	0.01%
D7	R62	0.00415	0.00422	0.1	0.1	1125	0.01%	0.01%
Other (D7)	R8	0.01574	0.01599	0.5	0.5	1125	0.05%	0.05%
D8	R55	0.00196	0.00199	0.1	0.1	251	0.03%	0.03%
D8	R56	0.00208	0.00211	0.1	0.1	251	0.03%	0.03%
D8	R61	0.00211	0.00214	0.1	0.1	251	0.03%	0.03%
D9	R16	0.00413	0.00420	0.1	0.1	275	0.05%	0.05%
D9	R19	0.00272	0.00276	0.1	0.1	275	0.03%	0.03%
D9	R20	0.00263	0.00267	0.1	0.1	275	0.03%	0.03%

		Annual metal deposition		Additional soil metal concentration after 12 months construction				
		Mod6 construction	Mod6 construction with 1.6% increased Pb emissions	Mod6 construction	Mod6 construction with 1.6% increased Pb emissions	Existing soil metal concentration	Mod6 construction as % of existing soil Pb	Mod6 construction as % of existing soil Pb with 1.6% increased Pb emissions
District	ID	M _{ann dep} (g/m ² /yr)	M _{ann dep} (g/m ² /yr)	C _s (mg/kg)	C _s (mg/kg)	C _{s_existing} (mg/kg)	%	%
D9	R48	0.00486	0.00494	0.2	0.2	250	0.06%	0.07%
D9	R49	0.00243	0.00247	0.1	0.1	80	0.10%	0.10%
D9	R60	0.00656	0.00666	0.2	0.2	275	0.08%	0.08%
D10	R14	0.00794	0.00807	0.3	0.3	343	0.08%	0.08%
D10	R15	0.00315	0.00320	0.1	0.1	343	0.03%	0.03%
D10	R17	0.00696	0.00707	0.2	0.2	343	0.07%	0.07%
D10	R54	0.00576	0.00585	0.2	0.2	343	0.06%	0.06%
D10	R58	0.00204	0.00207	0.1	0.1	343	0.02%	0.02%
D10	R63	0.00295	0.00300	0.1	0.1	343	0.03%	0.03%

Appendix B: Change in operations Pb soil and indoor dust concentrations due to minor changes in project description

Lead (Pb)		Annual metal deposition		Additional soil metal concentration after 5 yrs remaining mine life				Total soil metal concentration after 5 years remaining mine life		Total indoor dust Pb concentration after 5 years remaining mine life	
		S2: Mod6 Operations	Operations with 0.6% increase in Pb emissions	S2: Mod6 Operations	Operations with 0.6% increase in Pb emissions			Existing soil metal concentration	Existing soil metal concentration incorporating loss over 5 yrs	S2: Mod6 Operations	S2: Mod6 Operations with 0.6% increase in Pb emissions
District	ID	M _{ann dep} (g/m ² /yr)		C _s (mg/kg)		C _{s_existing} (mg/kg)	C _{s_existing(end)} (mg/kg)	C _s (mg/kg)		Dust Pb (mg/kg)	
D1	R6	0.01316	0.013239	2.2	2.2	370	362	363.8	363.8	545.7	545.7
D1	R11	0.00993	0.0099896	1.6	1.6	370	362	363.3	363.3	544.9	544.9
D1	R18	0.0051	0.0051306	0.8	0.8	370	362	362.5	362.5	543.7	543.7
D1	R46	0.00385	0.0038731	0.6	0.6	2450	2395	2395.2	2395.2	3592.8	3592.8
D1	R53	0.00478	0.0048087	0.8	0.8	370	362	362.4	362.4	543.6	543.6
D2	R43	0.02721	0.0273733	4.5	4.5	735	718	722.8	722.9	1084.3	1084.3
D2	R44	0.00347	0.0034908	0.6	0.6	700	684	684.7	684.7	1027.1	1027.1
D2	R68	0.00736	0.0074042	1.2	1.2	735	718	719.6	719.6	1079.4	1079.4
D2	R69	0.0059	0.0059354	1.0	1.0	735	718	719.3	719.3	1079.0	1079.0
D2	R70	0.00492	0.0049495	0.8	0.8	735	718	719.2	719.2	1078.8	1078.8
Other (D2)	R59	0.00101	0.0010161	0.2	0.2	735	718	718.5	718.5	1077.8	1077.8
D3	R3	0.04505	0.0453203	7.4	7.5	370	362	369.0	369.1	553.6	553.6
D3	R4	0.01851	0.0186211	3.0	3.1	370	362	364.7	364.7	547.0	547.0
D3	R5	0.0143	0.0143858	2.4	2.4	370	362	364.0	364.0	546.0	546.0
D3	R12	0.00819	0.0082391	1.3	1.4	370	362	363.0	363.0	544.5	544.5
D3	R13	0.00701	0.0070521	1.2	1.2	370	362	362.8	362.8	544.2	544.2
D3	R45	0.00821	0.0082593	1.4	1.4	700	684	685.5	685.5	1028.3	1028.3
D4	R1	0.02231	0.0224439	3.7	3.7	370	362	365.3	365.3	548.0	548.0
D4	R2	0.02491	0.0250595	4.1	4.1	370	362	365.7	365.8	548.6	548.6
Other (D4)	R21	0.02497	0.0251198	4.1	4.1	370	362	365.7	365.8	548.6	548.6
Other (D4)	R22	0.02598	0.0261359	4.3	4.3	370	362	365.9	365.9	548.9	548.9
Other (D4)	R23	0.02981	0.0299889	4.9	4.9	370	362	366.5	366.6	549.8	549.8
Other (D4)	R24	0.03358	0.0337815	5.5	5.6	370	362	367.2	367.2	550.7	550.8
Other (D4)	R25	0.01748	0.0175849	2.9	2.9	370	362	364.5	364.5	546.8	546.8
Other (D4)	R26	0.04598	0.0462559	7.6	7.6	370	362	369.2	369.2	553.8	553.9
D5	R31	0.01881	0.0189229	3.1	3.1	604	590	593.4	593.4	890.1	890.2
D5	R32	0.01775	0.0178565	2.9	2.9	604	590	593.3	593.3	889.9	889.9
D5	R33	0.02067	0.020794	3.4	3.4	604	590	593.7	593.8	890.6	890.6

Lead (Pb)		Annual metal deposition		Additional soil metal concentration after 5 yrs remaining mine life				Total soil metal concentration after 5 years remaining mine life		Total indoor dust Pb concentration after 5 years remaining mine life	
		S2: Mod6 Operations	Operations with 0.6% increase in Pb emissions	S2: Mod6 Operations	Operations with 0.6% increase in Pb emissions			Existing soil metal concentration	Existing soil metal concentration incorporating loss over 5 yrs	S2: Mod6 Operations	S2: Mod6 Operations with 0.6% increase in Pb emissions
District	ID	M _{ann dep} (g/m ² /yr)		C _s (mg/kg)		C _{s_existing} (mg/kg)	C _{s_existing(end)} (mg/kg)	C _s (mg/kg)		Dust Pb (mg/kg)	
D5	R64	0.00483	0.004859	0.8	0.8	604	590	591.1	591.1	886.7	886.7
D5	R65	0.01319	0.0132691	2.2	2.2	604	590	592.5	592.5	888.8	888.8
D5	R66	0.00832	0.0083699	1.4	1.4	604	590	591.7	591.7	887.5	887.6
D5	R67	0.00873	0.0087824	1.4	1.4	604	590	591.8	591.8	887.6	887.7
D6	R10	0.01289	0.0129673	2.1	2.1	1125	1100	1101.7	1101.7	1652.5	1652.5
D6	R34	0.02358	0.0237215	3.9	3.9	1125	1100	1103.4	1103.4	1655.1	1655.2
D6	R35	0.02058	0.0207035	3.4	3.4	1125	1100	1102.9	1102.9	1654.4	1654.4
D6	R36	0.01805	0.0181583	3.0	3.0	1125	1100	1102.5	1102.5	1653.8	1653.8
D6	R37	0.01703	0.0171322	2.8	2.8	1125	1100	1102.3	1102.4	1653.5	1653.5
D6	R41	0.01852	0.0186311	3.1	3.1	1125	1100	1102.6	1102.6	1653.9	1653.9
D6	R42	0.02445	0.0245967	4.0	4.1	1125	1100	1103.6	1103.6	1655.3	1655.4
D6	R47	0.01091	0.0109755	1.8	1.8	300	293	295.0	295.0	442.5	442.5
D6	R50	0.01382	0.0139029	2.3	2.3	1125	1100	1101.8	1101.8	1652.7	1652.7
Other (D6)	R27	0.06722	0.0676233	11.1	11.1	1125	1100	1110.6	1110.7	1665.9	1666.0
Other (D6)	R28	0.055	0.05533	9.1	9.1	1125	1100	1108.6	1108.7	1662.9	1663.0
Other (D6)	R29	0.04217	0.042423	6.9	7.0	1125	1100	1106.5	1106.5	1659.7	1659.8
Other (D6)	R30	0.03653	0.0367492	6.0	6.1	1125	1100	1105.6	1105.6	1658.3	1658.4
D7	R7	0.00683	0.006871	1.1	1.1	1125	1100	1100.7	1100.7	1651.0	1651.0
D7	R9	0.01264	0.0127158	2.1	2.1	1125	1100	1101.6	1101.6	1652.4	1652.4
D7	R38	0.00571	0.0057443	0.9	0.9	1125	1100	1100.5	1100.5	1650.7	1650.7
D7	R39	0.00604	0.0060762	1.0	1.0	1125	1100	1100.5	1100.5	1650.8	1650.8
D7	R40	0.01424	0.0143254	2.3	2.4	1125	1100	1101.9	1101.9	1652.8	1652.8
D7	R51	0.00754	0.0075852	1.2	1.2	1125	1100	1100.8	1100.8	1651.2	1651.2
D7	R52	0.00821	0.0082593	1.4	1.4	1125	1100	1100.9	1100.9	1651.3	1651.3
D7	R57	0.00401	0.0040341	0.7	0.7	1125	1100	1100.2	1100.2	1650.3	1650.3
D7	R62	0.00415	0.0041749	0.7	0.7	1125	1100	1100.2	1100.2	1650.3	1650.3
Other (D7)	R8	0.01599	0.0160859	2.6	2.7	1125	1100	1102.2	1102.2	1653.3	1653.3
D8	R55	0.00195	0.0019617	0.3	0.3	251	245	245.6	245.6	368.5	368.5

Lead (Pb)		Annual metal deposition		Additional soil metal concentration after 5 yrs remaining mine life				Total soil metal concentration after 5 years remaining mine life		Total indoor dust Pb concentration after 5 years remaining mine life	
		S2: Mod6 Operations	Operations with 0.6% increase in Pb emissions	S2: Mod6 Operations	Operations with 0.6% increase in Pb emissions			Existing soil metal concentration	Existing soil metal concentration incorporating loss over 5 yrs	S2: Mod6 Operations	S2: Mod6 Operations with 0.6% increase in Pb emissions
District	ID	M _{ann dep} (g/m ² /yr)		C _s (mg/kg)		C _{s_existing} (mg/kg)	C _{s_existing(end)} (mg/kg)	C _s (mg/kg)		Dust Pb (mg/kg)	
D8	R56	0.0021	0.0021126	0.3	0.3	251	245	245.7	245.7	368.5	368.5
D8	R61	0.0021	0.0021126	0.3	0.3	251	245	245.7	245.7	368.5	368.5
D9	R16	0.00407	0.0040944	0.7	0.7	275	269	269.4	269.4	404.2	404.2
D9	R19	0.00269	0.0027061	0.4	0.4	275	269	269.2	269.2	403.8	403.8
D9	R20	0.0026	0.0026156	0.4	0.4	275	269	269.2	269.2	403.8	403.8
D9	R48	0.00477	0.0047986	0.8	0.8	250	244	245.1	245.1	367.7	367.7
D9	R49	0.0024	0.0024144	0.4	0.4	80	78	78.6	78.6	117.9	117.9
D9	R60	0.0064	0.0064384	1.1	1.1	275	269	269.8	269.8	404.7	404.8
D10	R14	0.00808	0.0081285	1.3	1.3	343	335	336.6	336.6	504.9	504.9
D10	R15	0.00312	0.0031387	0.5	0.5	343	335	335.7	335.8	503.6	503.6
D10	R17	0.00691	0.0069515	1.1	1.1	343	335	336.4	336.4	504.6	504.6
D10	R54	0.00571	0.0057443	0.9	0.9	343	335	336.2	336.2	504.3	504.3
D10	R58	0.00204	0.0020522	0.3	0.3	343	335	335.6	335.6	503.4	503.4
D10	R63	0.00299	0.0030079	0.5	0.5	343	335	335.7	335.7	503.6	503.6