Proposed Kalgoorlie Rare Earths Processing Plant – Deposition

Appendix to Main Report

Version 0

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Approval for Release

Name	Position	File Reference
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Signature		

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1 Summary

Lynas Corporation Ltd (Lynas) proposes to construct a Rare Earth Processing Facility (REPF) in Yilkari, approximately five kilometres from Kalgoorlie, Western Australia. The Rare Earth Processing Facility will produce a solid RE carbonate via a cracking and leaching process (CIL). The RE carbonate will be packaged and transported to the port at Fremantle for export to the Lynas Malaysia plant where the material will be further processed. Processing waste will be temporarily stored on site and periodically transported to the Yarri Road residue containment facility for long-term storage.

This technical summary provides the results of dust (as PM_{10}) deposition modelling associated with the operation of the proposed REPF, including the Yarri Road residue containment facility for long-term storage. It is intended as supplementary information to the project's radiological assessment. For details on model configuration and assumption, please refer to the project 's air quality impact assessment report.

Sensitive receptor locations, relative to both the REPF and the Yarri Road residue containment facility are shown in Figure 1-1 and Figure 1-2 respectively. The estimated maximum dust deposition rates at each receptor location are presented in Table 1-1.

In terms of an evaluation of the potential ambient air quality impact (amenity), criteria for comparison would reference either:

- The NSW Environment Protection Authority (EPA) assessment criterion - this is an annual average of 2 g/m^2/month for the maximum increase in deposited dust or 4 g/m^2/month for the total dust deposition rate (NSW EPA, 2017).
- The Victorian Protocol for Environmental Management (EPAV, 2007) for extractive industries defines a guideline of 4 g/m^2/month for dust deposition rate (no more than 2 g/m^2/month above background) as a monthly average.

These dust deposition guidelines are numerically consistent although the NSW EPA explicitly requires an assessment of the annual average deposition rate against the assessment criterion. Please note the modelling results shown in Table 1-1 are reported in mg/m^2/month.

The maximum modelled concentration attributable to the REPF, including the Yarri Road residue containment facility, in isolation of any other sources in the area:

- At any identified sensitive receptor location (3.37 mg/m^2/month) is approximately 0.025% of the 4 g/m^2/month criteria.
- Outside of the premises boundary and anywhere within the modelled domain (3.37 mg/m^2/month), is approximately 0.084% of the 4 g/m^2/month criteria.

Table 1-1: Maximum ground level concentrations for selected discrete receptors – Particulates (REPF and Yarri Road facility in operation)

ID		Coordinates (m)		PM_{10} Maximum GLC at Sensitive Receptor Locations			
		x	y	ug/m²/s (30 day average)	mg/m²/month	ug/m²/s (Annual Average)	mg/m²/year
R1	Lot 317 Hall Road	347.245	6592.737	4.15E-05	0.11	2.53E-05	0.80
R2	Lot 187 Hall Road	346.886	6592.502	9.65E-05	0.25	2.84E-05	0.90
R3	Lot 183 Hall Road	345.151	6591.473	6.56E-05	0.17	3.36E-05	1.06
R4	Lot 272 Hall Road	344.787	6591.178	4.26E-05	0.11	2.69E-05	0.85
R5	Cnr Epis Street & Kybo Street	351.047	6593.385	7.66E-05	0.20	2.27E-05	0.72
R6	5 Treloar Road	348.949	6594.301	6.79E-05	0.18	1.94E-05	0.61
R7	Lot 184 Western Road	349.129	6594.146	3.24E-05	0.08	1.59E-05	0.50
R8	Lot 270 Western Road	349.253	6594.398	2.35E-05	0.06	1.39E-05	0.44
R9	85 Wortley Street	350.033	6594.421	2.04E-05	0.05	1.29E-05	0.41
R13	83 Wortley Street	350.079	6594.445	2.04E-05	0.05	1.29E-05	0.41
R10	4 Hunter Street	350.26	6594.389	2.01E-05	0.05	1.31E-05	0.41
R11	6 Hunter Street	350.297	6594.337	2.01E-05	0.05	1.33E-05	0.42
R12	Cnr Hunter & Wortley Street	350.226	6594.55	2.05E-05	0.05	1.29E-05	0.41
R14	Hunter Street	350.316	6594.465	2.02E-05	0.05	1.32E-05	0.41
R15	Hunter Street	350.413	6594.357	2.01E-05	0.05	1.36E-05	0.43
I1	Lot 198 Hall Road	346.723	6592.38	3.89E-04	1.01	7.32E-05	2.31
I2	Vacant crown land	345.652	6591.77	8.43E-05	0.22	4.04E-05	1.27
I3	Lot 273 Hall Road	345.013	6591.484	6.41E-05	0.17	3.19E-05	1.00
I4	Lot 300 Hall Road	344.516	6591.233	4.65E-05	0.12	2.59E-05	0.82
I5	Lot 193 Western Road	348.838	6594.047	7.26E-05	0.19	2.14E-05	0.68
I6	Lot 181 Western Road	349.457	6594.526	2.16E-05	0.06	1.30E-05	0.41
I7	Western Power	349.016	6592.994	2.31E-04	0.60	5.14E-05	1.62
I8	Rifle Club	348.694	6592.303	2.73E-04	0.71	5.13E-05	1.62
Additional sensitive receptor locations associated with Yarri Road facility in operation							
R_1	Speedway	353.557	6602.912	5.73E-05	0.15	2.99E-05	0.94
R_2	Hannans North	353.409	6599.757	3.93E-05	0.10	1.90E-05	0.60
R_3	Goldfield Institute	353.69	6599.661	3.92E-05	0.10	1.96E-05	0.62
R_4	Ningamia	355.787	6599.261	2.81E-05	0.07	1.63E-05	0.51
R_5	Cockburn Cement	356.035	6599.951	3.42E-05	0.09	1.99E-05	0.63
R_6	Duratec Australia	356.186	6600.222	3.85E-05	0.10	2.17E-05	0.68
R_7	Parkeston Industrial	356.373	6599.918	3.34E-05	0.09	2.05E-05	0.65
R_8	Yarri Rd Waste Facility	357.379	6601.584	8.98E-05	0.23	3.87E-05	1.22
Maximum Ground Level -All locations on Model Grid				**1.30E-03**	**3.37**	**2.70E-04**	**8.51**

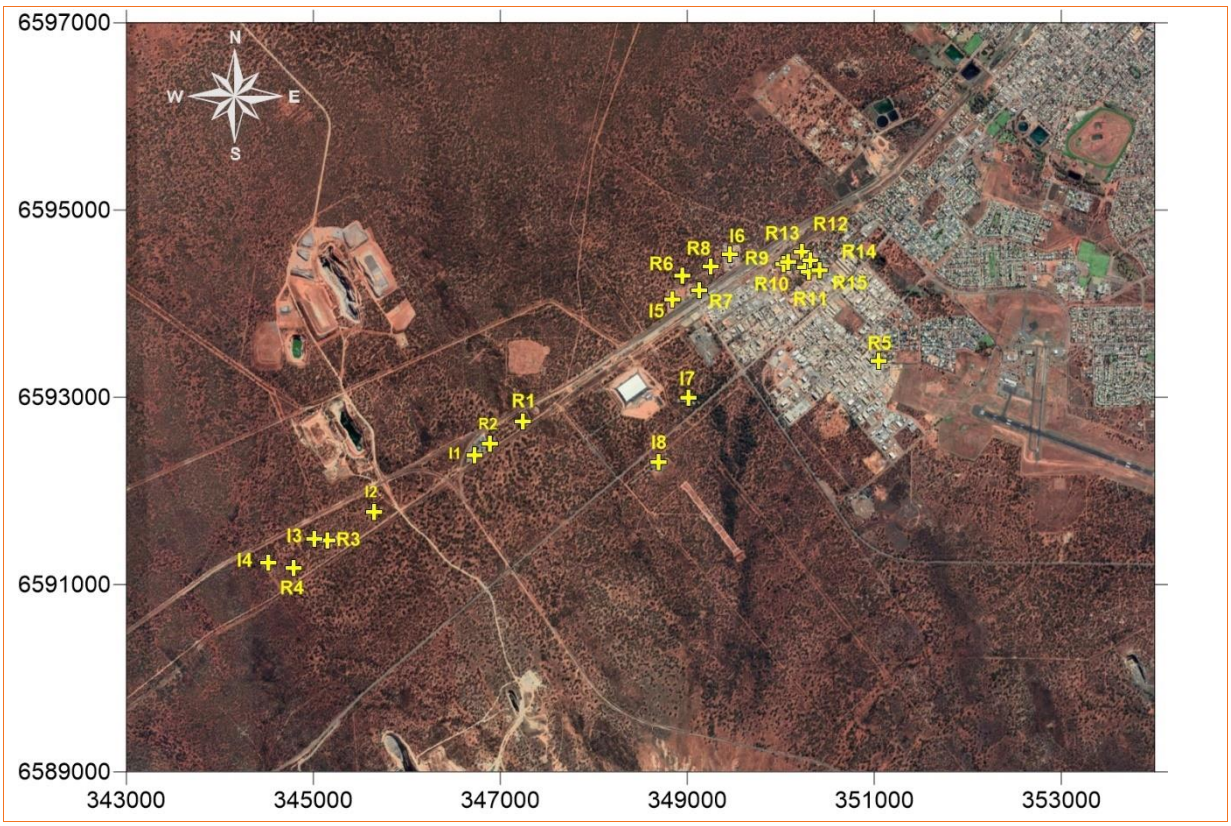

Figure 1-1: Discrete sensitive receptor locations for REPF (Lot 500 only)

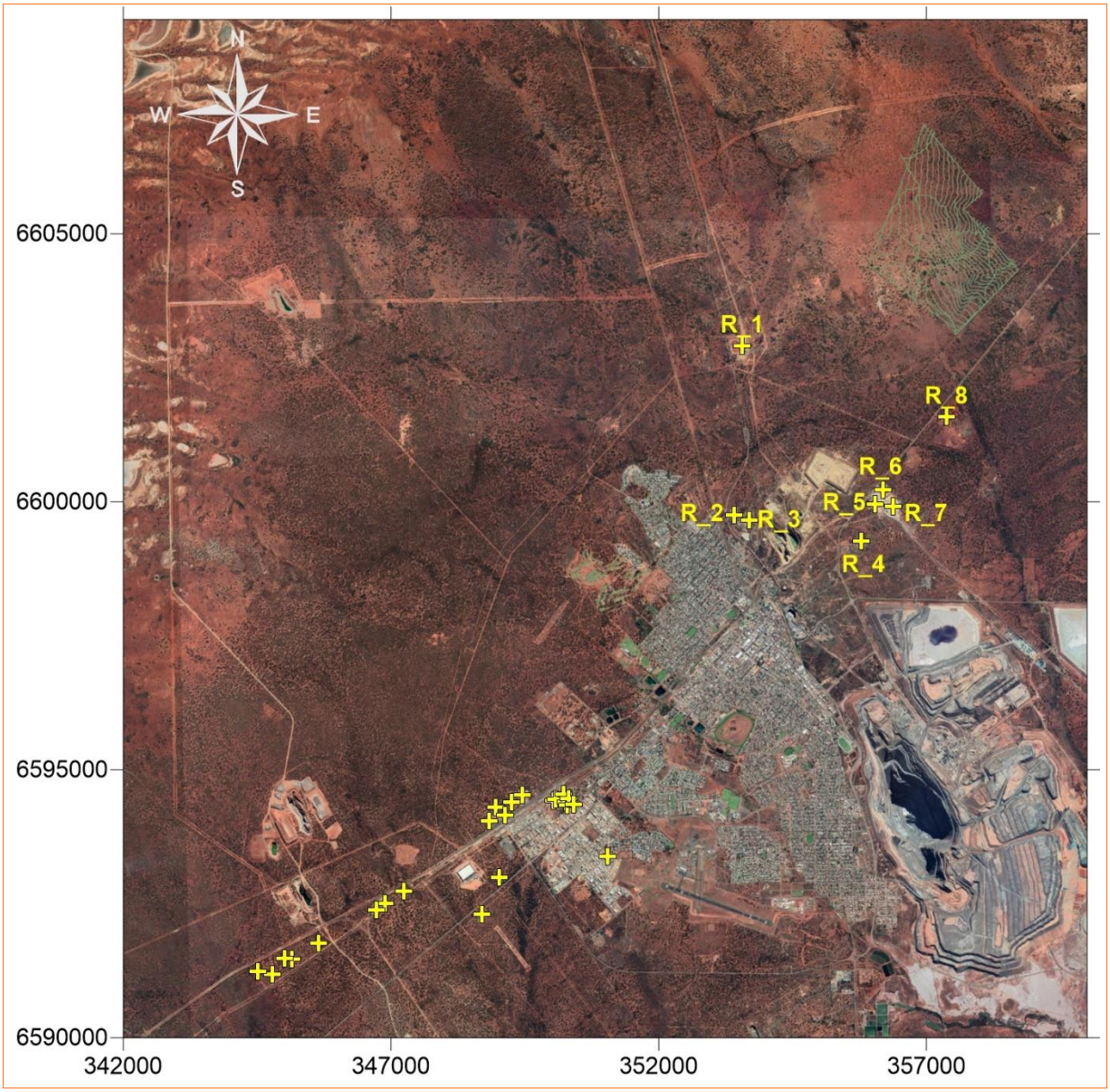

Figure 1-2: Additional discrete sensitive receptor locations associated with inclusion of Yarri Road facility