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16 November 2021

RW Corkery and Co Pty Ltd
1st Floor, 12 Dangar Road
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Attention: Scott Hollamby (scott@rwcorkery.com)

Final responses regarding the human health risk assessment for Bowdens Silver Mine

Introduction

Environmental Risk Sciences Pty Ltd (enRiskS) has been engaged to provide some additional figures and tables requested by NSW Department of Planning, Industry and Environment (NSW DPIE) and to provide any further responses, where necessary, to the final review comments from Dr Roger Drew on the HHRA prepared as part of the Environment Impact Statement and Response to Submissions for the Bowdens Silver Mine *(SSD 5765)*

Dr Drew has provided final comments in the following document:

- Drew Toxicology Consulting (2021) Comments on responses to review of HHRA for Bowdens Silver Mine (SSD 5765).

Dr Drew undertook a detailed review of the HHRA for the proposed mine prepared by enRiskS in 2020. The HHRA was part of the environmental impact statement for the project. The comments made by Dr Drew were considered and addressed in April 2021 and the overall report was revised, where necessary, to address the comments. A change log was also provided at that time noting how the comment from Dr Drew had been addressed in the revised HHRA.

Dr Drew was asked to consider the revised HHRA and the change log to provide advice to NSW DPIE. The report noted above provides his final comments on the HHRA.

NSW DPIE have also requested some additional information as follows:

- An updated copy of figures 5.3, 5.4 and 5.5 (of the HHRA) that includes the orange bars in the legend.
- Confirmation that figures 5.4 and 5.5 reflect the RI at property R4.
- Justification for presenting the calculated RI based on emissions during year 8, noting that year 9 exposures are seemingly higher and would, therefore, represent a more conservative assessment.
- Figure 5.6 and 5.7 graphically represents the lead exposure at private receptors. However, it is difficult to determine from the chart exactly what the calculated RI is for each property for existing and cumulative exposures. It would be appreciated if you could provide the numerical values, at least for properties R4 and R21.
- As noted by Dr. Drew, the RI has been presented for exposures to metals in air at privately-owned and project-related properties, but for multi path exposures only privately-owned properties have been included. It is also not clear whether the project related residences could or would be tenanted and, therefore, what the health risks would be to prospective tenants. The Department requests

that you provide the calculated RI for multi-path exposures for all residences, including project related.

Overall view – Dr Drew report

Dr Drew has indicated that he agrees with the conclusions of the HHRA and that the proposed mine poses a low risk to people. He specifically notes the following:

> *Overall, the HHRA follows the standard process for conducting such assessments in Australia. The HHRA concentrates on incremental health risks that the mine proposal may present. The revised HHRA adequately documents the methodology and important assumption are supported. The calculations indicate health risks due to the proposed mine are very low. I agree with these conclusions.*

Specific comments – Dr Drew report

Dr Drew has kindly provided discussion of all responses in line with the change log provided earlier in 2021. Most of his responses indicate that he agrees that:

- a matter has been addressed adequately or
- additional information provided in the revised HHRA is appreciated and helpful or
- some further information could have been added to address the initial review comment better but no change to the conclusions of the HHRA would have occurred should that have been done.

Data transparency

One of the main matters that was considered by Dr Drew to have not been addressed adequately was some matters around data transparency. The data used in the HHRA were sourced from studies undertaken for use in the environmental impact statement and which have been documented in detail in other technical reports that form part of the planning documents.

While it is noted that sufficient information about the data and its quality used in any HHRA should be provided in a HHRA, there are limitations at times placed on assessors in regard to how much of the specific details in other technical reports can be repeated in the HHRA. It is acknowledged that, in all cases, sufficient summary information along with appropriate links to the specific details must be provided in any HHRA. It is believed that the revised HHRA provided sufficient information and references for the sources of all information used. It is not appropriate for the HHRA to simply repeat all detail provided in other technical reports that are referenced. It is acknowledged that this may not be in line with the preferences of the reviewer.

It is also noted that the data relevant to these comments are those related to investigations of the existing environment. While it is important to provide an appropriate description of existing exposures when assessing a new development, it is the exposure from the new development which is critical. Providing excessive technical detail about the existing environment can be distracting/confusing when trying to demonstrate the size of any potential risks from the new development. In this case, quite a large amount of data were collected in regard to the existing environment which provided an excellent level of understanding but readers could easily have been confused if all of these data were described in detail and would have resulted in a discussion of the existing environment which was very much larger than the discussion of the new mining development.

Project related residences

Calculations were undertaken for both private and project related residential locations in the initial stages of the assessment, however risks for project owned properties were not the focus of the EIS (including the air quality impact assessment) and hence the calculations presented in the HHRA related to private properties. Further information on this matter has been provided later in this letter report.

Other matters

The other matters listed are noted and the issues raised mostly relate to personal preference when explaining technical matters. The comments provided by Dr Drew are noted but do not require any further discussion.

Additional information – NSW DPIE

This section provides additional information to address the specific requests from NSW DPIE.

An updated copy of figures 5.3, 5.4 and 5.5 (of the HHRA) that includes the orange bars in the legend.

The legend provided for Figure 5.3 in the HHRA already includes the definition for the orange bars. The orange portion of these bar graphs represents the contribution for each of the metals from dietary exposures – i.e. what people are exposed to from the food they consume.

The legend for Figures 5.4 and 5.5 in the HHRA already includes a definition of the orange bar, which relates to the ingestion of soil. It is noted that there are three items in the legend (ingestion of soil, ingestion of tank water and ingestion of home milk) that have used varying shades of orange. To assist in distinguishing these colours/items more clearly the colour for ingestion of tank water has been changed to purple. The colour for ingestion of soil remains as orange and the colour for ingestion of home milk remains as yellow (which is visually different to the orange).

These figures are included below.

Figure 5.3 Calculated RI for Existing Exposures to Metals in the Environment

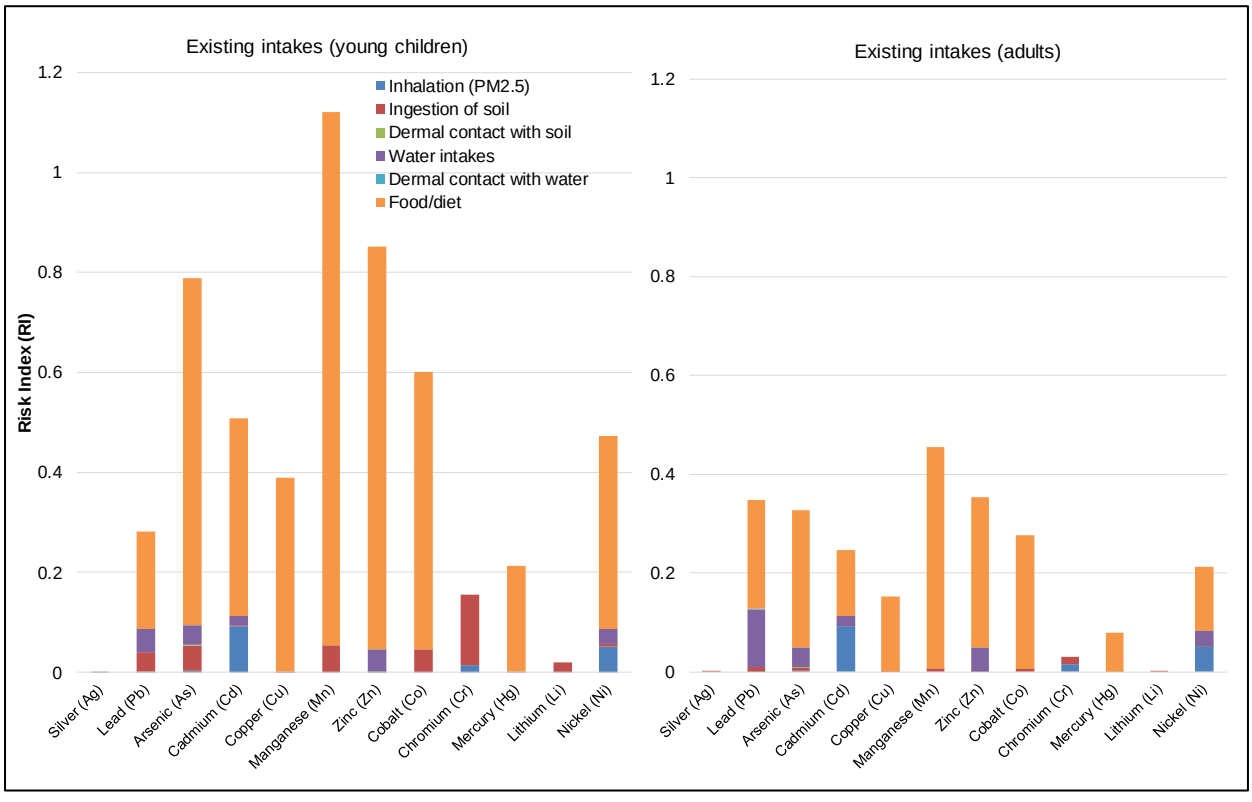


Figure 5.4 Calculated RI for Existing and Project Exposures (Scenario 3 – Year 8) – Young Children

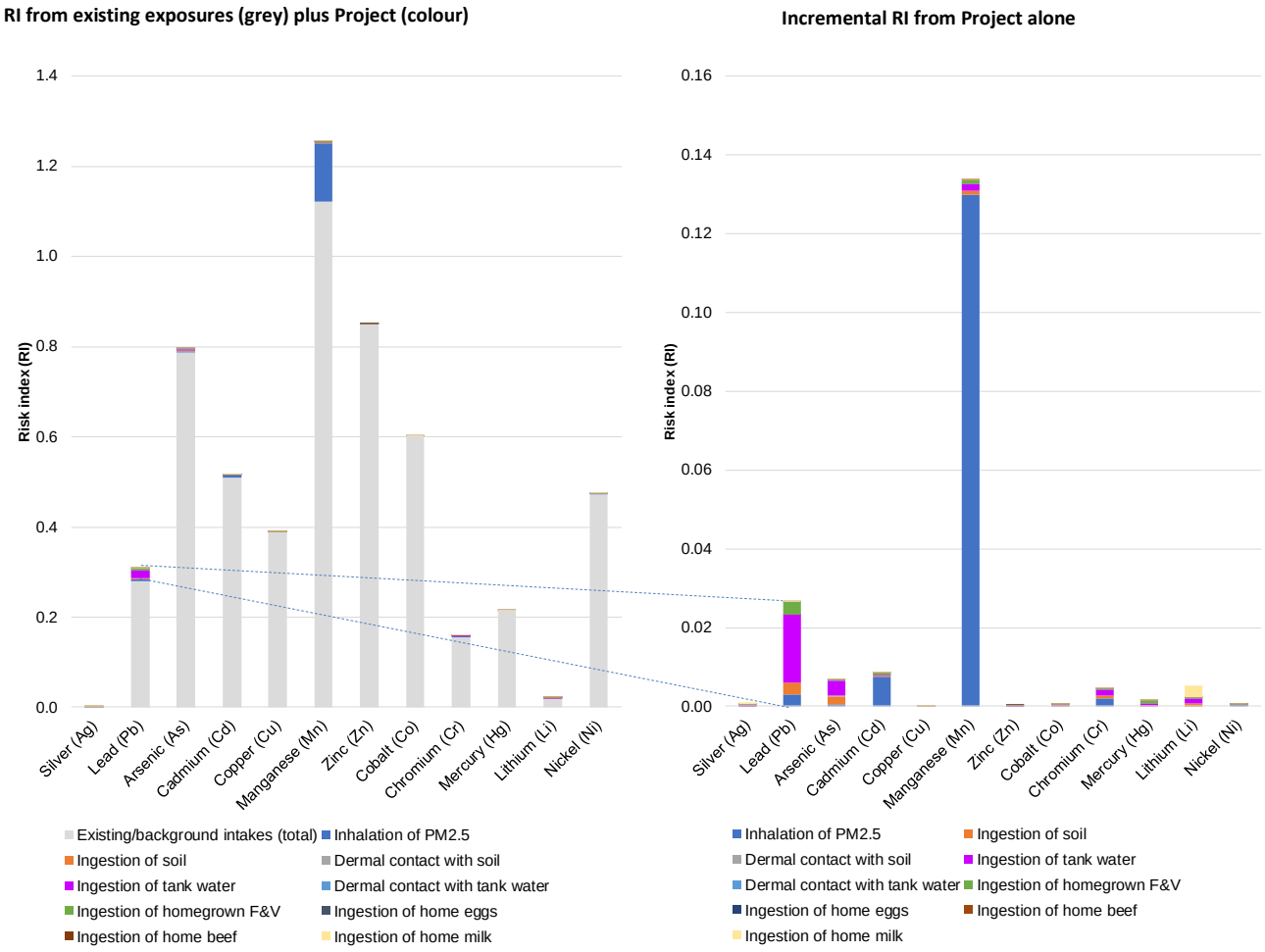
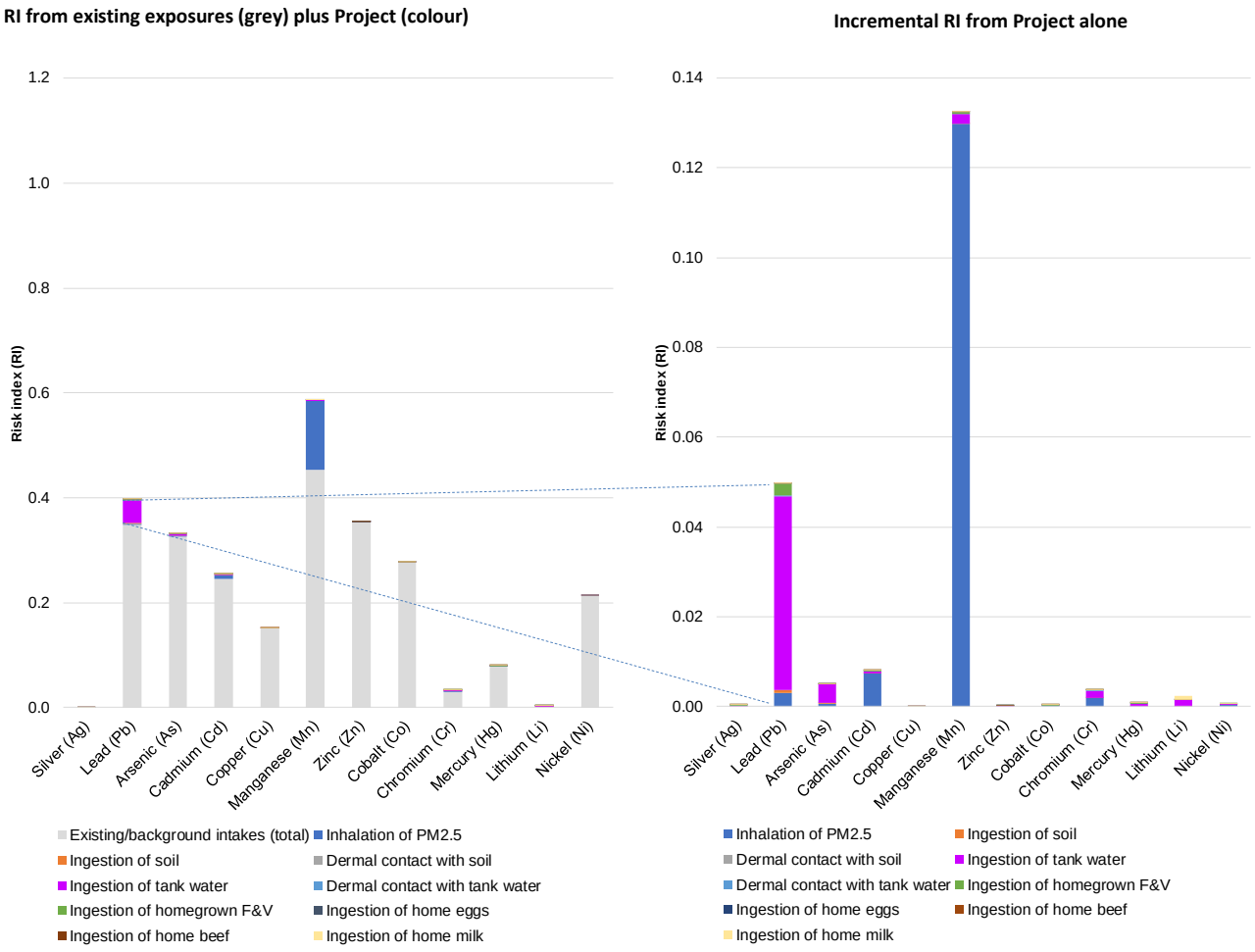


Figure 5.5 Calculated RI for Existing and Project Exposures (Scenario 3 – Year 8) – Adults



Confirmation that Figures 5.4 and 5.5 reflect the RI at property R4.

Figures 5.4 and 5.5 of the HHRA provide the risk indices for the maximum impacted private residence. Therefore, they show the worst case for any private residence and all other lots will have lower risks. The maximum impacted private residence is R4 as stated in paragraph 4 underneath Figure 5.5.

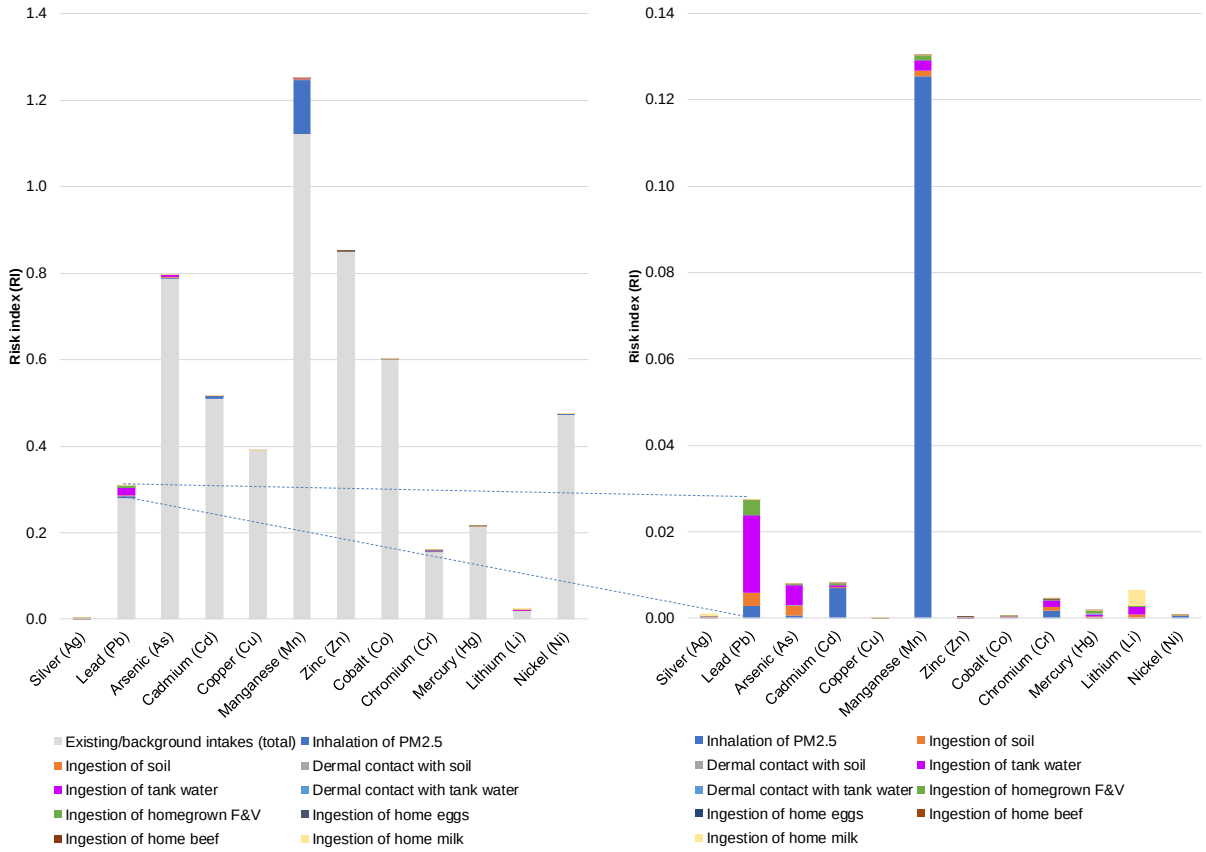
Justification for presenting the calculated RI based on emissions during year 8, noting that year 9 exposures are seemingly higher and would, therefore, represent a more conservative assessment.

All project scenarios have been assessed in the HHRA. The only place where information is presented differently for Scenario 3 (Year 8) is the graphical representation of the data, which is presented in Figures 5.4 and 5.5 of the HHRA.

The initial air quality assessments all indicated that the worst case year was the one that was used in the figures throughout the HHRA. The worst case year changed slightly in the final version of the AQA but, given that the change was extremely small, it was decided to retain the figures as they were as there was no measurable difference. It is noted that data for all years are provided in the tables near the figures in the report.

For completeness the following presents figures for the calculated RI for the maximum private residential receptor location relevant to Scenario 4 (Year 9) for children and adults. These can be compared with Figures 5.4 and 5.5 included above for Scenario 3 (Year 8). There is no discernible difference in the RI presented in these figures.

Calculated RI for Existing and Project Exposures (Scenario 4 – Year 9) – Young Children



Calculated RI for Existing and Project Exposures (Scenario 4 – Year 9) – Adults

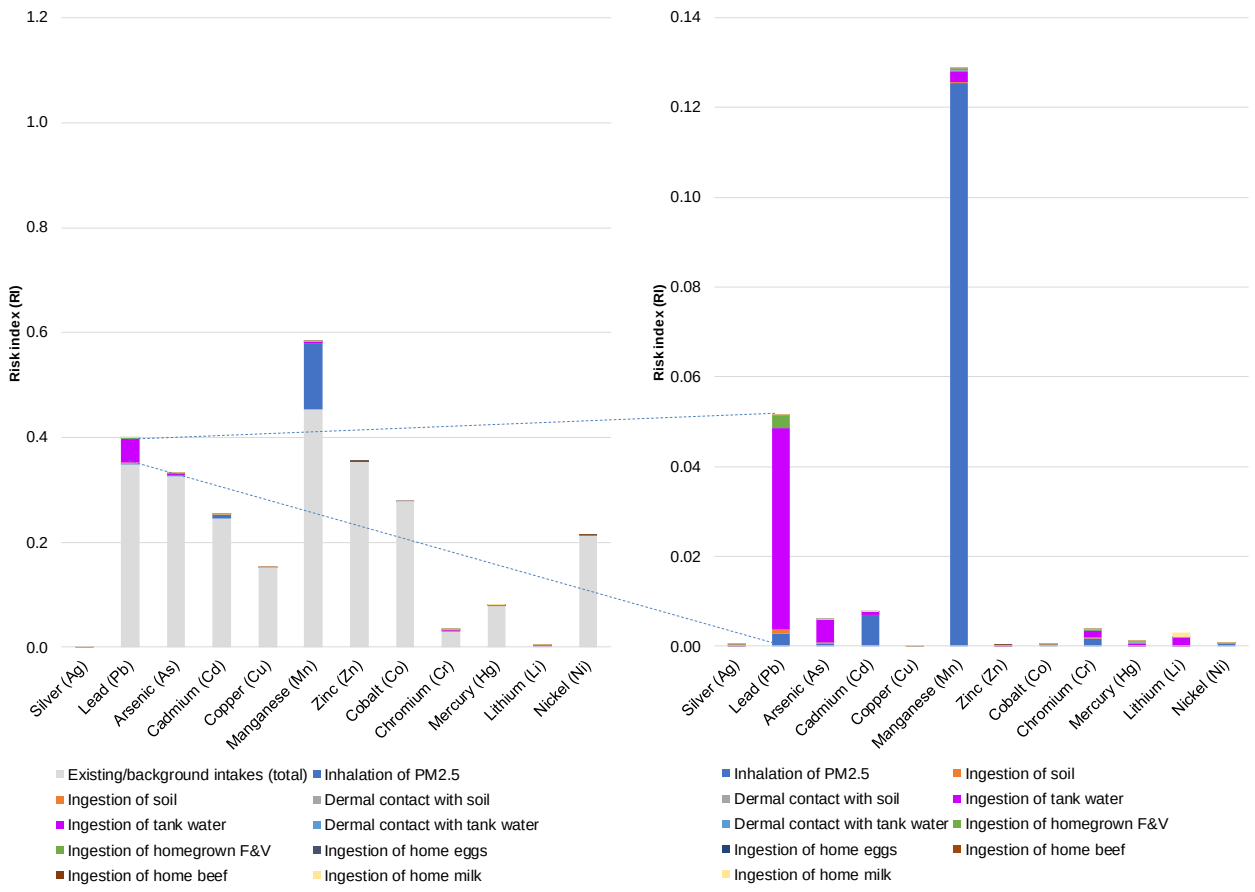


Figure 5.6 and 5.7 graphically represents the lead exposure at private receptors. However, it is difficult to determine from the chart exactly what the calculated RI is for each property for existing and cumulative exposures. It would be appreciated if you could provide the numerical values, at least for properties R4 and R21.

A table of the results is included in **Attachment A** along with a reproduction of Figure 5.6 and 5.7 with additional significant figures in the y-axis to assist in reading the values. It is noted that these results indicate the risks at most properties are between 0.28 and 0.29 which are not significantly different.

As noted by Dr. Drew, the RI has been presented for exposures to metals in air at privately-owned and project-related properties, but for multi path exposures only privately-owned properties have been included. It is also not clear whether the project related residences could or would be tenanted and, therefore, what the health risks would be to prospective tenants. The Department requests that you provide the calculated RI for multi-path exposures for all residences, including project related.

A similar table, as that noted above, has been provided in **Attachment B** detailing the results for the project related properties along with a map that shows the location of these properties. The data presented relates to Scenario 3 (Year 8). As noted above the calculated risks are not discernibly different for Scenario 4 (Year 9).

The project related properties included in **Attachment B** only include properties that would remain. Four properties in the mining area would be demolished (as detailed in Section 2.3.2, 2.14.1 and 2.14.2 of the EIS) and would not be occupied. This includes property R1C which is in the pit area, and properties R1D, R1E and R1F. Calculations of multi-pathway risk has not been presented for the properties that will be demolished.

Attachment B also includes graphs relevant to the project related properties only. The graphs presented in **Attachment B** include the following:

- calculated RI for the maximum impacted project related property, relevant to multipathway exposures to all metals evaluated for young children and adults (tables of calculate RI relevant to these graphs are also included)
- calculated RI relevant to multipathway exposures for lead at each project related property (tables of calculated RI relevant to these graphs are also included).

The total RI for the project related properties (from multi-pathway exposures) remains below 1. Hence calculated risks are considered to be low and acceptable for all properties including the project related properties.

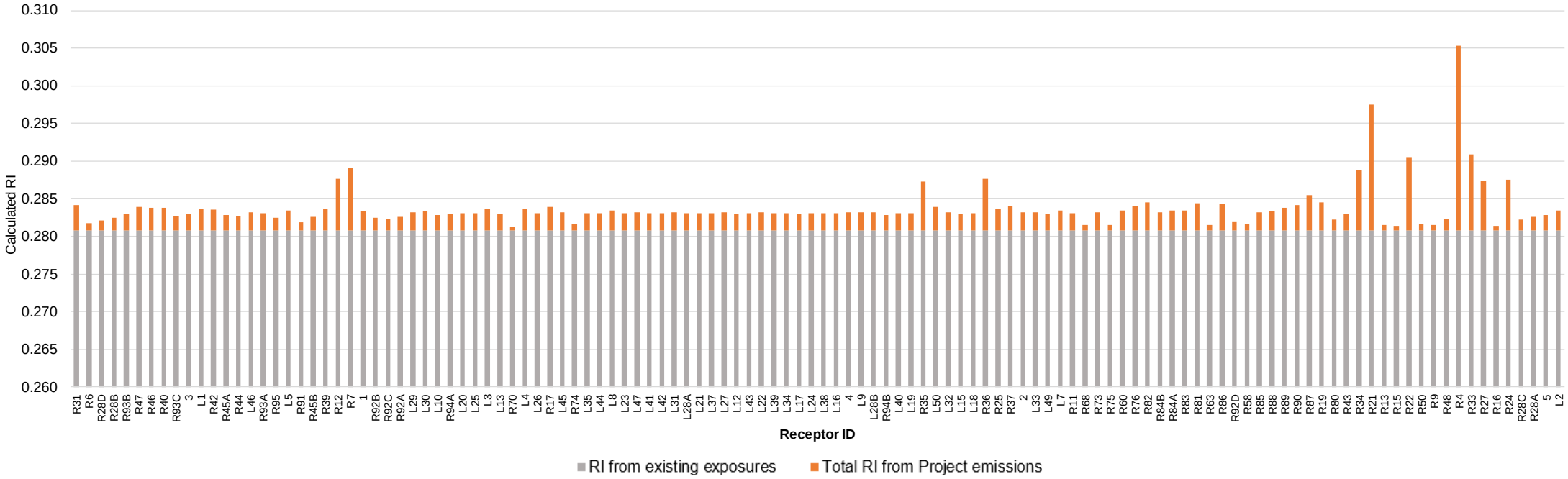
I would be happy to discuss any aspect of the issues raised, or the response, with Dr Roger Drew and/or the NSW Department of Planning, Industry and Environment, as required.

Yours sincerely,

Dr Jackie Wright (Fellow ACTRA)
Principal/Director
Environmental Risk Sciences Pty Ltd

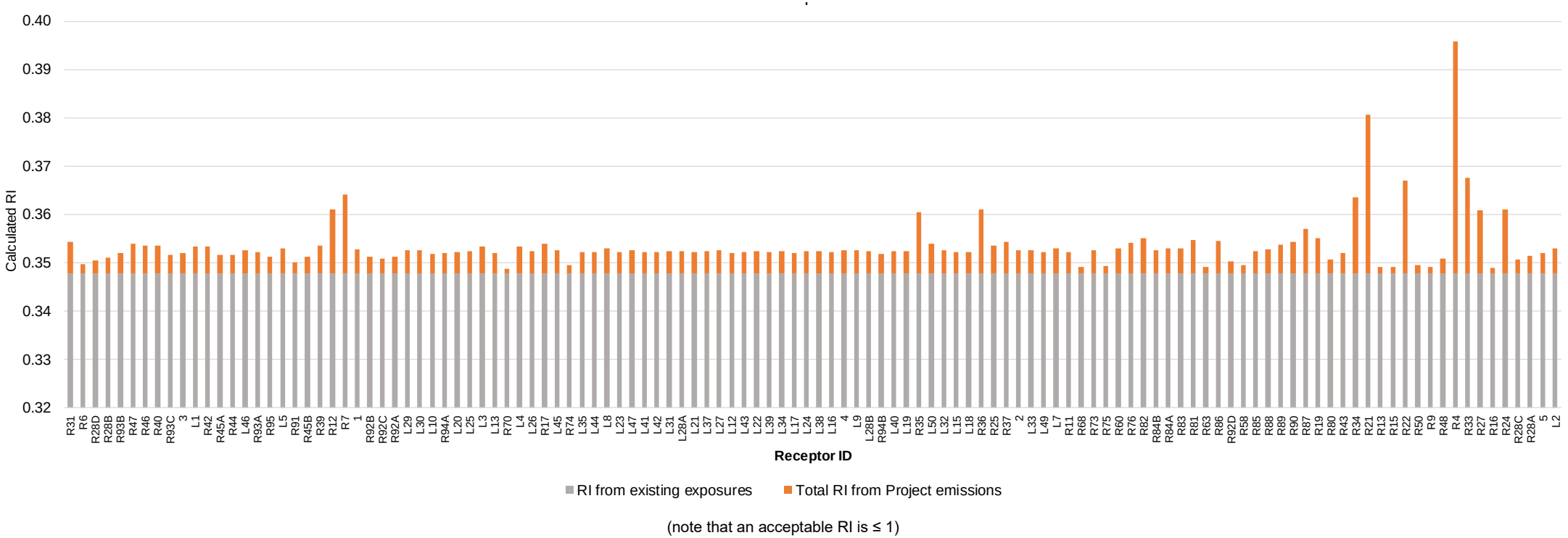
Attachment A: Calculated RI for lead exposure, Scenario 3 (Year 8) for all properties evaluated in HHRA (multi-pathway exposures)

Figure 5.6 Calculated RI for Exposure to Lead at each Private Receptor / Residence – Young Children



(note that an acceptable RI is ≤ 1)

Figure 5.7 Calculated RI for Exposure to Lead at each Private Receptor/Residence – Adults



(note that an acceptable RI is ≤ 1)

RI calculated for exposure to lead at each individual private property

		Young children										
			Calculated RI for each individual pathway assessed (project emissions)									
Receptor	Ownership	RI from existing exposures	Inhalation of PM2.5	Ingestion of soil	Ingestion of tank water	Dermal contact with tank water	Ingestion of homegrown F&V	Ingestion of home eggs	Ingestion of home beef	Ingestion of home milk	Total RI from Project emissions	Total RI (existing exposures + Project)
R31	Private	2.8E-01	2.0E-05	3.9E-04	2.3E-03	1.4E-05	4.9E-04	9.8E-07	3.3E-06	5.9E-05	3.3E-03	2.84E-01
R6	Private	2.8E-01	8.0E-06	1.1E-04	6.5E-04	3.9E-06	1.4E-04	2.7E-07	9.1E-07	1.6E-05	9.2E-04	2.82E-01
R28D	Private	2.8E-01	1.2E-05	1.6E-04	9.4E-04	5.8E-06	2.0E-04	4.0E-07	1.3E-06	2.4E-05	1.3E-03	2.82E-01
R28B	Private	2.8E-01	1.3E-05	2.0E-04	1.2E-03	7.2E-06	2.5E-04	5.0E-07	1.7E-06	3.0E-05	1.7E-03	2.82E-01
R93B	Private	2.8E-01	3.8E-05	2.5E-04	1.5E-03	9.2E-06	3.2E-04	6.4E-07	2.1E-06	3.8E-05	2.2E-03	2.83E-01
R47	Private	2.8E-01	4.2E-05	3.6E-04	2.2E-03	1.3E-05	4.6E-04	9.2E-07	3.1E-06	5.5E-05	3.1E-03	2.84E-01
R46	Private	2.8E-01	4.3E-05	3.4E-04	2.1E-03	1.3E-05	4.4E-04	8.7E-07	2.9E-06	5.2E-05	2.9E-03	2.84E-01
R40	Private	2.8E-01	4.1E-05	3.4E-04	2.1E-03	1.3E-05	4.4E-04	8.7E-07	2.9E-06	5.2E-05	3.0E-03	2.84E-01
R93C	Private	2.8E-01	3.5E-05	2.2E-04	1.3E-03	8.1E-06	2.8E-04	5.6E-07	1.9E-06	3.4E-05	1.9E-03	2.83E-01
3	Private	2.8E-01	3.5E-05	2.5E-04	1.5E-03	9.2E-06	3.2E-04	6.4E-07	2.1E-06	3.8E-05	2.2E-03	2.83E-01
L1	Private	2.8E-01	4.2E-05	3.3E-04	2.0E-03	1.2E-05	4.2E-04	8.4E-07	2.8E-06	5.0E-05	2.8E-03	2.84E-01
R42	Private	2.8E-01	3.9E-05	3.2E-04	1.9E-03	1.2E-05	4.1E-04	8.2E-07	2.7E-06	4.9E-05	2.8E-03	2.84E-01
R45A	Private	2.8E-01	3.1E-05	2.3E-04	1.4E-03	8.4E-06	2.9E-04	5.8E-07	1.9E-06	3.5E-05	2.0E-03	2.83E-01
R44	Private	2.8E-01	3.0E-05	2.2E-04	1.3E-03	8.1E-06	2.8E-04	5.7E-07	1.9E-06	3.4E-05	1.9E-03	2.83E-01
L46	Private	2.8E-01	3.9E-05	2.8E-04	1.7E-03	1.0E-05	3.5E-04	7.1E-07	2.4E-06	4.2E-05	2.4E-03	2.83E-01
R93A	Private	2.8E-01	4.0E-05	2.6E-04	1.6E-03	9.5E-06	3.3E-04	6.6E-07	2.2E-06	4.0E-05	2.2E-03	2.83E-01
R95	Private	2.8E-01	2.9E-05	2.0E-04	1.2E-03	7.2E-06	2.5E-04	5.0E-07	1.7E-06	3.0E-05	1.7E-03	2.82E-01
L5	Private	2.8E-01	3.9E-05	3.0E-04	1.8E-03	1.1E-05	3.9E-04	7.7E-07	2.6E-06	4.6E-05	2.6E-03	2.83E-01
R91	Private	2.8E-01	2.2E-05	1.3E-04	7.6E-04	4.7E-06	1.6E-04	3.2E-07	1.1E-06	1.9E-05	1.1E-03	2.82E-01
R45B	Private	2.8E-01	2.8E-05	2.0E-04	1.2E-03	7.3E-06	2.6E-04	5.1E-07	1.7E-06	3.1E-05	1.7E-03	2.83E-01
R39	Private	2.8E-01	4.1E-05	3.4E-04	2.0E-03	1.2E-05	4.3E-04	8.7E-07	2.9E-06	5.2E-05	2.9E-03	2.84E-01
R12	Private	2.8E-01	9.8E-05	7.9E-04	4.7E-03	2.9E-05	1.0E-03	2.0E-06	6.7E-06	1.2E-04	6.8E-03	2.88E-01
R7	Private	2.8E-01	9.7E-05	9.7E-04	5.8E-03	3.6E-05	1.2E-03	2.5E-06	8.2E-06	1.5E-04	8.3E-03	2.89E-01
1	Private	2.8E-01	3.9E-05	3.0E-04	1.8E-03	1.1E-05	3.8E-04	7.6E-07	2.5E-06	4.5E-05	2.6E-03	2.83E-01
R92B	Private	2.8E-01	3.1E-05	2.0E-04	1.2E-03	7.2E-06	2.5E-04	5.0E-07	1.7E-06	3.0E-05	1.7E-03	2.83E-01
R92C	Private	2.8E-01	2.9E-05	1.8E-04	1.1E-03	6.7E-06	2.3E-04	4.7E-07	1.5E-06	2.8E-05	1.6E-03	2.82E-01
R92A	Private	2.8E-01	3.1E-05	2.0E-04	1.2E-03	7.3E-06	2.6E-04	5.1E-07	1.7E-06	3.0E-05	1.7E-03	2.83E-01
L29	Private	2.8E-01	4.2E-05	2.8E-04	1.7E-03	1.0E-05	3.5E-04	7.1E-07	2.3E-06	4.2E-05	2.4E-03	2.83E-01
L30	Private	2.8E-01	4.5E-05	2.8E-04	1.7E-03	1.0E-05	3.6E-04	7.3E-07	2.4E-06	4.4E-05	2.5E-03	2.83E-01
L10	Private	2.8E-01	3.3E-05	2.4E-04	1.4E-03	8.8E-06	3.1E-04	6.1E-07	2.0E-06	3.7E-05	2.1E-03	2.83E-01
R94A	Private	2.8E-01	3.6E-05	2.4E-04	1.5E-03	9.0E-06	3.1E-04	6.3E-07	2.1E-06	3.7E-05	2.1E-03	2.83E-01
L20	Private	2.8E-01	3.6E-05	2.6E-04	1.6E-03	9.6E-06	3.3E-04	6.7E-07	2.2E-06	4.0E-05	2.3E-03	2.83E-01
L25	Private	2.8E-01	3.8E-05	2.7E-04	1.6E-03	9.8E-06	3.4E-04	6.8E-07	2.3E-06	4.1E-05	2.3E-03	2.83E-01
L3	Private	2.8E-01	4.2E-05	3.3E-04	2.0E-03	1.2E-05	4.2E-04	8.3E-07	2.8E-06	5.0E-05	2.8E-03	2.84E-01
L13	Private	2.8E-01	3.5E-05	2.5E-04	1.5E-03	9.1E-06	3.2E-04	6.3E-07	2.1E-06	3.8E-05	2.1E-03	2.83E-01
R70	Private	2.8E-01	4.0E-06	5.5E-05	3.3E-04	2.0E-06	7.0E-05	1.4E-07	4.7E-07	8.4E-06	4.7E-04	2.81E-01
L4	Private	2.8E-01	4.1E-05	3.3E-04	2.0E-03	1.2E-05	4.2E-04	8.3E-07	2.8E-06	5.0E-05	2.8E-03	2.84E-01
L26	Private	2.8E-01	3.8E-05	2.7E-04	1.6E-03	9.9E-06	3.4E-04	6.9E-07	2.3E-06	4.1E-05	2.3E-03	2.83E-01
R17	Private	2.8E-01	1.6E-05	3.6E-04	2.2E-03	1.3E-05	4.6E-04	9.2E-07	3.1E-06	5.5E-05	3.1E-03	2.84E-01
L45	Private	2.8E-01	4.2E-05	2.8E-04	1.7E-03	1.0E-05	3.6E-04	7.2E-07	2.4E-06	4.3E-05	2.4E-03	2.83E-01
R74	Private	2.8E-01	6.5E-06	1.0E-04	6.1E-04	3.7E-06	1.3E-04	2.6E-07	8.5E-07	1.5E-05	8.6E-04	2.82E-01
L35	Private	2.8E-01	3.6E-05	2.6E-04	1.5E-03	9.4E-06	3.3E-04	6.5E-07	2.2E-06	3.9E-05	2.2E-03	2.83E-01
L44	Private	2.8E-01	3.9E-05	2.6E-04	1.5E-03	9.4E-06	3.3E-04	6.5E-07	2.2E-06	3.9E-05	2.2E-03	2.83E-01
L8	Private	2.8E-01	4.0E-05	3.0E-04	1.8E-03	1.1E-05	3.9E-04	7.7E-07	2.6E-06	4.6E-05	2.6E-03	2.83E-01
L23	Private	2.8E-01	3.7E-05	2.6E-04	1.6E-03	9.6E-06	3.3E-04	6.7E-07	2.2E-06	4.0E-05	2.3E-03	2.83E-01
L47	Private	2.8E-01	4.0E-05	2.8E-04	1.7E-03	1.0E-05	3.5E-04	7.1E-07	2.4E-06	4.2E-05	2.4E-03	2.83E-01
L41	Private	2.8E-01	3.9E-05	2.6E-04	1.6E-03	9.6E-06	3.3E-04	6.7E-07	2.2E-06	4.0E-05	2.3E-03	2.83E-01
L42	Private	2.8E-01	3.8E-05	2.6E-04	1.6E-03	9.6E-06	3.3E-04	6.7E-07	2.2E-06	4.0E-05	2.3E-03	2.83E-01
L31	Private	2.8E-01	4.0E-05	2.7E-04	1.6E-03	9.9E-06	3.4E-04	6.9E-07	2.3E-06	4.1E-05	2.3E-03	2.83E-01
L28A	Private	2.8E-01	3.6E-05	2.7E-04	1.6E-03	9.8E-06	3.4E-04	6.8E-07	2.3E-06	4.1E-05	2.3E-03	2.83E-01
L21	Private	2.8E-01	3.6E-05	2.6E-04	1.6E-03	9.6E-06	3.3E-04	6.7E-07	2.2E-06	4.0E-05	2.3E-03	2.83E-01
L37	Private	2.8E-01	3.8E-05	2.7E-04	1.6E-03	9.9E-06	3.4E-04	6.8E-07	2.3E-06	4.1E-05	2.3E-03	2.83E-01
L27	Private	2.8E-01	3.8E-05	2.8E-04	1.7E-03	1.0E-05	3.5E-04	7.0E-07	2.3E-06	4.2E-05	2.4E-03	2.83E-01
L12	Private	2.8E-01	3.4E-05	2.4E-04	1.5E-03	9.0E-06	3.1E-04	6.2E-07	2.1E-06	3.7E-05	2.1E-03	2.83E-01
L43	Private	2.8E-01	3.9E-05	2.6E-04	1.6E-03	9.5E-06	3.3E-04	6.6E-07	2.2E-06	3.9E-05	2.2E-03	2.83E-01
L22	Private	2.8E-01	3.7E-05	2.7E-04	1.6E-03	9.9E-06	3.4E-04	6.9E-07	2.3E-06	4.1E-05	2.3E-03	2.83E-01
L39	Private	2.8E-01	3.7E-05	2.6E-04	1.5E-03	9.4E-06	3.3E-04	6.5E-07	2.2E-06	3.9E-05	2.2E-03	2.83E-01
L34	Private	2.8E-01	3.9E-05	2.7E-04	1.6E-03	9.8E-06	3.4E-04	6.8E-07	2.3E-06	4.1E-05	2.3E-03	2.83E-01
L17	Private	2.8E-01	3.6E-05	2.5E-04	1.5E-03	9.2E-06	3.2E-04	6.4E-07	2.1E-06	3.8E-05	2.2E-03	2.83E-01
L24	Private	2.8E-01	3.8E-05	2.7E-04	1.6E-03	9.8E-06	3.4E-04	6.8E-07	2.3E-06	4.1E-05	2.3E-03	2.83E-01
L38	Private	2.8E-01	3.8E-05	2.6E-04	1.6E-03	9.7E-06	3.4E-04	6.7E-07	2.2E-06	4.0E-05	2.3E-03	2.83E-01
L16	Private	2.8E-01	3.7E-05	2.6E-04	1.5E-03	9.4E-06	3.3E-04	6.6E-07	2.2E-06	3.9E-05	2.2E-03	2.83E-01
4	Private	2.8E-01	3.7E-05	2.8E-04	1.7E-03	1.0E-05	3.5E-04	7.0E-07	2.3E-06	4.2E-05	2.4E-03	2.83E-01
L9	Private	2.8E-01	3.7E-05	2.8E-04	1.7E-03	1.0E-05	3.5E-04	7.0E-07	2.3E-06	4.2E-05	2.4E-03	2.83E-01
L28B	Private	2.8E-01	3.7E-05	2.7E-04	1.6E-03	1.0E-05	3.5E-04	6.9E-07	2.3E-06	4.1E-05	2.3E-03	2.83E-01
R94B	Private	2.8E-01	3.5E-05	2.4E-04	1.4E-03	8.8E-06	3.0E-04	6.1E-07	2.0E-06	3.6E-05	2.1E-03	2.83E-01
L40	Private	2.8E-01	3.9E-05	2.7E-04	1.6E-03	9.8E-06	3.4E-04	6.8E-07	2.3E-06	4.1E-05	2.3E-03	2.83E-01
L19	Private	2.8E-01	3.7E-05	2.6E-04	1.6E-03	9.7E-06	3.4E-04	6.8E-07	2.2E-06	4.0E-05	2.3E-03	2.83E-01
R35	Private	2.8E-01	6.7E-05	7.5E-04	4.5E-03	2.8E-05	9.6E-04	1.9E-06	6.4E-06	1.1E-04	6.5E-03	2.87E-01
L50	Private	2.8E-01	4.5E-05	3.6E-04	2.2E-03	1.3E-05	4.6E-04	9.2E-07	3.0E-06	5.5E-05	3.1E-03	2.84E-01
L32	Private	2.8E-01	4.2E-05	2.8E-04	1.7E-03	1.0E-05	3.6E-04	7.1E-07	2.4E-06	4.3E-05	2.4E-03	2.83E-01
L15	Private	2.8E-01	3.5E-05	2.5E-04	1.5E-03	9.3E-06	3.2E-04	6.4E-07	2.1E-06	3.9E-05	2.2E-03	2.83E-01

		Young children										
			Calculated RI for each individual pathway assessed (project emissions)									
Receptor	Ownership	RI from existing exposures	Inhalation of PM2.5	Ingestion of soil	Ingestion of tank water	Dermal contact with tank water	Ingestion of homegrown F&V	Ingestion of home eggs	Ingestion of home beef	Ingestion of home milk	Total RI from Project emissions	Total RI (existing exposures + Project)
L18	Private	2.8E-01	3.6E-05	2.6E-04	1.6E-03	9.5E-06	3.3E-04	6.6E-07	2.2E-06	4.0E-05	2.2E-03	2.83E-01
R36	Private	2.8E-01	5.1E-05	7.9E-04	4.8E-03	2.9E-05	1.0E-03	2.0E-06	6.7E-06	1.2E-04	6.8E-03	2.88E-01
R25	Private	2.8E-01	4.2E-05	3.3E-04	2.0E-03	1.2E-05	4.3E-04	8.5E-07	2.8E-06	5.1E-05	2.9E-03	2.84E-01
R37	Private	2.8E-01	4.3E-05	3.8E-04	2.3E-03	1.4E-05	4.9E-04	9.7E-07	3.2E-06	5.8E-05	3.3E-03	2.84E-01
2	Private	2.8E-01	4.1E-05	2.7E-04	1.7E-03	1.0E-05	3.5E-04	7.0E-07	2.3E-06	4.2E-05	2.4E-03	2.83E-01
L33	Private	2.8E-01	4.1E-05	2.8E-04	1.7E-03	1.0E-05	3.5E-04	7.0E-07	2.3E-06	4.2E-05	2.4E-03	2.83E-01
L49	Private	2.8E-01	3.4E-05	2.5E-04	1.5E-03	9.3E-06	3.2E-04	6.5E-07	2.1E-06	3.9E-05	2.2E-03	2.83E-01
L7	Private	2.8E-01	3.9E-05	3.0E-04	1.8E-03	1.1E-05	3.8E-04	7.7E-07	2.5E-06	4.6E-05	2.6E-03	2.83E-01
R11	Private	2.8E-01	3.5E-05	2.6E-04	1.6E-03	9.5E-06	3.3E-04	6.6E-07	2.2E-06	3.9E-05	2.2E-03	2.83E-01
R68	Private	2.8E-01	6.2E-06	7.6E-05	4.6E-04	2.8E-06	9.8E-05	1.9E-07	6.5E-07	1.2E-05	6.6E-04	2.81E-01
R73	Private	2.8E-01	1.4E-05	2.8E-04	1.7E-03	1.0E-05	3.6E-04	7.2E-07	2.4E-06	4.3E-05	2.4E-03	2.83E-01
R75	Private	2.8E-01	6.2E-06	8.2E-05	5.0E-04	3.0E-06	1.1E-04	2.1E-07	7.0E-07	1.3E-05	7.1E-04	2.82E-01
R60	Private	2.8E-01	2.4E-05	3.0E-04	1.8E-03	1.1E-05	3.9E-04	7.7E-07	2.6E-06	4.6E-05	2.6E-03	2.83E-01
R76	Private	2.8E-01	2.3E-05	3.8E-04	2.3E-03	1.4E-05	4.8E-04	9.7E-07	3.2E-06	5.8E-05	3.2E-03	2.84E-01
R82	Private	2.8E-01	5.6E-05	4.3E-04	2.6E-03	1.6E-05	5.5E-04	1.1E-06	3.6E-06	6.5E-05	3.7E-03	2.84E-01
R84B	Private	2.8E-01	4.1E-05	2.8E-04	1.7E-03	1.0E-05	3.6E-04	7.2E-07	2.4E-06	4.3E-05	2.4E-03	2.83E-01
R84A	Private	2.8E-01	4.1E-05	3.1E-04	1.9E-03	1.1E-05	3.9E-04	7.8E-07	2.6E-06	4.7E-05	2.7E-03	2.83E-01
R83	Private	2.8E-01	4.3E-05	3.1E-04	1.9E-03	1.1E-05	3.9E-04	7.9E-07	2.6E-06	4.7E-05	2.7E-03	2.83E-01
R81	Private	2.8E-01	5.4E-05	4.1E-04	2.5E-03	1.5E-05	5.2E-04	1.0E-06	3.5E-06	6.3E-05	3.5E-03	2.84E-01
R63	Private	2.8E-01	4.4E-06	8.0E-05	4.8E-04	3.0E-06	1.0E-04	2.1E-07	6.8E-07	1.2E-05	6.9E-04	2.81E-01
R86	Private	2.8E-01	4.5E-05	4.0E-04	2.4E-03	1.5E-05	5.1E-04	1.0E-06	3.4E-06	6.1E-05	3.4E-03	2.84E-01
R92D	Private	2.8E-01	1.5E-05	1.4E-04	8.7E-04	5.3E-06	1.8E-04	3.7E-07	1.2E-06	2.2E-05	1.2E-03	2.82E-01
R58	Private	2.8E-01	1.1E-05	1.0E-04	6.1E-04	3.7E-06	1.3E-04	2.6E-07	8.6E-07	1.5E-05	8.7E-04	2.82E-01
R85	Private	2.8E-01	3.9E-05	2.7E-04	1.6E-03	1.0E-05	3.5E-04	7.0E-07	2.3E-06	4.2E-05	2.4E-03	2.83E-01
R88	Private	2.8E-01	3.2E-05	2.9E-04	1.8E-03	1.1E-05	3.7E-04	7.4E-07	2.5E-06	4.5E-05	2.5E-03	2.83E-01
R89	Private	2.8E-01	4.0E-05	3.5E-04	2.1E-03	1.3E-05	4.5E-04	9.0E-07	3.0E-06	5.4E-05	3.0E-03	2.84E-01
R90	Private	2.8E-01	4.4E-05	3.8E-04	2.3E-03	1.4E-05	4.9E-04	9.7E-07	3.2E-06	5.8E-05	3.3E-03	2.84E-01
R87	Private	2.8E-01	4.5E-05	5.4E-04	3.3E-03	2.0E-05	6.9E-04	1.4E-06	4.6E-06	8.2E-05	4.6E-03	2.85E-01
R19	Private	2.8E-01	1.5E-05	4.3E-04	2.6E-03	1.6E-05	5.6E-04	1.1E-06	3.7E-06	6.6E-05	3.7E-03	2.85E-01
R80	Private	2.8E-01	1.0E-05	1.6E-04	9.8E-04	6.0E-06	2.1E-04	4.1E-07	1.4E-06	2.5E-05	1.4E-03	2.82E-01
R43	Private	2.8E-01	1.3E-05	2.5E-04	1.5E-03	9.0E-06	3.1E-04	6.3E-07	2.1E-06	3.8E-05	2.1E-03	2.83E-01
R34	Private	2.8E-01	2.7E-05	9.4E-04	5.7E-03	3.5E-05	1.2E-03	2.4E-06	8.0E-06	1.4E-04	8.1E-03	2.89E-01
R21	Private	2.8E-01	6.2E-05	2.0E-03	1.2E-02	7.2E-05	2.5E-03	5.0E-06	1.7E-05	3.0E-04	1.7E-02	2.98E-01
R13	Private	2.8E-01	5.5E-06	7.7E-05	4.7E-04	2.8E-06	9.9E-05	2.0E-07	6.5E-07	1.2E-05	6.6E-04	2.81E-01
R15	Private	2.8E-01	5.5E-06	7.2E-05	4.4E-04	2.7E-06	9.3E-05	1.8E-07	6.1E-07	1.1E-05	6.2E-04	2.81E-01
R22	Private	2.8E-01	3.7E-05	1.1E-03	6.9E-03	4.2E-05	1.5E-03	2.9E-06	9.7E-06	1.7E-04	9.8E-03	2.91E-01
R50	Private	2.8E-01	1.2E-05	9.8E-05	5.9E-04	3.6E-06	1.2E-04	2.5E-07	8.3E-07	1.5E-05	8.4E-04	2.82E-01
R9	Private	2.8E-01	5.9E-06	8.0E-05	4.8E-04	2.9E-06	1.0E-04	2.0E-07	6.8E-07	1.2E-05	6.9E-04	2.81E-01
R48	Private	2.8E-01	2.2E-05	1.7E-04	1.0E-03	6.4E-06	2.2E-04	4.4E-07	1.5E-06	2.7E-05	1.5E-03	2.82E-01
R4	Private	2.8E-01	9.7E-05	2.9E-03	1.7E-02	1.1E-04	3.7E-03	7.3E-06	2.4E-05	4.4E-04	2.4E-02	3.05E-01
R33	Private	2.8E-01	3.9E-05	1.2E-03	7.1E-03	4.3E-05	1.5E-03	3.0E-06	1.0E-05	1.8E-04	1.0E-02	2.91E-01
R27	Private	2.8E-01	4.5E-05	7.7E-04	4.6E-03	2.8E-05	9.9E-04	2.0E-06	6.5E-06	1.2E-04	6.6E-03	2.87E-01
R16	Private	2.8E-01	4.5E-06	6.7E-05	4.1E-04	2.5E-06	8.6E-05	1.7E-07	5.7E-07	1.0E-05	5.8E-04	2.81E-01
R24	Private	2.8E-01	3.8E-05	7.9E-04	4.8E-03	2.9E-05	1.0E-03	2.0E-06	6.7E-06	1.2E-04	6.8E-03	2.88E-01
R28C	Private	2.8E-01	1.3E-05	1.7E-04	1.0E-03	6.2E-06	2.2E-04	4.3E-07	1.4E-06	2.6E-05	1.5E-03	2.82E-01
R28A	Private	2.8E-01	1.4E-05	2.1E-04	1.3E-03	7.6E-06	2.7E-04	5.3E-07	1.8E-06	3.2E-05	1.8E-03	2.83E-01
5	Private	2.8E-01	3.3E-05	2.4E-04	1.5E-03	8.9E-06	3.1E-04	6.2E-07	2.0E-06	3.7E-05	2.1E-03	2.83E-01
L2	Private	2.8E-01	3.9E-05	3.1E-04	1.8E-03	1.1E-05	3.9E-04	7.8E-07	2.6E-06	4.7E-05	2.6E-03	2.83E-01

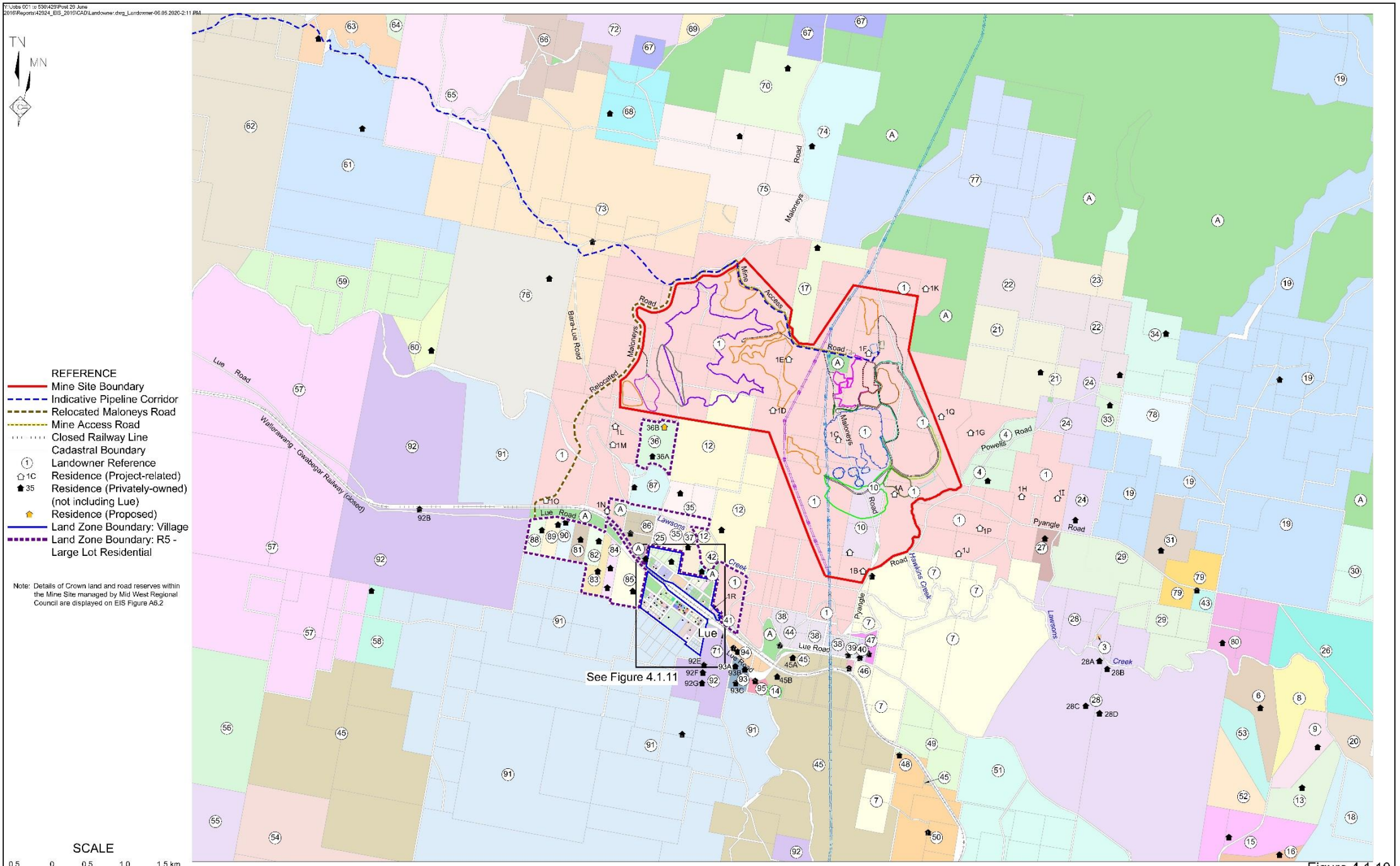
		Adults										
			Calculated RI for each individual pathway assessed (project emissions)									
Receptor	Ownership	RI from existing exposures	Inhalation of PM2.5	Ingestion of soil	Ingestion of tank water	Dermal contact with tank water	Ingestion of homegrown F&V	Ingestion of home eggs	Ingestion of home beef	Ingestion of home milk	Total RI from Project emissions	Total RI (existing exposures + Project)
R31	Private	3.5E-01	2.0E-05	9.6E-05	5.8E-03	1.3E-05	4.6E-04	1.1E-06	3.1E-06	3.5E-05	6.4E-03	3.54E-01
R6	Private	3.5E-01	8.0E-06	2.7E-05	1.6E-03	3.7E-06	1.3E-04	3.2E-07	8.5E-07	9.7E-06	1.8E-03	3.50E-01
R28D	Private	3.5E-01	1.2E-05	3.9E-05	2.4E-03	5.5E-06	1.9E-04	4.7E-07	1.2E-06	1.4E-05	2.6E-03	3.51E-01
R28B	Private	3.5E-01	1.3E-05	4.9E-05	2.9E-03	6.8E-06	2.4E-04	5.8E-07	1.6E-06	1.8E-05	3.3E-03	3.51E-01
R93B	Private	3.5E-01	3.8E-05	6.2E-05	3.8E-03	8.7E-06	3.0E-04	7.4E-07	2.0E-06	2.2E-05	4.2E-03	3.52E-01
R47	Private	3.5E-01	4.2E-05	9.1E-05	5.5E-03	1.3E-05	4.4E-04	1.1E-06	2.9E-06	3.3E-05	6.1E-03	3.54E-01
R46	Private	3.5E-01	4.3E-05	8.5E-05	5.1E-03	1.2E-05	4.1E-04	1.0E-06	2.7E-06	3.1E-05	5.7E-03	3.54E-01
R40	Private	3.5E-01	4.1E-05	8.6E-05	5.2E-03	1.2E-05	4.1E-04	1.0E-06	2.7E-06	3.1E-05	5.7E-03	3.54E-01
R93C	Private	3.5E-01	3.5E-05	5.5E-05	3.3E-03	7.7E-06	2.7E-04	6.6E-07	1.8E-06	2.0E-05	3.7E-03	3.52E-01
3	Private	3.5E-01	3.5E-05	6.3E-05	3.8E-03	8.8E-06	3.0E-04	7.5E-07	2.0E-06	2.3E-05	4.2E-03	3.52E-01
L1	Private	3.5E-01	4.2E-05	8.2E-05	4.9E-03	1.1E-05	3.9E-04	9.7E-07	2.6E-06	3.0E-05	5.5E-03	3.53E-01
R42	Private	3.5E-01	3.9E-05	8.0E-05	4.9E-03	1.1E-05	3.9E-04	9.6E-07	2.6E-06	2.9E-05	5.4E-03	3.53E-01
R45A	Private	3.5E-01	3.1E-05	5.7E-05	3.4E-03	8.0E-06	2.8E-04	6.8E-07	1.8E-06	2.1E-05	3.8E-03	3.52E-01
R44	Private	3.5E-01	3.0E-05	5.5E-05	3.3E-03	7.7E-06	2.7E-04	6.6E-07	1.8E-06	2.0E-05	3.7E-03	3.52E-01
L46	Private	3.5E-01	3.9E-05	6.9E-05	4.2E-03	9.7E-06	3.3E-04	8.3E-07	2.2E-06	2.5E-05	4.7E-03	3.53E-01
R93A	Private	3.5E-01	4.0E-05	6.5E-05	3.9E-03	9.1E-06	3.1E-04	7.7E-07	2.1E-06	2.3E-05	4.4E-03	3.52E-01
R95	Private	3.5E-01	2.9E-05	4.9E-05	2.9E-03	6.8E-06	2.4E-04	5.8E-07	1.6E-06	1.8E-05	3.3E-03	3.51E-01
L5	Private	3.5E-01	3.9E-05	7.6E-05	4.6E-03	1.1E-05	3.7E-04	9.0E-07	2.4E-06	2.7E-05	5.1E-03	3.53E-01
R91	Private	3.5E-01	2.2E-05	3.2E-05	1.9E-03	4.4E-06	1.5E-04	3.8E-07	1.0E-06	1.1E-05	2.1E-03	3.50E-01
R45B	Private	3.5E-01	2.8E-05	5.0E-05	3.0E-03	7.0E-06	2.4E-04	5.9E-07	1.6E-06	1.8E-05	3.4E-03	3.51E-01
R39	Private	3.5E-01	4.1E-05	8.5E-05	5.1E-03	1.2E-05	4.1E-04	1.0E-06	2.7E-06	3.1E-05	5.7E-03	3.54E-01
R12	Private	3.5E-01	9.8E-05	2.0E-04	1.2E-02	2.7E-05	9.5E-04	2.3E-06	6.3E-06	7.1E-05	1.3E-02	3.61E-01
R7	Private	3.5E-01	9.7E-05	2.4E-04	1.5E-02	3.4E-05	1.2E-03	2.9E-06	7.7E-06	8.7E-05	1.6E-02	3.64E-01
1	Private	3.5E-01	3.9E-05	7.4E-05	4.5E-03	1.0E-05	3.6E-04	8.8E-07	2.4E-06	2.7E-05	5.0E-03	3.53E-01
R92B	Private	3.5E-01	3.1E-05	4.9E-05	3.0E-03	6.9E-06	2.4E-04	5.9E-07	1.6E-06	1.8E-05	3.3E-03	3.51E-01
R92C	Private	3.5E-01	2.9E-05	4.6E-05	2.8E-03	6.4E-06	2.2E-04	5.4E-07	1.5E-06	1.6E-05	3.1E-03	3.51E-01
R92A	Private	3.5E-01	3.1E-05	5.0E-05	3.0E-03	7.0E-06	2.4E-04	5.9E-07	1.6E-06	1.8E-05	3.4E-03	3.51E-01
L29	Private	3.5E-01	4.2E-05	6.9E-05	4.2E-03	9.7E-06	3.3E-04	8.2E-07	2.2E-06	2.5E-05	4.7E-03	3.53E-01
L30	Private	3.5E-01	4.5E-05	7.1E-05	4.3E-03	1.0E-05	3.4E-04	8.5E-07	2.3E-06	2.6E-05	4.8E-03	3.53E-01
L10	Private	3.5E-01	3.3E-05	6.0E-05	3.6E-03	8.4E-06	2.9E-04	7.1E-07	1.9E-06	2.2E-05	4.0E-03	3.52E-01
R94A	Private	3.5E-01	3.6E-05	6.1E-05	3.7E-03	8.6E-06	3.0E-04	7.3E-07	2.0E-06	2.2E-05	4.1E-03	3.52E-01
L20	Private	3.5E-01	3.6E-05	6.5E-05	3.9E-03	9.1E-06	3.2E-04	7.8E-07	2.1E-06	2.4E-05	4.4E-03	3.52E-01
L25	Private	3.5E-01	3.8E-05	6.7E-05	4.0E-03	9.4E-06	3.2E-04	8.0E-07	2.1E-06	2.4E-05	4.5E-03	3.52E-01
L3	Private	3.5E-01	4.2E-05	8.1E-05	4.9E-03	1.1E-05	3.9E-04	9.7E-07	2.6E-06	2.9E-05	5.5E-03	3.53E-01
L13	Private	3.5E-01	3.5E-05	6.2E-05	3.7E-03	8.6E-06	3.0E-04	7.3E-07	2.0E-06	2.2E-05	4.1E-03	3.52E-01
R70	Private	3.5E-01	4.0E-06	1.4E-05	8.3E-04	1.9E-06	6.6E-05	1.6E-07	4.4E-07	5.0E-06	9.2E-04	3.49E-01
L4	Private	3.5E-01	4.1E-05	8.1E-05	4.9E-03	1.1E-05	3.9E-04	9.7E-07	2.6E-06	2.9E-05	5.5E-03	3.53E-01
L26	Private	3.5E-01	3.8E-05	6.7E-05	4.0E-03	9.4E-06	3.2E-04	8.0E-07	2.1E-06	2.4E-05	4.5E-03	3.52E-01
R17	Private	3.5E-01	1.6E-05	9.0E-05	5.4E-03	1.3E-05	4.3E-04	1.1E-06	2.9E-06	3.2E-05	6.0E-03	3.54E-01
L45	Private	3.5E-01	4.2E-05	7.0E-05	4.2E-03	9.8E-06	3.4E-04	8.4E-07	2.2E-06	2.5E-05	4.7E-03	3.53E-01
R74	Private	3.5E-01	6.5E-06	2.5E-05	1.5E-03	3.5E-06	1.2E-04	3.0E-07	8.0E-07	9.1E-06	1.7E-03	3.50E-01
L35	Private	3.5E-01	3.6E-05	6.4E-05	3.8E-03	8.9E-06	3.1E-04	7.6E-07	2.0E-06	2.3E-05	4.3E-03	3.52E-01
L44	Private	3.5E-01	3.9E-05	6.4E-05	3.9E-03	9.0E-06	3.1E-04	7.6E-07	2.0E-06	2.3E-05	4.3E-03	3.52E-01
L8	Private	3.5E-01	4.0E-05	7.5E-05	4.5E-03	1.1E-05	3.6E-04	9.0E-07	2.4E-06	2.7E-05	5.1E-03	3.53E-01
L23	Private	3.5E-01	3.7E-05	6.5E-05	3.9E-03	9.2E-06	3.2E-04	7.8E-07	2.1E-06	2.4E-05	4.4E-03	3.52E-01
L47	Private	3.5E-01	4.0E-05	6.9E-05	4.2E-03	9.7E-06	3.3E-04	8.3E-07	2.2E-06	2.5E-05	4.7E-03	3.53E-01
L41	Private	3.5E-01	3.9E-05	6.5E-05	3.9E-03	9.2E-06	3.2E-04	7.8E-07	2.1E-06	2.4E-05	4.4E-03	3.52E-01
L42	Private	3.5E-01	3.8E-05	6.5E-05	3.9E-03	9.2E-06	3.2E-04	7.8E-07	2.1E-06	2.4E-05	4.4E-03	3.52E-01
L31	Private	3.5E-01	4.0E-05	6.7E-05	4.1E-03	9.4E-06	3.2E-04	8.0E-07	2.2E-06	2.4E-05	4.5E-03	3.52E-01
L28A	Private	3.5E-01	3.6E-05	6.7E-05	4.0E-03	9.4E-06	3.2E-04	8.0E-07	2.1E-06	2.4E-05	4.5E-03	3.52E-01
L21	Private	3.5E-01	3.6E-05	6.5E-05	3.9E-03	9.1E-06	3.1E-04	7.8E-07	2.1E-06	2.4E-05	4.4E-03	3.52E-01
L37	Private	3.5E-01	3.8E-05	6.7E-05	4.0E-03	9.4E-06	3.2E-04	8.0E-07	2.1E-06	2.4E-05	4.5E-03	3.52E-01
L27	Private	3.5E-01	3.8E-05	6.9E-05	4.2E-03	9.6E-06	3.3E-04	8.2E-07	2.2E-06	2.5E-05	4.6E-03	3.53E-01
L12	Private	3.5E-01	3.4E-05	6.1E-05	3.7E-03	8.5E-06	2.9E-04	7.3E-07	1.9E-06	2.2E-05	4.1E-03	3.52E-01
L43	Private	3.5E-01	3.9E-05	6.5E-05	3.9E-03	9.0E-06	3.1E-04	7.7E-07	2.1E-06	2.3E-05	4.3E-03	3.52E-01
L22	Private	3.5E-01	3.7E-05	6.7E-05	4.1E-03	9.4E-06	3.3E-04	8.0E-07	2.2E-06	2.4E-05	4.5E-03	3.52E-01
L39	Private	3.5E-01	3.7E-05	6.4E-05	3.9E-03	9.0E-06	3.1E-04	7.6E-07	2.0E-06	2.3E-05	4.3E-03	3.52E-01
L34	Private	3.5E-01	3.9E-05	6.7E-05	4.0E-03	9.4E-06	3.2E-04	8.0E-07	2.1E-06	2.4E-05	4.5E-03	3.52E-01
L17	Private	3.5E-01	3.6E-05	6.2E-05	3.8E-03	8.7E-06	3.0E-04	7.4E-07	2.0E-06	2.2E-05	4.2E-03	3.52E-01
L24	Private	3.5E-01	3.8E-05	6.6E-05	4.0E-03	9.3E-06	3.2E-04	7.9E-07	2.1E-06	2.4E-05	4.5E-03	3.52E-01
L38	Private	3.5E-01	3.8E-05	6.6E-05	4.0E-03	9.2E-06	3.2E-04	7.9E-07	2.1E-06	2.4E-05	4.4E-03	3.52E-01
L16	Private	3.5E-01	3.7E-05	6.4E-05	3.9E-03	9.0E-06	3.1E-04	7.6E-07	2.0E-06	2.3E-05	4.3E-03	3.52E-01
4	Private	3.5E-01	3.7E-05	6.9E-05	4.2E-03	9.6E-06	3.3E-04	8.2E-07	2.2E-06	2.5E-05	4.6E-03	3.53E-01
L9	Private	3.5E-01	3.7E-05	6.9E-05	4.2E-03	9.7E-06	3.3E-04	8.2E-07	2.2E-06	2.5E-05	4.6E-03	3.53E-01
L28B	Private	3.5E-01	3.7E-05	6.8E-05	4.1E-03	9.5E-06	3.3E-04	8.1E-07	2.2E-06	2.4E-05	4.6E-03	3.52E-01
R94B	Private	3.5E-01	3.5E-05	6.0E-05	3.6E-03	8.3E-06	2.9E-04	7.1E-07	1.9E-06	2.1E-05	4.0E-03	3.52E-01
L40	Private	3.5E-01	3.9E-05	6.7E-05	4.0E-03	9.3E-06	3.2E-04	7.9E-07	2.1E-06	2.4E-05	4.5E-03	3.52E-01
L19	Private	3.5E-01	3.7E-05	6.6E-05	4.0E-03	9.3E-06	3.2E-04	7.9E-07	2.1E-06	2.4E-05	4.4E-03	3.52E-01
R35	Private	3.5E-01	6.7E-05	1.9E-04	1.1E-02	2.6E-05	9.1E-04	2.2E-06	6.0E-06	6.8E-05	1.3E-02	3.60E-01
L50	Private	3.5E-01	4.5E-05	9.0E-05	5.4E-03	1.3E-05	4.3E-04	1.1E-06	2.9E-06	3.2E-05	6.0E-03	3.54E-01
L32	Private	3.5E-01	4.2E-05	7.0E-05	4.2E-03	9.8E-06	3.4E-04	8.3E-07	2.2E-06	2.5E-05	4.7E-03	3.53E-01
L15	Private	3.5E-01	3.5E-05	6.3E-05	3.8E-03	8.8E-06	3.0E-04	7.5E-07	2.0E-06	2.3E-05	4.2E-03	3.52E-01

		Adults										
			Calculated RI for each individual pathway assessed (project emissions)									
Receptor	Ownership	RI from existing exposures	Inhalation of PM2.5	Ingestion of soil	Ingestion of tank water	Dermal contact with tank water	Ingestion of homegrown F&V	Ingestion of home eggs	Ingestion of home beef	Ingestion of home milk	Total RI from Project emissions	Total RI (existing exposures + Project)
L18	Private	3.5E-01	3.6E-05	6.5E-05	3.9E-03	9.1E-06	3.1E-04	7.7E-07	2.1E-06	2.3E-05	4.4E-03	3.52E-01
R36	Private	3.5E-01	5.1E-05	2.0E-04	1.2E-02	2.8E-05	9.5E-04	2.4E-06	6.3E-06	7.1E-05	1.3E-02	3.61E-01
R25	Private	3.5E-01	4.2E-05	8.4E-05	5.0E-03	1.2E-05	4.0E-04	1.0E-06	2.7E-06	3.0E-05	5.6E-03	3.54E-01
R37	Private	3.5E-01	4.3E-05	9.5E-05	5.7E-03	1.3E-05	4.6E-04	1.1E-06	3.0E-06	3.4E-05	6.4E-03	3.54E-01
2	Private	3.5E-01	4.1E-05	6.9E-05	4.1E-03	9.6E-06	3.3E-04	8.2E-07	2.2E-06	2.5E-05	4.6E-03	3.53E-01
L33	Private	3.5E-01	4.1E-05	6.9E-05	4.2E-03	9.6E-06	3.3E-04	8.2E-07	2.2E-06	2.5E-05	4.6E-03	3.53E-01
L49	Private	3.5E-01	3.4E-05	6.3E-05	3.8E-03	8.8E-06	3.1E-04	7.5E-07	2.0E-06	2.3E-05	4.3E-03	3.52E-01
L7	Private	3.5E-01	3.9E-05	7.5E-05	4.5E-03	1.1E-05	3.6E-04	8.9E-07	2.4E-06	2.7E-05	5.0E-03	3.53E-01
R11	Private	3.5E-01	3.5E-05	6.4E-05	3.9E-03	9.0E-06	3.1E-04	7.7E-07	2.1E-06	2.3E-05	4.3E-03	3.52E-01
R68	Private	3.5E-01	6.2E-06	1.9E-05	1.2E-03	2.7E-06	9.2E-05	2.3E-07	6.1E-07	6.9E-06	1.3E-03	3.49E-01
R73	Private	3.5E-01	1.4E-05	7.0E-05	4.2E-03	9.8E-06	3.4E-04	8.4E-07	2.2E-06	2.5E-05	4.7E-03	3.53E-01
R75	Private	3.5E-01	6.2E-06	2.1E-05	1.2E-03	2.9E-06	9.9E-05	2.4E-07	6.6E-07	7.4E-06	1.4E-03	3.49E-01
R60	Private	3.5E-01	2.4E-05	7.6E-05	4.6E-03	1.1E-05	3.6E-04	9.0E-07	2.4E-06	2.7E-05	5.1E-03	3.53E-01
R76	Private	3.5E-01	2.3E-05	9.5E-05	5.7E-03	1.3E-05	4.6E-04	1.1E-06	3.0E-06	3.4E-05	6.3E-03	3.54E-01
R82	Private	3.5E-01	5.6E-05	1.1E-04	6.4E-03	1.5E-05	5.2E-04	1.3E-06	3.4E-06	3.9E-05	7.2E-03	3.55E-01
R84B	Private	3.5E-01	4.1E-05	7.0E-05	4.2E-03	9.8E-06	3.4E-04	8.4E-07	2.2E-06	2.5E-05	4.7E-03	3.53E-01
R84A	Private	3.5E-01	4.1E-05	7.7E-05	4.6E-03	1.1E-05	3.7E-04	9.1E-07	2.4E-06	2.8E-05	5.2E-03	3.53E-01
R83	Private	3.5E-01	4.3E-05	7.7E-05	4.6E-03	1.1E-05	3.7E-04	9.2E-07	2.5E-06	2.8E-05	5.2E-03	3.53E-01
R81	Private	3.5E-01	5.4E-05	1.0E-04	6.2E-03	1.4E-05	4.9E-04	1.2E-06	3.3E-06	3.7E-05	6.9E-03	3.55E-01
R63	Private	3.5E-01	4.4E-06	2.0E-05	1.2E-03	2.8E-06	9.7E-05	2.4E-07	6.4E-07	7.3E-06	1.3E-03	3.49E-01
R86	Private	3.5E-01	4.5E-05	1.0E-04	6.0E-03	1.4E-05	4.8E-04	1.2E-06	3.2E-06	3.6E-05	6.7E-03	3.55E-01
R92D	Private	3.5E-01	1.5E-05	3.6E-05	2.2E-03	5.0E-06	1.7E-04	4.3E-07	1.1E-06	1.3E-05	2.4E-03	3.50E-01
R58	Private	3.5E-01	1.1E-05	2.5E-05	1.5E-03	3.5E-06	1.2E-04	3.0E-07	8.1E-07	9.1E-06	1.7E-03	3.50E-01
R85	Private	3.5E-01	3.9E-05	6.8E-05	4.1E-03	9.6E-06	3.3E-04	8.1E-07	2.2E-06	2.5E-05	4.6E-03	3.52E-01
R88	Private	3.5E-01	3.2E-05	7.3E-05	4.4E-03	1.0E-05	3.5E-04	8.7E-07	2.3E-06	2.6E-05	4.9E-03	3.53E-01
R89	Private	3.5E-01	4.0E-05	8.8E-05	5.3E-03	1.2E-05	4.2E-04	1.0E-06	2.8E-06	3.2E-05	5.9E-03	3.54E-01
R90	Private	3.5E-01	4.4E-05	9.5E-05	5.8E-03	1.3E-05	4.6E-04	1.1E-06	3.0E-06	3.4E-05	6.4E-03	3.54E-01
R87	Private	3.5E-01	4.5E-05	1.3E-04	8.1E-03	1.9E-05	6.5E-04	1.6E-06	4.3E-06	4.9E-05	9.0E-03	3.57E-01
R19	Private	3.5E-01	1.5E-05	1.1E-04	6.6E-03	1.5E-05	5.2E-04	1.3E-06	3.5E-06	3.9E-05	7.3E-03	3.55E-01
R80	Private	3.5E-01	1.0E-05	4.1E-05	2.4E-03	5.7E-06	2.0E-04	4.8E-07	1.3E-06	1.5E-05	2.7E-03	3.51E-01
R43	Private	3.5E-01	1.3E-05	6.1E-05	3.7E-03	8.6E-06	3.0E-04	7.3E-07	2.0E-06	2.2E-05	4.1E-03	3.52E-01
R34	Private	3.5E-01	2.7E-05	2.4E-04	1.4E-02	3.3E-05	1.1E-03	2.8E-06	7.5E-06	8.5E-05	1.6E-02	3.64E-01
R21	Private	3.5E-01	6.2E-05	4.9E-04	2.9E-02	6.8E-05	2.4E-03	5.8E-06	1.6E-05	1.8E-04	3.3E-02	3.81E-01
R13	Private	3.5E-01	5.5E-06	1.9E-05	1.2E-03	2.7E-06	9.3E-05	2.3E-07	6.2E-07	7.0E-06	1.3E-03	3.49E-01
R15	Private	3.5E-01	5.5E-06	1.8E-05	1.1E-03	2.5E-06	8.7E-05	2.2E-07	5.8E-07	6.5E-06	1.2E-03	3.49E-01
R22	Private	3.5E-01	3.7E-05	2.9E-04	1.7E-02	4.0E-05	1.4E-03	3.4E-06	9.1E-06	1.0E-04	1.9E-02	3.67E-01
R50	Private	3.5E-01	1.2E-05	2.4E-05	1.5E-03	3.4E-06	1.2E-04	2.9E-07	7.8E-07	8.8E-06	1.6E-03	3.50E-01
R9	Private	3.5E-01	5.9E-06	2.0E-05	1.2E-03	2.8E-06	9.7E-05	2.4E-07	6.4E-07	7.2E-06	1.3E-03	3.49E-01
R48	Private	3.5E-01	2.2E-05	4.3E-05	2.6E-03	6.1E-06	2.1E-04	5.2E-07	1.4E-06	1.6E-05	2.9E-03	3.51E-01
R4	Private	3.5E-01	9.7E-05	7.2E-04	4.3E-02	1.0E-04	3.5E-03	8.5E-06	2.3E-05	2.6E-04	4.8E-02	3.96E-01
R33	Private	3.5E-01	3.9E-05	3.0E-04	1.8E-02	4.1E-05	1.4E-03	3.5E-06	9.4E-06	1.1E-04	2.0E-02	3.68E-01
R27	Private	3.5E-01	4.5E-05	1.9E-04	1.2E-02	2.7E-05	9.3E-04	2.3E-06	6.1E-06	6.9E-05	1.3E-02	3.61E-01
R16	Private	3.5E-01	4.5E-06	1.7E-05	1.0E-03	2.3E-06	8.1E-05	2.0E-07	5.4E-07	6.1E-06	1.1E-03	3.49E-01
R24	Private	3.5E-01	3.8E-05	2.0E-04	1.2E-02	2.8E-05	9.5E-04	2.4E-06	6.3E-06	7.1E-05	1.3E-02	3.61E-01
R28C	Private	3.5E-01	1.3E-05	4.2E-05	2.5E-03	5.9E-06	2.0E-04	5.0E-07	1.3E-06	1.5E-05	2.8E-03	3.51E-01
R28A	Private	3.5E-01	1.4E-05	5.2E-05	3.1E-03	7.3E-06	2.5E-04	6.2E-07	1.7E-06	1.9E-05	3.5E-03	3.51E-01
5	Private	3.5E-01	3.3E-05	6.0E-05	3.6E-03	8.4E-06	2.9E-04	7.2E-07	1.9E-06	2.2E-05	4.1E-03	3.52E-01
L2	Private	3.5E-01	3.9E-05	7.7E-05	4.6E-03	1.1E-05	3.7E-04	9.1E-07	2.4E-06	2.8E-05	5.1E-03	3.53E-01

Attachment B: Calculated RI for all project related properties (multi-pathway exposures, Scenario 3 – Year 8)

Maximum RI calculated for project owned properties

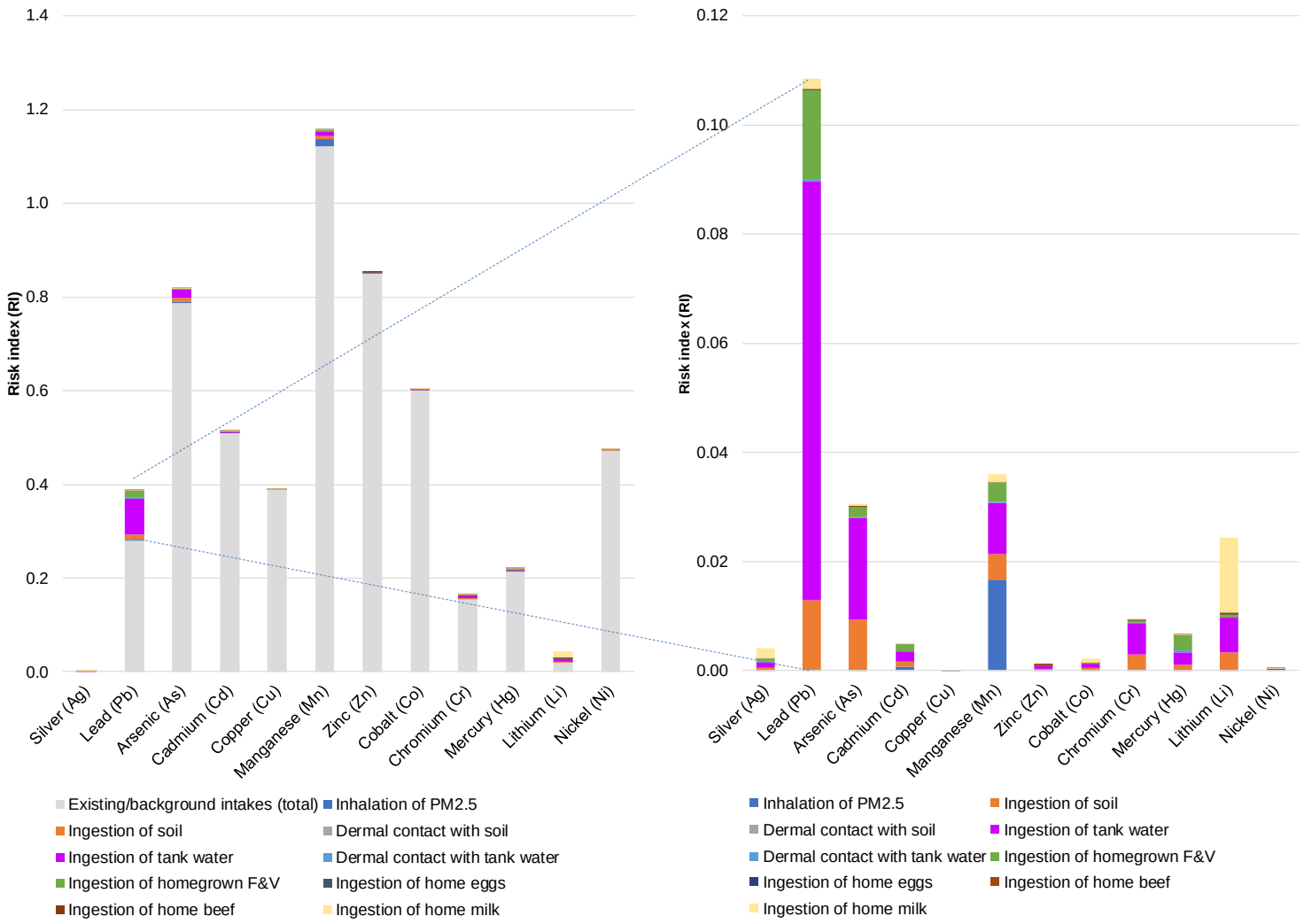
The maximum impacted project owned property is R1Q. The following figures show the calculated RI for each metal for all exposure pathways assessed for multipathway exposures, for young children and adults. A summary table with the calculated risks is also included following the figures.
A map showing the location of project related (and other) properties is also included.



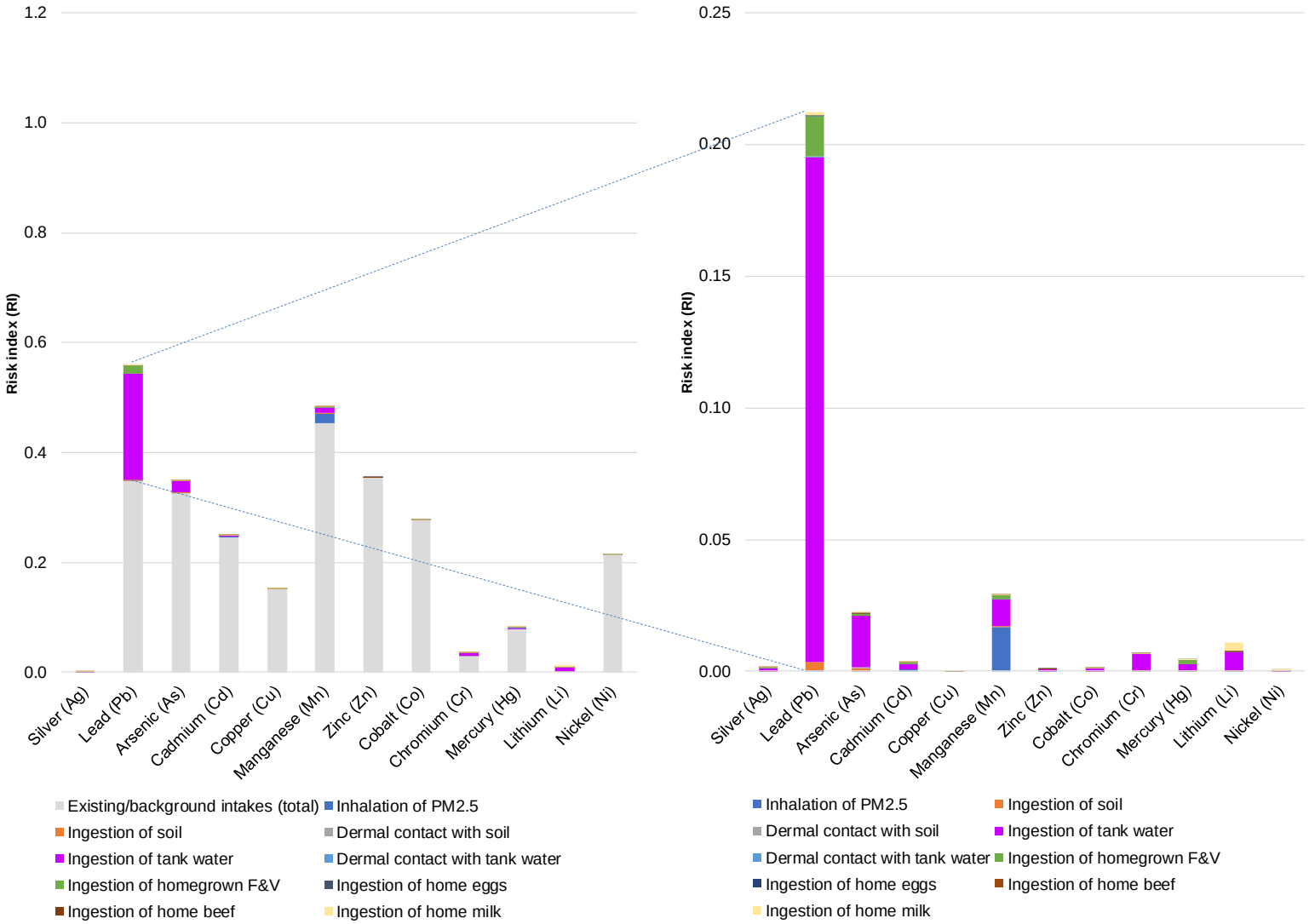
Landowner Source: Globalxterrain - December 2019
Cadastral Boundary Source: © NSW Department of Finance and Services
Panorama Avenue Bathurst NSW 2795 www.lpi.nsw.gov.au

Figure 4.1.10
LAND OWNERSHIP AND RESIDENCES - LUE SURROUNDS

Calculated RI for Existing and Project Exposures (Scenario 3 – Year 8) – Maximum Impacted Project Related Property – Young Children



Calculated RI for Existing and Project Exposures (Scenario 3 – Year 8) – Maximum Impacted Project Related Property – Adults



Summary of risk calculations

Maximum impacted project related residence

Young children

Scenario 3 (Year 8)

CoPC	RI									
	Existing/ background intakes (total)	Inhalation of PM2.5	Ingestion of soil	Dermal contact with soil	Ingestion of tank water	Dermal contact with tank water	Ingestion of homegrown F&V	Ingestion of home eggs	Ingestion of home beef	Ingestion of home milk
Silver (Ag)	5.8E-04	7.0E-07	4.7E-04	--	9.4E-04	2.1E-04	5.4E-04	3.8E-07	1.3E-05	2.0E-03
Lead (Pb)	2.8E-01	2.5E-04	1.3E-02	--	7.7E-02	4.7E-04	1.6E-02	3.2E-05	1.1E-04	1.9E-03
Arsenic (As)	7.9E-01	7.3E-05	9.4E-03	7.7E-06	1.8E-02	2.8E-04	1.9E-03	1.4E-05	1.7E-04	3.9E-04
Cadmium (Cd)	5.1E-01	6.7E-04	9.5E-04	--	1.9E-03	2.8E-05	1.3E-03	2.0E-07	1.7E-06	3.9E-06
Copper (Cu)	3.9E-01	1.9E-08	1.9E-05	--	3.7E-05	5.7E-07	2.2E-05	1.5E-08	1.8E-06	2.4E-05
Manganese (Mn)	1.1E+00	1.7E-02	4.8E-03	--	9.4E-03	1.4E-04	3.6E-03	3.8E-06	1.8E-05	1.4E-03
Zinc (Zn)	8.5E-01	3.9E-07	3.1E-04	5.2E-08	6.0E-04	5.5E-06	6.5E-05	2.4E-07	2.8E-04	6.8E-10
Cobalt (Co)	6.0E-01	2.2E-05	4.6E-04	7.5E-08	9.1E-04	5.6E-06	6.8E-05	3.7E-07	8.5E-05	7.7E-04
Chromium (Cr)	1.5E-01	1.5E-04	2.9E-03	--	5.7E-03	1.7E-04	3.3E-04	5.5E-07	2.4E-04	2.2E-05
Mercury (Hg)	2.1E-01	1.1E-05	1.1E-03	2.5E-06	2.2E-03	4.8E-04	2.7E-03	1.9E-05	4.1E-06	6.5E-05
Lithium (Li)	1.9E-02	3.2E-06	3.3E-03	--	6.5E-03	9.9E-05	5.2E-04	2.6E-06	3.0E-04	1.4E-02
Nickel (Ni)	4.7E-01	1.4E-04	7.3E-05	5.8E-08	1.4E-04	4.4E-07	1.8E-05	3.0E-08	2.0E-07	1.8E-06

Summary of risk calculations

Maximum impacted project related residence

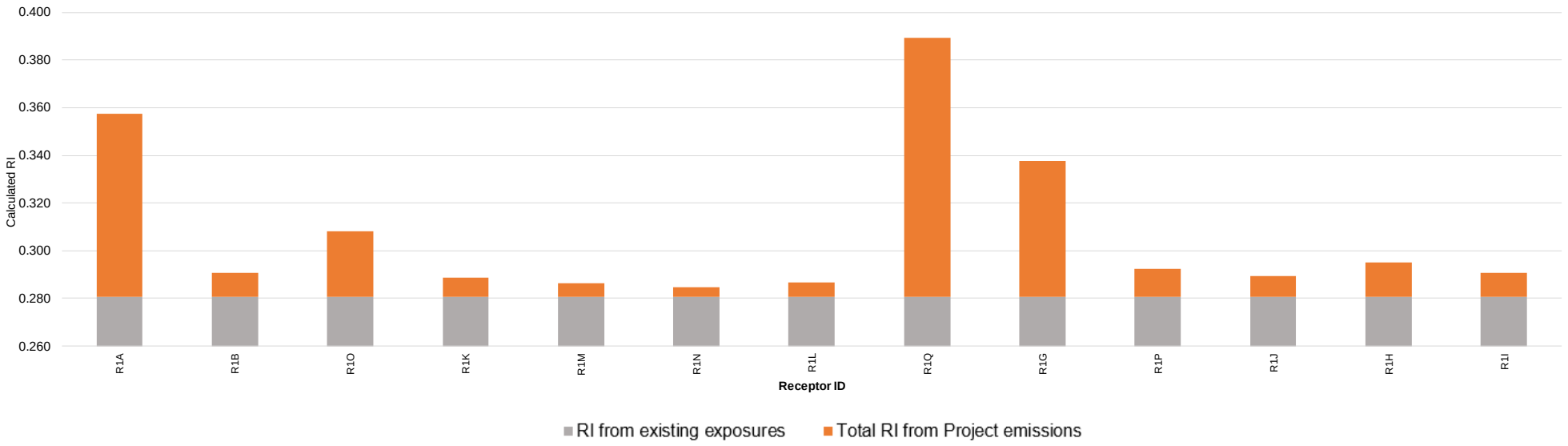
Adults

Scenario 3 (Year 8)

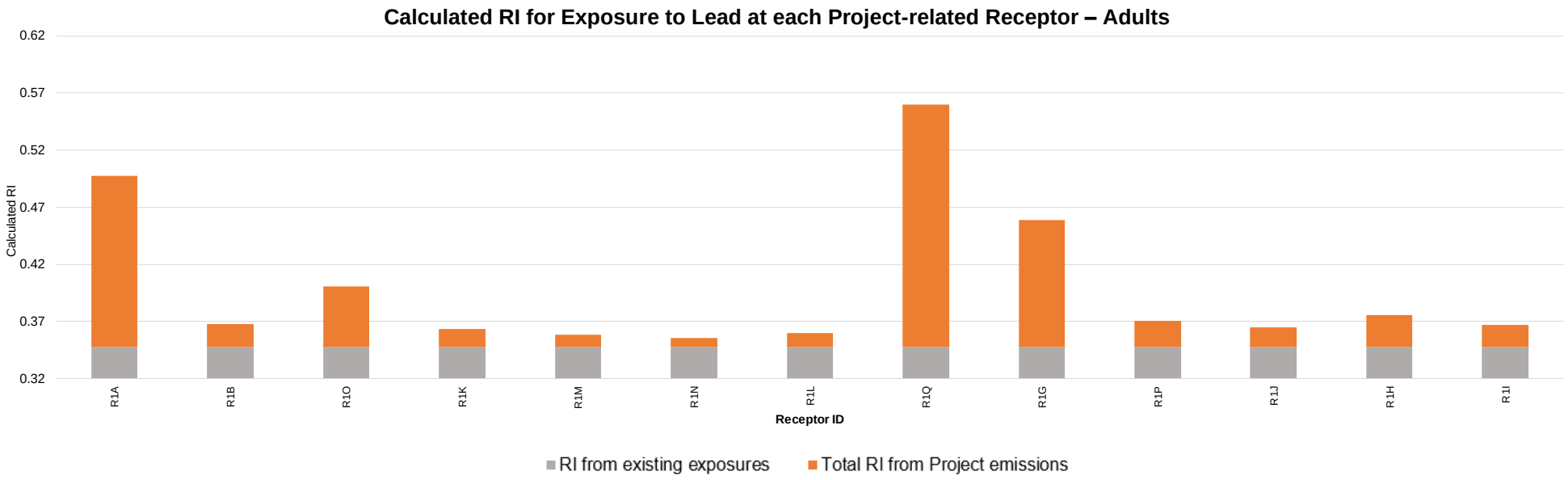
CoPC	RI									
	Existing/ background intakes (total)	Inhalation of PM2.5	Ingestion of soil	Dermal contact with soil	Ingestion of tank water	Dermal contact with tank water	Ingestion of homegrown F&V	Ingestion of home eggs	Ingestion of home beef	Ingestion of home milk
Silver (Ag)	6.3E-05	7.0E-07	5.1E-05	--	1.0E-03	8.7E-05	2.7E-04	1.9E-07	5.3E-06	5.0E-04
Lead (Pb)	3.5E-01	2.5E-04	3.2E-03	--	1.9E-01	4.4E-04	1.5E-02	3.8E-05	1.0E-04	1.1E-03
Arsenic (As)	3.3E-01	7.3E-05	1.0E-03	3.2E-04	2.0E-02	1.1E-04	7.4E-04	6.8E-06	7.0E-05	9.9E-05
Cadmium (Cd)	2.5E-01	6.7E-04	1.0E-04	--	2.0E-03	1.2E-05	6.6E-04	9.9E-08	7.0E-07	1.0E-06
Copper (Cu)	1.5E-01	1.9E-08	2.0E-06	--	4.0E-05	2.3E-07	1.1E-05	7.5E-09	7.1E-07	6.0E-06
Manganese (Mn)	4.5E-01	1.7E-02	5.1E-04	--	1.0E-02	5.8E-05	1.7E-03	1.9E-06	7.1E-06	3.5E-04
Zinc (Zn)	3.5E-01	3.9E-07	3.3E-05	2.1E-06	6.5E-04	2.3E-06	2.6E-05	1.2E-07	1.1E-04	1.7E-10
Cobalt (Co)	2.8E-01	2.2E-05	5.0E-05	3.1E-06	9.8E-04	2.3E-06	2.4E-05	1.8E-07	3.4E-05	1.9E-04
Chromium (Cr)	3.0E-02	1.5E-04	3.1E-04	--	6.1E-03	7.0E-05	1.0E-04	2.8E-07	9.8E-05	5.4E-06
Mercury (Hg)	7.9E-02	1.1E-05	1.2E-04	1.1E-04	2.3E-03	1.9E-04	1.4E-03	9.3E-06	1.7E-06	1.6E-05
Lithium (Li)	2.0E-03	3.2E-06	3.5E-04	--	6.9E-03	4.0E-05	1.9E-04	1.3E-06	1.2E-04	3.5E-03
Nickel (Ni)	2.1E-01	1.4E-04	7.8E-06	2.5E-06	1.5E-04	1.8E-07	7.7E-06	1.5E-08	8.1E-08	4.6E-07

Calculated RI for lead at project owned properties

Calculated RI for Exposure to Lead at each Project-related Receptor – Young Children



(note that an acceptable RI is ≤ 1)



(note that an acceptable RI is ≤ 1)

RI calculated for exposure to lead at each individual project related property

		Young children										
			Calculated RI for each individual pathway assessed (project emissions)									
Receptor	Ownership	RI from existing exposures	Inhalation of PM2.5	Ingestion of soil	Ingestion of tank water	Dermal contact with tank water	Ingestion of homegrown F&V	Ingestion of home eggs	Ingestion of home beef	Ingestion of home milk	Total RI from Project emissions	Total RI (existing exposures + Project)
R1A	Project	2.8E-01	2.6E-04	9.0E-03	5.4E-02	3.3E-04	1.1E-02	2.3E-05	7.6E-05	1.4E-03	7.7E-02	3.57E-01
R1B	Project	2.8E-01	1.2E-04	1.2E-03	7.0E-03	4.3E-05	1.5E-03	3.0E-06	9.9E-06	1.8E-04	1.0E-02	2.91E-01
R1O	Project	2.8E-01	3.6E-04	3.2E-03	1.9E-02	1.2E-04	4.0E-03	8.1E-06	2.7E-05	4.8E-04	2.7E-02	3.08E-01
R1K	Project	2.8E-01	3.3E-05	9.2E-04	5.5E-03	3.4E-05	1.2E-03	2.3E-06	7.8E-06	1.4E-04	7.9E-03	2.89E-01
R1M	Project	2.8E-01	4.3E-05	6.3E-04	3.8E-03	2.3E-05	8.0E-04	1.6E-06	5.3E-06	9.6E-05	5.4E-03	2.86E-01
R1N	Project	2.8E-01	4.9E-05	4.6E-04	2.8E-03	1.7E-05	5.9E-04	1.2E-06	3.9E-06	7.0E-05	4.0E-03	2.85E-01
R1L	Project	2.8E-01	4.6E-05	7.1E-04	4.3E-03	2.6E-05	9.0E-04	1.8E-06	6.0E-06	1.1E-04	6.0E-03	2.87E-01
R1Q	Project	2.8E-01	2.5E-04	1.3E-02	7.7E-02	4.7E-04	1.6E-02	3.2E-05	1.1E-04	1.9E-03	1.1E-01	3.89E-01
R1G	Project	2.8E-01	1.7E-04	6.7E-03	4.0E-02	2.4E-04	8.5E-03	1.7E-05	5.6E-05	1.0E-03	5.7E-02	3.38E-01
R1P	Project	2.8E-01	8.5E-05	1.4E-03	8.2E-03	5.0E-05	1.7E-03	3.5E-06	1.2E-05	2.1E-04	1.2E-02	2.93E-01
R1J	Project	2.8E-01	7.6E-05	1.0E-03	6.0E-03	3.7E-05	1.3E-03	2.6E-06	8.5E-06	1.5E-04	8.6E-03	2.89E-01
R1H	Project	2.8E-01	7.7E-05	1.7E-03	1.0E-02	6.1E-05	2.1E-03	4.2E-06	1.4E-05	2.5E-04	1.4E-02	2.95E-01
R1I	Project	2.8E-01	5.2E-05	1.2E-03	7.0E-03	4.3E-05	1.5E-03	3.0E-06	9.8E-06	1.8E-04	9.9E-03	2.91E-01

RI calculated for exposure to lead at each individual project related property

		Adults										
			Calculated RI for each individual pathway assessed (project emissions)									
Receptor	Ownership	RI from existing exposures	Inhalation of PM2.5	Ingestion of soil	Ingestion of tank water	Dermal contact with tank water	Ingestion of homegrown F&V	Ingestion of home eggs	Ingestion of home beef	Ingestion of home milk	Total RI from Project emissions	Total RI (existing exposures + Project)
R1A	Project	3.5E-01	2.6E-04	2.2E-03	1.4E-01	3.1E-04	1.1E-02	2.7E-05	7.2E-05	8.1E-04	1.5E-01	4.98E-01
R1B	Project	3.5E-01	1.2E-04	2.9E-04	1.8E-02	4.1E-05	1.4E-03	3.5E-06	9.3E-06	1.1E-04	2.0E-02	3.67E-01
R1O	Project	3.5E-01	3.6E-04	7.9E-04	4.8E-02	1.1E-04	3.8E-03	9.4E-06	2.5E-05	2.9E-04	5.3E-02	4.01E-01
R1K	Project	3.5E-01	3.3E-05	2.3E-04	1.4E-02	3.2E-05	1.1E-03	2.7E-06	7.3E-06	8.3E-05	1.5E-02	3.63E-01
R1M	Project	3.5E-01	4.3E-05	1.6E-04	9.5E-03	2.2E-05	7.6E-04	1.9E-06	5.0E-06	5.7E-05	1.1E-02	3.58E-01
R1N	Project	3.5E-01	4.9E-05	1.1E-04	6.9E-03	1.6E-05	5.5E-04	1.4E-06	3.7E-06	4.1E-05	7.7E-03	3.56E-01
R1L	Project	3.5E-01	4.6E-05	1.8E-04	1.1E-02	2.5E-05	8.5E-04	2.1E-06	5.6E-06	6.4E-05	1.2E-02	3.60E-01
R1Q	Project	3.5E-01	2.5E-04	3.2E-03	1.9E-01	4.4E-04	1.5E-02	3.8E-05	1.0E-04	1.1E-03	2.1E-01	5.60E-01
R1G	Project	3.5E-01	1.7E-04	1.7E-03	1.0E-01	2.3E-04	8.0E-03	2.0E-05	5.3E-05	6.0E-04	1.1E-01	4.59E-01
R1P	Project	3.5E-01	8.5E-05	3.4E-04	2.1E-02	4.8E-05	1.6E-03	4.1E-06	1.1E-05	1.2E-04	2.3E-02	3.71E-01
R1J	Project	3.5E-01	7.6E-05	2.5E-04	1.5E-02	3.5E-05	1.2E-03	3.0E-06	8.0E-06	9.0E-05	1.7E-02	3.65E-01
R1H	Project	3.5E-01	7.7E-05	4.1E-04	2.5E-02	5.8E-05	2.0E-03	4.9E-06	1.3E-05	1.5E-04	2.8E-02	3.76E-01
R1I	Project	3.5E-01	5.2E-05	2.9E-04	1.7E-02	4.1E-05	1.4E-03	3.5E-06	9.3E-06	1.0E-04	1.9E-02	3.67E-01