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18 September 2017

Attention: Aislinn Farnon and Mark Nolan
Glencore United and Yancoal
Via email

Dear Aislinn and Mark

United Wambo Open Cut Coal Project and Hunter Valley Operations Modification 5

Thank you for providing a copy of the communications with the Department of Planning and Environment (DP&E) regarding the potential cumulative air quality impacts of the United Wambo Open Cut Coal Mine (United Wambo) and Hunter Valley Operations Modification 5 (HVO). We have received the following documents:

- "Request for Further Information – Air Quality Review". Letter from the DP&E dated 24 July 2017.
- "United Wambo Open Cut Coal Mine Project and Hunter Valley Operations Modification 5 – Cumulative Air Quality Impact Assessment Peer Review". Letter from Ramboll to the DP&E, dated 21 July 2017.

The DP&E has requested that United and Yancoal implement the recommendations of the peer review that was carried out by Ramboll.

This letter has been jointly prepared by Jacobs (consultant to Glencore for the United Wambo project) and Todoroski Air Sciences (consultant to Yancoal for the HVO project). Its purpose is to address the issues raised in the Ramboll recommendations. The key issue will be the potential cumulative air quality impacts between United Wambo and HVO, primarily in the vicinity of Warkworth Village and Moses Crossing where there is potential for cumulative impacts to arise.

In summary, this cumulative assessment has shown that the concurrent development of the two projects would not trigger acquisition rights associated with air quality impacts at any additional sensitive receptor, not already considered in the original assessment for each project.

Yours sincerely

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Yours sincerely

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1. Scope of Work

Jacobs and Todoroski Air Sciences have reviewed the peer review and its recommendations. We agree with the review recommendation, in general, that a single cumulative assessment needs to be provided to address the unavoidable differences in model predictions arising from the limited availability of project information at the time of preparing each individual assessment. Therefore, this joint cumulative impact assessment focuses on:

- Resolving differences in assumed emissions between the cumulative assessment components of the HVO and United Wambo projects (i.e. HVO's assumed United Wambo emissions and vice versa).
- The particulate matter classifications and averaging times that have the highest potential to influence the assessment outcomes, i.e. annual average PM_{10} and $PM_{2.5}$.
- Assessment of annual average impacts in accordance with the current EPA air quality impact assessment criteria and DP&E Voluntary Land Acquisition and Mitigation Policy.

The recommendations from Ramboll are summarised in **Table 1**, including reference to where these recommendations have been addressed in this assessment.

Table 1 Summary of Ramboll recommendations

Ramboll recommendation	Where addressed in this report
Recommendation: Emissions from neighbouring mine sites should be quantified in a consistent manner for matching current scenario year and future years. Future years should be selected collaboratively to ensure potential worst-case impact years are accounted for	Section 2.3 and 2.4
Recommendation: Analysis of cumulative impacts requires a consistent representation of background concentrations. The NSW OEH Jerrys Plains, Wambo AQ03 TSP and D24 dust deposition monitoring locations represent the most appropriate monitoring resource for this analysis	Section 2.7
Recommendation: Cumulative modelling study should integrate all available meteorological monitoring sites that meet input dataset requirements	Section 2.5

2. Methodology

2.1 Overview

Addressing the recommendations of the review has involved:

1. Consolidation of sensitive receptors identified for each Project.
2. Exchanging of project specific emission inventories for HVO and United Wambo between Todoroski Air Sciences and Jacobs.
3. Determining the scenario which is likely to represent the potential worst-case air quality outcomes, focussing on the potential effects at Moses Crossing and Warkworth areas, where there is potential for cumulative impacts to arise.
4. Exchanging of the meteorological monitoring data that were used in the HVO and United Wambo assessments, updating the respective CALMET models to include data from all relevant meteorological stations, and updating the respective project dispersion (CALPUFF) models.
5. Exchanging results of annual average PM_{10} and $PM_{2.5}$ concentrations due to HVO and United Wambo between Todoroski Air Sciences and Jacobs. This approach therefore reflects the specific emission estimates and source locations from each project.
6. Establishing a suitable background level (for both PM_{10} and $PM_{2.5}$) to be added to the model results as determined from a review of the two assessment approaches, and based on monitored levels representative of receptor locations. The assessment provides a discussion outlining the rationale for the background level selected.
7. Adding the contributions arising due to the emissions at HVO, United Wambo and Mt Thorley / Warkworth mine (MTW) with the background level in order to produce cumulative predictions at the potentially cumulatively affected receptors (i.e. those in the vicinity of Moses Crossing and Warkworth). This approach also includes the necessary adjustments to avoid double counting of existing and future mine contributions.
8. Tabulating the results to show the incremental impacts of the United Wambo and HVO projects separately, and the cumulative total levels at each sensitive receptor.
9. Developing contour plots for the incremental and cumulative impacts for the scenario(s) assessed.
10. Comparing the model predictions to the current EPA air quality impact assessment criteria and DP&E Voluntary Land Acquisition and Mitigation Policy to determine the updated potential cumulative impacts.
11. Documenting the findings of the assessment in this jointly prepared cumulative air quality impact assessment report.

2.2 Receptors

A consolidated, common list of sensitive receptors has been prepared based on the information presented in the United Wambo and HVO assessments. **Figure 1** shows the locations of all sensitive receptors, for both the Moses Crossing and Warkworth areas.

Identification labels have been developed by combining the identification labels from the United Wambo assessment with the identification labels from the HVO assessment, separated by a dash. The process of consolidation identified several receptors which were clearly the same

dwelling but were in slightly different positions in each assessment. This issue was partially resolved in the consolidation process whereby any two or more receptors within 20 metres of each other were considered to be the same receptor. Some likely duplicate receptor locations still remained after this process (for example, the same receptors which were just over 20 metres apart) but these can be more clearly identified from **Figure 1**. It should be noted that there is no tangible difference in the modelled results at receptor locations nominally 20m apart.

Figure 1 also identifies private (or non-mine owned) and mine-owned receptors.

2.3 Emissions

The cumulative modelling included the predicted emissions from United Wambo (per Jacobs) and the emissions from HVO (per Todoroski Air Sciences). The emission sources have been modelled in the same locations as those presented in the respective EIS assessments, and appropriate adjustments have been made where necessary, for example, due to the changed wind speed arising from the revised weather data. This approach was used to make sure the Project-specific data of both United Wambo and HVO were applied in the cumulative assessment.

2.4 Scenario

The worst case scenario was determined to be the HVO Stage 2 and the United Wambo Year 6. These cases nominally arise in 2022 and 2023 (depending on the timing of the determination of the projects), but have been modelled as occurring at the same time. The scenario represents the combined maximum rates of emissions from source locations closest to potentially affected receptors. The locations of modelled emissions sources have been presented in the respective assessments.

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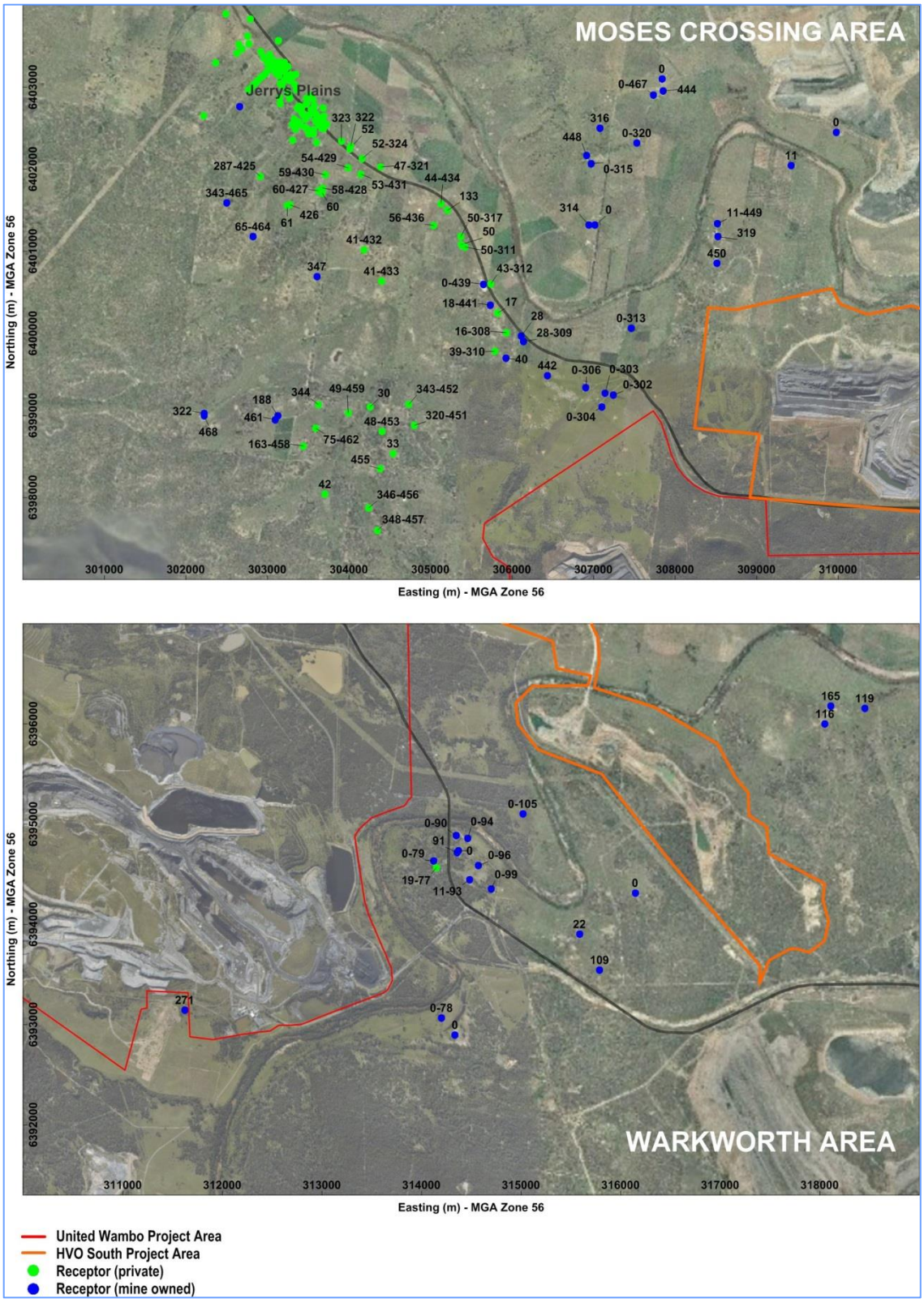

Figure 1 Sensitive receptor locations and consolidated identification labels

2.5 Meteorological Data

The meteorological monitoring data that were used in the HVO and United Wambo assessments were made available to Jacobs and Todoroski Air Sciences. The meteorological stations specifically included for this cumulative assessment were Jerrys Plains, Warkworth, Wambo, Maison Dieu, Cheshunt, Charlton Ridge and HVO. The station locations are shown in **Figure 2**. All of these data for the 2014 calendar year were used to update the respective CALMET models.

It should be noted that the identified differences in the model predictions from HVO and United Wambo are mainly driven by the differences in calculated emissions from the two projects. Each (HVO and United Wambo) model uses the site specific data for the mine position, and each model has been developed to be as accurate as possible in the vicinity of the mine and the nearest potentially affected receptors to the mine.

Todoroski Air Sciences and Jacobs note that some of the review's suggested meteorological stations are not warranted for inclusion. For example, the addition of the Bulga and Camberwell data in the meteorological modelling will not alter the conclusions in the areas of any significant effect due to the projects, given the prevailing winds (Camberwell) and large distance (Bulga), and because local meteorological station data closer to each project mine is already included the modelling. It should also be noted that including the data from more weather stations will not necessarily improve the performance of the modelling in this case. This is mainly because a single radius of influence value needs to be chosen to represent all model stations and this value may not necessarily be appropriate for every station. For example, stations located in a valley require a smaller radius of influence than stations located in an open area, which can compromise how both the valley and open area weather stations are represented in the model.

Therefore, as noted above, the United Wambo and HVO meteorological models (CALMET) were updated to include all nearby meteorological stations in the respective assessments, and the United Wambo and HVO dispersion models (CALPUFF) were re-run for this cumulative assessment.

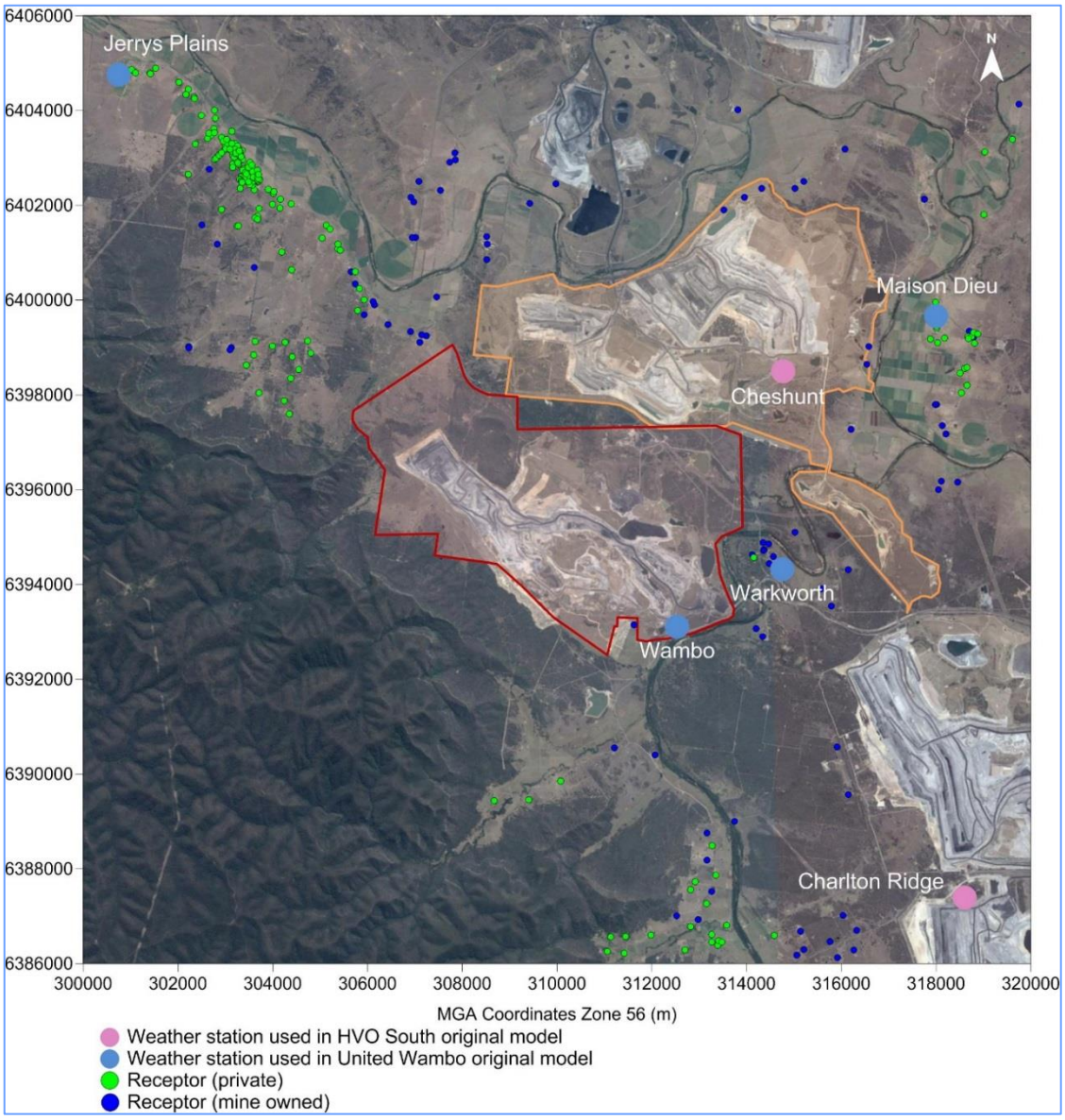

Figure 2 Location of meteorological stations for CALMET modelling

2.6 Assessed Dust Parameters

The cumulative assessment considers annual average PM_{10} and $PM_{2.5}$. These parameters have the greatest scope to exceed criteria, and are the most challenging to control once a project is operational. Provided that the annual average criteria can be met, generally short term 24-hour effects are able to be managed using predictive and reactive management systems and procedures, on a day to day basis, independently by each operation.

2.7 Background Levels

Several means of applying background data have been identified for this cumulative air dispersion modelling assessment. These are:

1. **Review recommended approach.** The review recommended sourcing data from monitoring locations that are not near the potentially most cumulatively affected

receptors. The rationale would be that the measured background level away from the source, plus the modelled incremental effects of the mine(s), less any adjustment to prevent double counting, be tallied to derive the total cumulative impact.

2. **Approved Methods approach.** The Approved Methods states that *"The background concentrations of air pollutants are ideally obtained from ambient monitoring data collected at the proposed site."* But that if this is not possible, "….*data is obtained from a monitoring site as close as possible to the proposed location, where the sources of air pollution resemble the existing sources at the proposed site."* The rationale would be that the measured background level at the nearby monitors, plus the modelled incremental effects of the mine(s), less any adjustment to prevent double counting, be tallied to derive the total cumulative impact.

The pros and cons of each approach listed above, including two potential Approved Methods approaches have been considered for this situation, as outlined in **Table 2**.

Table 2 Review of methods for determining the approach to background levels

Method	Pros	Cons
Review recommended method using PM_{10} data from Jerrys Plains	Minimises potential double counting of modelled sources and background levels as mining has little potential effect at these locations. Preserves the relationships between meteorological conditions and ambient air quality conditions. Most accurate at receptors with minimal potential effects from the Projects.	The use of data further from the area of interest is not strictly in accordance with EPA's Approved Methods. Assumes that the monitored levels are representative of the background levels at the locations of interest in the modelled domain. Less accurate at receptors most potentially affected by the Projects.
Approved Methods – multiple background data	Represents the actual measured background level at the nearest receptors most potentially affected by the Project(s). Provides a spatially varying background level. Preserves the relationships between meteorological conditions and ambient air quality conditions.	Problematic when the data exhibit large variations over short distances, which will bias the results. In this case, in Warkworth, there are variations of up to 5 µg/m^3 in annual average PM_{10} for monitors located very close to each other. Less accurate at receptor locations with minimal potential effects from the Projects.
Approved Methods - averaged background data	In this case, minimises bias from variability in the measured data. In this case, is most accurate at the receptors that most potentially affected by the Projects.	Less accurate at receptor locations with minimal potential effects from the Projects.

Adoption of the procedure outlined in the Approved Methods is preferred for modelling and assessment of projects in NSW. The use of multiple sources of monitoring data was initially preferred for selecting the background levels approach in this cumulative assessment however, as noted in **Table 2**, this approach was problematic as the data exhibited large variations over short distances (of up to 5 µg/m^3 in annual average PM_{10}). Thus if the varying data were used in each location, the erroneous bias in the data would carry into the assessment.

As it was not known if the higher or lower monitored values were correct, the average of all of the data was used in the assessment. Also, as the modelled mines would be the dominant anthropogenic sources of dust at the potentially most affected receptor locations of interest in this study, the modelling of the mines was used to account for the spatial variability in dust levels.

Thus to overcome the limitations described above, the approach adopted to determine background levels was based on using the average of the measured data in 2014 from all monitoring locations near to the mines, and in the vicinity of the most potentially affected

receptors. The monitoring stations used in the calculation were; AQ01, AQ02, AQ03, AQ04 / Kilburnie South, Maison Dieu (OEH / TEOM / HVAS), Warkworth (OEH / TEOM / HVAS) and Knodlers Lane (TEOM / HVAS).

The measured background levels and the corresponding predicted mine contributions in 2014 were then used to derive the contribution from other, non-modelled, sources. **Table 3** shows the data applied and the calculated values.

Table 3 Summary of measurement data and model results for derivation of background

Monitoring site	Annual average PM_{10} concentrations	
	Background level Measured value in 2014	Modelled mining contribution Predicted value in 2014
Coralie (AQ01)	18.0	9.8
Warkworth (OEH)	20.6	10.5
Warkworth (TEOM)	16.8	10.4
Warkworth (HVAS)	21.8	10.4
Wambo Road (AQ02)	19.0	2.1
Thelander (AQ03)	14.7	2.3
Muller (AQ04)	17.7	4.7
Kilburnie South (HVAS)	18.8	4.7
Maison Dieu (OEH)	22.7	4.0
Maison Dieu (TEOM)	21.6	4.0
Maison Dieu (HVAS)	19.8	4.0
Knodlers Lane (TEOM)	19.0	9.7
Average	**19.5**	**6.6**

The background level approach can be summarised as follows:

- Annual average PM_{10} background level of 19.5 µg/m^3. This is the average of the annual average PM_{10} concentration from all measurement data collected near the areas of interest in 2014.
- Annual average PM_{10} adjustment to prevent double counting of 6.6 µg/m^3. This represents the average modelled contribution from the existing mining operations in 2014 (United, Wambo, HVO South and Warkworth) to all monitoring sites, and is applied to account for double counting of the existing modelled mine sources.

In order to model the total cumulative impact the modelled future incremental contributions at each receptor from the United Wambo Project, the HVO Modification 5 Project and MTW were then added to the background level (19.5 µg/m^3), less the adjustment for 2014 contributions from the modelled mines, in order to prevent double counting (-6.6 µg/m^3).

Please note that to simplify the results table, and thus focus on the contributions from the projects and the total cumulative level, the background level (which includes dust contributed by mines), less the adjustment for double counting the modelled mines (i.e. 19.5 - 6.6 = 12.8 rounded) plus the modelled incremental future contribution from MTW are added at each receptor and presented as “other non-modelled sources + MTW”.

As there are no locally available $PM_{2.5}$ data that are representative of the receptor locations, an assumed value was applied, based on consideration of the available monitoring data in the

Hunter Valley. As it is not in a large urban area and has similar mining activity nearby, Camberwell village is most like the sites under consideration in this study. However, due to the anthropogenic emissions in the village and a busier highway, Camberwell would experience greater effects than at the receptors of most interest in this study. Thus to account for these differences, a level of 6 µg/m^3 was applied, and is approximately 1.5 to 2.2 µg/m^3 less than occurs at Camberwell.

The approach outlined above can be compared to the original assessments as follows:

- The original United Wambo assessment was based on the background annual average PM_{10} level measured at AQ03 of 14.7 µg/m^3, less an adjustment of 2.7 µg/m^3 for the existing mines in 2014. The result, 12.1 µg/m^3, represented the other non-modelled sources and was added to the future modelled levels for every mine in the surrounding area. For $PM_{2.5}$, the original value (in the Response to Submissions) was 5.2 µg/m^3 which can be compared to the currently assumed value of 6 µg/m^3.
- The original HVO South assessment used the background data at each of the HVO and OEH monitors, less an adjustment equivalent to the modelled 2014 results for every mine in the surrounding area at each monitor. The average of these results, 7 µg/m^3, represented the other non-modelled sources and was added to the future modelled levels for every mine in the surrounding area at each monitor location. For $PM_{2.5}$, the original value was 4.6 µg/m^3 which can be compared to the currently assumed value of 6 µg/m^3.

2.8 Cumulative Effect of Changes in the Project Area

As noted in **Section 2.7**, the average of the measured data for 2014 was used to represent the background levels in the cumulative assessment.

To determine the cumulative effects of the projects, the predicted dust levels that would arise from the United Wambo and HVO Projects, and MTW were added to the background level along with an adjustment for double counting of the existing mining impacts between 2014 and the assessment scenario year.

2.9 Accounting for Existing Mining Operations

The effects of the United Wambo, HVO and MTW operations are directly accounted for due to the approach taken. MTW was assumed to be operating at its maximum production limit. The less significant existing effects from distant mines were not considered.

2.10 Presentation of Results

The assessment sets out in tabular form the predicted cumulative concentrations at all sensitive receptors in the areas most likely to be influenced by the cumulative effects of the proposed United Wambo, HVO and MTW mining operations.

Contour plots have also been developed but it should be noted that the contour plots represent some interpolation of the modelled point to point predictions. Therefore, to avoid any doubt, the tabular data should be assessed in preference to the contour plots.

3. Modelling

Specific changes to the HVO and United Wambo models, for the purposes of this cumulative assessment, are described below in **Sections 3.1** and **3.2**.

3.1 Changes to the United Wambo Assessment

As outlined in **Section 2.5**, the United Wambo CALMET modelling was updated with additional meteorological data. The additional data included Cheshunt, Charlton Ridge and HVO meteorological stations for 2014. All other CALMET settings remain unchanged. No changes were made to the emission inventories. No changes were made to the CALPUFF settings.

3.2 Changes to the HVO Assessment

As outlined in **Section 2.5**, the HVO CALMET modelling was updated with additional meteorological data from Jerry's Plains, Warkworth, Wambo and Maision Dieu. The values for RMax in the CALMET model were halved to account for the more limited range of influence due to the valley locations of the new weather data relative to the stations originally applied.

The emissions inventory was updated to account for the new, lower wind speed data (for wind sensitive sources); a material bulk density of 2.1 tonnes per bench cubic metre (vs. 2.4) was applied; and an updated wind erosion factor (i.e. 0.1 kg/ha/h, per AP-42) was used. The updated inventory results in approximately 25% lower emissions and is presented in **Attachment 3**.

No changes were made to the CALPUFF settings.

4. Cumulative Results and Discussion

Figure 3 and **Figure 4** summarise the model predictions of cumulative annual average PM_{10} and $PM_{2.5}$ concentrations at the sensitive receptors. These figures identify the privately owned and mine owned properties as well the predictions which are either above or below the assessment criteria. It should be noted that the single private residential property in Warkworth (19-77) has, and would continue to have, acquisition rights due to dust impacts from nearby mining operations. **Table 4** shows the data for the private receptor where air quality criteria are predicted to be exceeded.

Table 4 Private receptors where air quality criteria are predicted to be exceeded

ID	Description	Due to United Wambo Year 6	Due to HVO South Stage 2	Other non-modelled sources plus MTW (19.5-6.6 + MTW)	Cumulative	Criteria
Annual average PM_{10} concentrations ($\mu g/m^3$)						
19-77	Private	14.9	9.0	19.3	43.3	25
Annual average $PM_{2.5}$ concentrations ($\mu g/m^3$)						
19-77	Private	3.5	1.2	7.2	11.9	8

Attachment 1 and **2** provide the model results in tabular and contour plot formats. The tabled annual average PM_{10} and $PM_{2.5}$ results for the potentially cumulatively affected receptors in the Warkworth and Moses Crossing areas, as set out in this report, supersede the corresponding results originally presented in the HVO South and United Wambo assessments.

The updated model results in this study indicate that fewer receptors would experience cumulative impacts above the EPA criterion of 25 $\mu g/m^3$ than in either of the original assessments. This arises mainly due to the application of the final emissions inventories for each project in this study.

Overall, the updated model results indicate that, for the worst case scenario assessed, there would be no additional private sensitive receptors that would experience air quality impacts above the respective assessment criteria, due to the cumulative operation of the proposed projects, including other mines and background dust levels.

It is therefore concluded that the concurrent development of the two projects would not trigger acquisition rights at any additional sensitive receptor not already considered in the original assessment for each project.

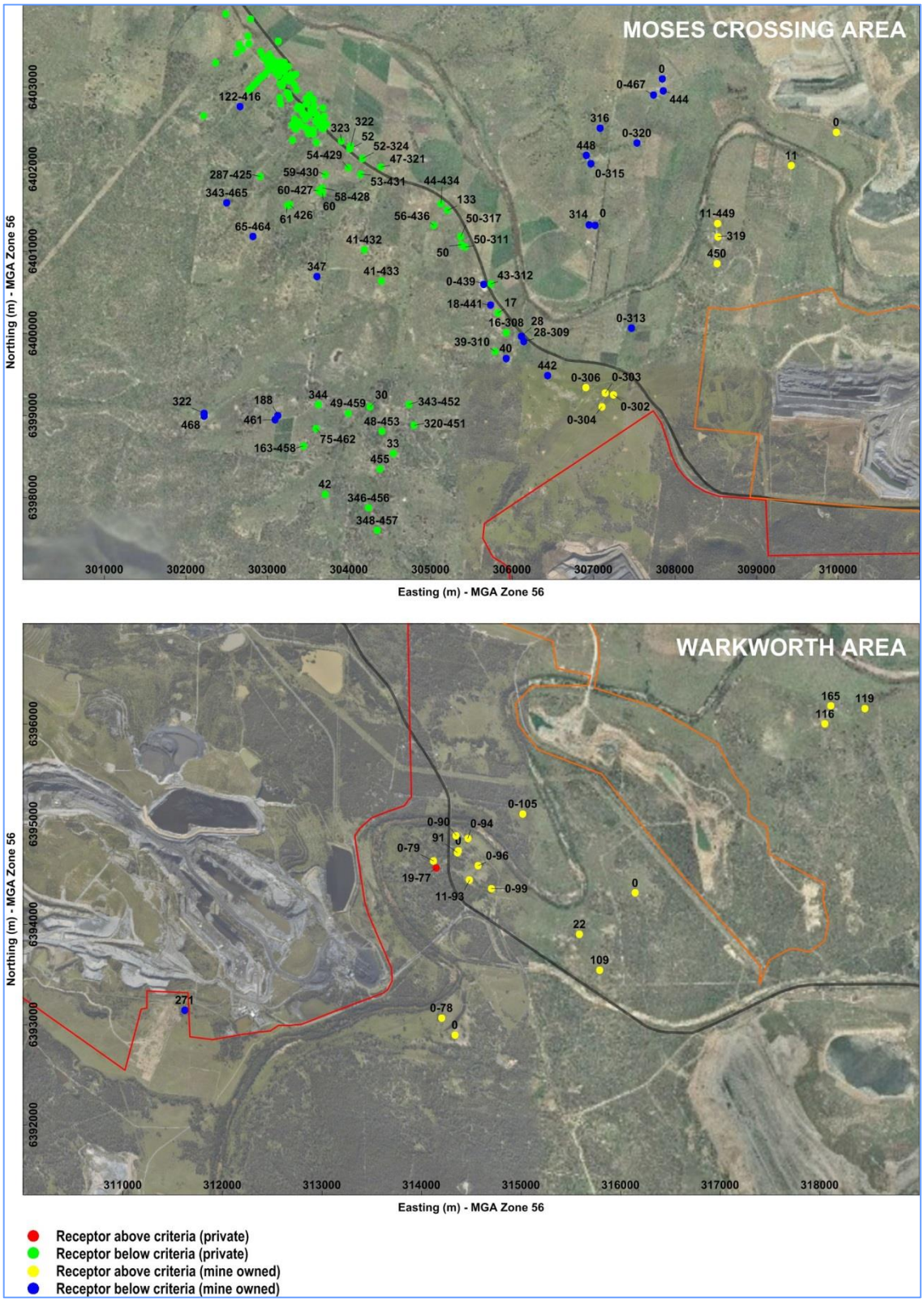

Figure 3 Summary of predicted annual average PM_{10} impacts

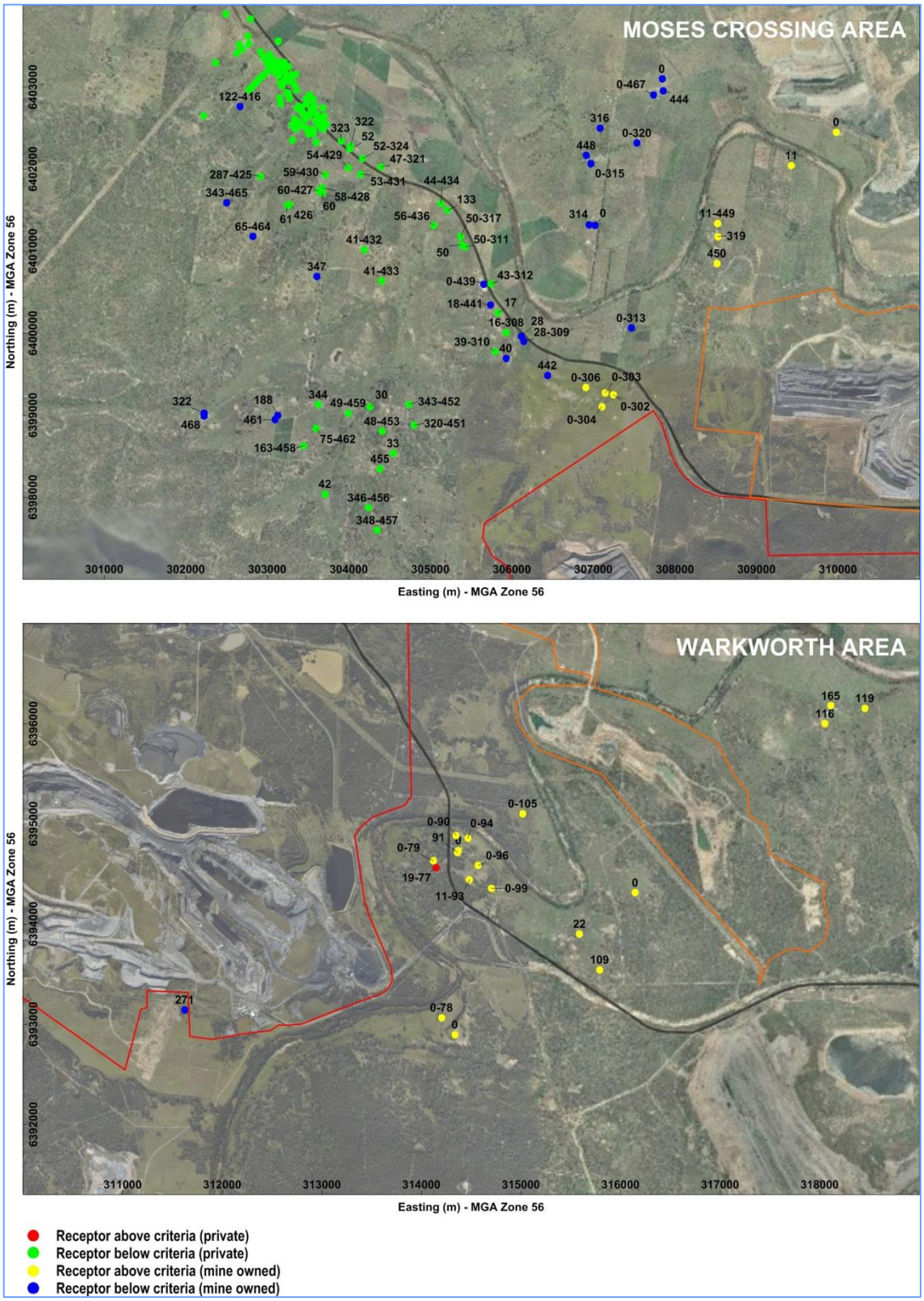

Figure 4 Summary of predicted annual average $PM_{2.5}$ impacts

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Attachment 1: Model Results in Tabular Form

All results are concentrations in micrograms per cubic metre (µg/m^3).

Table 5 Predicted annual average PM_{10} concentrations

Easting	Northing	ID	Description	Source	Increment due to United Wambo (Year 6)	Increment due to HVO South (Stage 2)	Other non-modelled sources + MTW (19.5 – 6.6 + MTW)	Cumulative	Criteria
314700	6394357	0-99	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	10.1	10.3	21.7	42.1	25
314120	6394634	0-79	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	15.9	9.4	19.3	44.6	25
313389	6386388	C	Private	United Wambo	0.1	0.3	13.5	13.9	25
313259	6387527	0	Mine Owned (Yancoal)	United Wambo	0.2	0.4	13.9	14.5	25
314589	6386598	D	AGL Energy	United Wambo	0.2	0.3	14.0	14.5	25
315920	6386135	0	Mine Owned (Yancoal)	United Wambo	0.2	0.3	14.2	14.6	25
316264	6386291	0	Mine Owned (Yancoal)	United Wambo	0.2	0.4	14.8	15.4	25
316321	6386706	0	Mine Owned (Yancoal)	United Wambo	0.2	0.4	15.8	16.4	25
316040	6387020	0	Mine Owned (Yancoal)	United Wambo	0.2	0.4	15.7	16.4	25
312067	6390410	0	Mine Owned (Wambo)	United Wambo	0.6	0.7	14.8	16.1	25
314570	6394587	0-96	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	12.4	11.9	20.9	45.2	25
314371	6394736	0	Mine Owned (Wambo)	United Wambo	15.2	12.1	20.1	47.4	25
314347	6394888	0-90	Mine Owned (Yancoal) Yancoal	United Wambo HVO	16.8	13.9	19.8	50.6	25
315017	6395104	0-105	Mine Owned (Yancoal) Yancoal	United Wambo HVO	9.6	33.7	22.3	65.6	25
316146	6394315	0	Mine Owned (Yancoal)	United Wambo	4.9	77.2	31.7	113.8	25
318608	6398555	E-122	Private Privately owned	United Wambo HVO	0.3	7.4	14.1	21.7	25
318011	6397794	0-265	Mine Owned (Yancoal) Yancoal	United Wambo HVO	0.4	14.6	14.9	30.0	25
318130	6397356	0-118	Mine Owned (Yancoal) Yancoal	United Wambo HVO	0.5	15.6	15.3	31.3	25
318792	6399220	0-257	Mine Owned (Yancoal) Privately owned	United Wambo HVO	0.2	5.6	13.8	19.6	25
318700	6399350	0	Mine Owned (Yancoal)	United Wambo	0.2	5.6	13.8	19.6	25
317759	6402132	0	Mine Owned (Yancoal)	United Wambo	0.1	4.8	13.4	18.3	25
319611	6403391	F	Private	United Wambo	0.1	2.3	13.1	15.4	25
319745	6404139	0	Mine Owned (Ashton)	United Wambo	0.1	1.9	13.0	15.0	25
315016	6402359	0	Mine Owned (Yancoal)	United Wambo	0.3	10.8	13.7	24.9	25
315206	6402509	0	Mine Owned (Yancoal)	United Wambo	0.3	9.6	13.7	23.5	25
314324	6402357	0	Mine Owned (Yancoal)	United Wambo	0.4	14.2	13.8	28.4	25
313949	6402173	0	Mine Owned (Yancoal)	United Wambo	0.5	17.8	13.9	32.1	25
307462	6400065	0-313	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	4.4	6.5	13.6	24.4	25
306906	6399341	0-306	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	11.7	4.1	13.4	29.2	25
307244	6399249	0-302	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	13.3	4.8	13.5	31.6	25

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Easting	Northing	ID	Description	Source	Increment due to United Wambo (Year 6)	Increment due to HVO South (Stage 2)	Other non-modelled sources + MTW (19.5 – 6.6 + MTW)	Cumulative	Criteria
307143	6399273	0-303	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	13.3	4.6	13.4	31.3	25
303604	6402327	Crown-396	Crown Land Privately owned	United Wambo HVO	1.2	2.4	13.2	16.7	25
303329	6402615	Crown-386-410	Crown Land Crown owned Crown owned	United Wambo HVO HVO	1.0	2.3	13.1	16.5	25
303337	6402604	Crown	Crown Land	United Wambo	1.0	2.3	13.1	16.5	25
305651	6400600	0-439	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	3.5	3.5	13.3	20.3	25
314465	6394859	0-94	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	15.2	14.5	20.2	49.9	25
307733	6402907	0-467	Mine Owned (Yancoal) Yancoal	United Wambo HVO	1.4	8.7	13.6	23.7	25
307840	6403103	0	Mine Owned (Yancoal)	United Wambo	1.3	8.8	13.6	23.7	25
307532	6402321	0-320	Mine Owned (Yancoal) Yancoal	United Wambo HVO	1.7	8.3	13.6	23.6	25
306969	6402070	0-315	Mine Owned (Yancoal) Yancoal	United Wambo HVO	1.8	6.1	13.5	21.5	25
307016	6401319	0	Mine Owned (Yancoal)	United Wambo	2.4	6.1	13.5	22.0	25
309977	6402453	0	Mine Owned (Yancoal)	United Wambo	1.3	23.2	13.9	38.3	25
311206	6390558	0	Mine Owned (Wambo)	United Wambo	0.6	0.6	14.4	15.5	25
315143	6386683	0	Mine Owned (Yancoal)	United Wambo	0.2	0.4	14.4	14.9	25
315060	6386183	0	Mine Owned (Yancoal)	United Wambo	0.1	0.3	13.8	14.3	25
315212	6386299	0	Mine Owned (Yancoal)	United Wambo	0.2	0.3	14.0	14.5	25
315758	6386466	0	Mine Owned (Yancoal)	United Wambo	0.2	0.4	14.6	15.1	25
314336	6392898	0	Mine Owned (Yancoal)	United Wambo	6.4	2.9	20.8	30.1	25
314201	6393069	0-78	Mine Owned (Yancoal) Yancoal	United Wambo HVO	7.7	3.1	20.2	30.9	25
315908	6390572	0	Mine Owned (Yancoal)	United Wambo	1.2	1.2	29.2	31.6	25
316141	6389566	0	Mine Owned (Yancoal)	United Wambo	0.7	0.9	22.3	23.9	25
307101	6399106	0-304	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	16.8	4.2	13.4	34.4	25
313160	6388755	2	Mine Owned (Yancoal)	United Wambo	0.3	0.5	14.4	15.2	25
313271	6388488	3	Private	United Wambo	0.3	0.5	14.3	15.1	25
312974	6386930	4	Mine Owned (Yancoal)	United Wambo	0.2	0.3	13.6	14.1	25
313163	6388181	4	Mine Owned (Yancoal)	United Wambo	0.3	0.4	14.1	14.8	25
303519	6402664	4	Private	United Wambo	1.1	2.4	13.2	16.7	25
312518	6387011	4	Mine Owned (Yancoal)	United Wambo	0.2	0.3	13.6	14.0	25
313347	6387867	6	Private	United Wambo	0.2	0.4	14.1	14.7	25
312920	6387731	7	Private	United Wambo	0.2	0.4	13.9	14.5	25
313743	6388999	8	Mine Owned (Yancoal)	United Wambo	0.4	0.6	15.0	16.0	25
314482	6394445	11-93	Mine Owned (Yancoal) Yancoal	United Wambo HVO	11.9	9.8	20.7	42.4	25
309426	6402046	11	Mine Owned (Yancoal)	United Wambo	1.7	20.8	13.9	36.4	25
308518	6401341	11-449	Mine Owned (Yancoal) Yancoal	United Wambo HVO	2.2	11.9	13.8	27.9	25
305929	6400010	16-308	Private Privately owned	United Wambo HVO	4.5	3.3	13.3	21.1	25
305825	6400250	17	Private	United Wambo	4.1	3.4	13.3	20.8	25

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Easting	Northing	ID	Description	Source	Increment due to United Wambo (Year 6)	Increment due to HVO South (Stage 2)	Other non-modelled sources + MTW (19.5 – 6.6 + MTW)	Cumulative	Criteria
305736	6400345	18-441	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	3.8	3.4	13.3	20.5	25
314149	6394567	19-77	Private	United Wambo HVO	14.9	9.0	19.4	43.4	25
315587	6393904	22	Mine Owned (Glencore)	United Wambo	6.1	11.1	30.8	48.0	25
310074	6389857	25	Private	United Wambo	0.3	0.4	13.8	14.6	25
306142	6399900	28-309	Mine	United Wambo HVO	5.4	3.4	13.3	22.1	25
306112	6399966	28	Mine	United Wambo	5.2	3.5	13.3	22.0	25
304258	6399106	30	Private	United Wambo	1.9	1.4	13.1	16.4	25
304542	6398538	33	Private	United Wambo	2.2	1.2	13.1	16.5	25
309406	6389457	35	Private	United Wambo	0.2	0.4	13.6	14.2	25
308673	6389438	35	Private	United Wambo	0.2	0.3	13.5	14.0	25
305790	6399782	39-310	Private Privately owned	United Wambo HVO	4.0	2.9	13.3	20.2	25
305926	6399697	40	Mine	United Wambo	4.6	2.9	13.3	20.8	25
304187	6401020	41-432	Private Privately owned	United Wambo HVO	1.5	2.4	13.2	17.1	25
304400	6400638	41-433	Private Privately owned	United Wambo HVO	1.6	2.3	13.2	17.1	25
303707	6398041	42	Private	United Wambo	1.3	0.9	13.1	15.3	25
305740	6400605	43-312	Private Privately owned	United Wambo HVO	3.6	3.6	13.3	20.5	25
305128	6401582	44-434	Private Privately owned	United Wambo HVO	2.2	3.4	13.3	18.8	25
304391	6402029	47-321	Private Privately owned	United Wambo HVO	1.6	2.8	13.2	17.6	25
304406	6398806	48-453	Private Privately owned	United Wambo HVO	2.0	1.3	13.1	16.5	25
303991	6399029	49-459	Private Privately owned	United Wambo HVO	1.7	1.3	13.1	16.1	25
305378	6401082	50	Private	United Wambo	2.7	3.5	13.3	19.5	25
305371	6401182	50-317	Private Privately owned	United Wambo HVO	2.6	3.5	13.3	19.4	25
305424	6401054	50-311	Private Privately owned	United Wambo HVO	2.8	3.5	13.3	19.6	25
304009	6402249	52	Private	United Wambo	1.3	2.6	13.2	17.2	25
304164	6402131	52-324	Private Privately owned	United Wambo HVO	1.4	2.7	13.2	17.3	25
304146	6401941	53-431	Private	United Wambo HVO	1.4	2.7	13.2	17.3	25
303990	6402018	54-429	Private Privately owned	United Wambo HVO	1.4	2.6	13.2	17.1	25
305041	6401315	56-436	Private Privately owned	United Wambo HVO	2.3	3.2	13.3	18.8	25
303674	6401773	58-428	Private Privately owned	United Wambo HVO	1.2	2.3	13.2	16.7	25
303709	6401932	59-430	Private Privately owned	United Wambo HVO	1.2	2.4	13.2	16.8	25
303628	6401737	60-427	Private Privately owned	United Wambo HVO	1.2	2.3	13.1	16.6	25
303672	6401711	60	Private	United Wambo	1.2	2.3	13.2	16.7	25
303243	6401558	61	Private	United Wambo	1.1	2.0	13.1	16.2	25
303347	6403156	62-362	Private Privately owned	United Wambo HVO	1.0	2.4	13.1	16.5	25
302823	6401180	65-464	Mine Owned (Doyles Creek) Other mine owned property	United Wambo HVO	0.9	1.7	13.1	15.7	25
303375	6402578	68-411	Private Privately owned	United Wambo HVO	1.1	2.4	13.1	16.6	25
303594	6398843	75-462	Private Privately owned	United Wambo HVO	1.5	1.1	13.1	15.7	25
302335	6404279	95	Private	United Wambo	0.6	2.1	13.1	15.8	25
302215	6404447	95	Private	United Wambo	0.6	2.1	13.0	15.7	25
303155	6403047	98-370	Private Privately owned	United Wambo HVO	1.0	2.3	13.1	16.4	25

Easting	Northing	ID	Description	Source	Increment due to United Wambo (Year 6)	Increment due to HVO South (Stage 2)	Other non-modelled sources + MTW (19.5 – 6.6 + MTW)	Cumulative	Criteria
303229	6403235	105-360	Private Privately owned	United Wambo HVO	1.0	2.4	13.1	16.4	25
302488	6403896	106-330	Private Privately owned	United Wambo HVO	0.7	2.1	13.1	15.9	25
303563	6402427	107-398	Private Privately owned	United Wambo HVO	1.1	2.4	13.2	16.7	25
303599	6402669	113-389	Private Privately owned	United Wambo HVO	1.1	2.5	13.2	16.8	25
303580	6402686	113-388	Private Privately owned	United Wambo HVO	1.1	2.5	13.2	16.7	25
303461	6402510	115-407	Private Privately owned	United Wambo HVO	1.1	2.4	13.1	16.6	25
303152	6402874	116-372	Private Privately owned	United Wambo HVO	1.0	2.3	13.1	16.4	25
302662	6402765	122-416	Mine Owned (Doyles Creek) Other mine owned property	United Wambo HVO	0.8	2.1	13.1	16.0	25
305207	6401500	133	Private	United Wambo	2.3	3.4	13.3	19.0	25
303057	6403344	135-347	Private Privately owned	United Wambo HVO	0.9	2.3	13.1	16.3	25
302975	6403164	143-346	Private Privately owned	United Wambo HVO	0.9	2.3	13.1	16.3	25
303308	6402357	144-419	Private Privately owned	United Wambo HVO	1.0	2.3	13.1	16.5	25
303082	6403276	146-351	Private Privately owned	United Wambo HVO	0.9	2.3	13.1	16.3	25
302690	6403469	148-335	Private Privately owned	United Wambo HVO	0.8	2.2	13.1	16.1	25
302625	6403418	148-334	Private Privately owned	United Wambo HVO	0.8	2.2	13.1	16.1	25
303357	6402970	150-377	Private Privately owned	United Wambo HVO	1.0	2.4	13.1	16.6	25
303276	6402868	151-375	Private Privately owned	United Wambo HVO	1.0	2.4	13.1	16.5	25
303423	6402758	156-383	Private Privately owned	United Wambo HVO	1.1	2.4	13.1	16.6	25
303381	6402773	156-384	Private Privately owned	United Wambo HVO	1.1	2.4	13.1	16.6	25
303442	6398629	163-458	Private Privately owned	United Wambo HVO	1.4	1.0	13.1	15.5	25
303115	6403298	168-352	Private Privately owned	United Wambo HVO	0.9	2.3	13.1	16.4	25
302218	6402651	170-466	Private Other mine owned property	United Wambo HVO	0.7	1.9	13.1	15.7	25
302999	6403290	171-349	Private Privately owned	United Wambo HVO	0.9	2.3	13.1	16.3	25
303257	6402924	174-373	Private Privately owned	United Wambo HVO	1.0	2.4	13.1	16.5	25
303239	6402934	174-371	Private Privately owned	United Wambo HVO	1.0	2.3	13.1	16.5	25
302943	6403133	175-345	Private Privately owned	United Wambo HVO	0.9	2.3	13.1	16.3	25
303130	6403214	180-356	Private Privately owned	United Wambo HVO	0.9	2.3	13.1	16.4	25
303262	6402901	186-374	Private Privately owned	United Wambo HVO	1.0	2.4	13.1	16.5	25
303466	6402612	187-380	Private Privately owned	United Wambo HVO	1.1	2.4	13.1	16.6	25
303127	6398998	188	Mine Owned (Doyles Creek)	United Wambo	1.3	1.1	13.1	15.4	25
302917	6403432	198-337	Private Privately owned	United Wambo HVO	0.9	2.3	13.1	16.2	25
303047	6403238	202-350	Private Privately owned	United Wambo HVO	0.9	2.3	13.1	16.3	25
303302	6402543	204-412	Department of Education and Communities Crown owned	United Wambo HVO	1.0	2.3	13.1	16.5	25
302879	6403079	205-343	Private Privately owned	United Wambo HVO	0.9	2.2	13.1	16.2	25
303399	6402544	206-409	Private Privately owned	United Wambo HVO	1.1	2.4	13.1	16.6	25
303166	6403236	211	Private	United Wambo	0.9	2.3	13.1	16.4	25
303184	6403276	211-355	Private Privately owned	United Wambo HVO	0.9	2.3	13.1	16.4	25
302019	6404601	230-437	Private Privately owned	United Wambo HVO	0.6	2.0	13.0	15.6	25
303365	6402742	240-385	Private Privately owned	United Wambo HVO	1.0	2.4	13.1	16.6	25

Easting	Northing	ID	Description	Source	Increment due to United Wambo (Year 6)	Increment due to HVO South (Stage 2)	Other non-modelled sources + MTW (19.5 – 6.6 + MTW)	Cumulative	Criteria
302757	6403624	256-336	Private Privately owned	United Wambo HVO	0.8	2.2	13.1	16.1	25
303205	6403302	261-354	Private Privately owned	United Wambo HVO	0.9	2.4	13.1	16.4	25
303254	6403256	276-361	Private Privately owned	United Wambo HVO	1.0	2.4	13.1	16.5	25
303181	6403017	277-417	Private Privately owned	United Wambo HVO	1.0	2.3	13.1	16.4	25
303007	6403201	277	Crown Land	United Wambo	0.9	2.3	13.1	16.3	25
303316	6403133	280-363	Private Privately owned	United Wambo HVO	1.0	2.4	13.1	16.5	25
303033	6403315	281-348	Private Privately owned	United Wambo HVO	0.9	2.3	13.1	16.3	25
302773	6404011	281-328	Private Privately owned	United Wambo HVO	0.8	2.2	13.1	16.1	25
303619	6402638	282-390-423	Private Privately owned Privately owned	United Wambo HVO HVO	1.1	2.5	13.2	16.8	25
303611	6402649	282	Private	United Wambo	1.1	2.5	13.2	16.8	25
302830	6403026	283-341	Private Privately owned	United Wambo HVO	0.9	2.2	13.1	16.2	25
302953	6403358	286	Private	United Wambo	0.9	2.3	13.1	16.3	25
302914	6401913	287-425	Private Privately owned	United Wambo HVO	0.9	2.0	13.1	16.0	25
303478	6402864	291-376	Private Privately owned	United Wambo HVO	1.1	2.4	13.2	16.7	25
304801	6398881	320-451	Private Privately owned	United Wambo HVO	2.4	1.5	13.2	17.0	25
302224	6399025	322	Mine Owned (Doyles Creek)	United Wambo	0.9	0.9	13.0	14.8	25
302650	6403523	325-333	Private Privately owned	United Wambo HVO	0.8	2.2	13.1	16.1	25
303536	6402728	326	Private	United Wambo	1.1	2.5	13.2	16.7	25
303573	6402776	326-421	Private Privately owned	United Wambo HVO	1.1	2.5	13.2	16.7	25
303570	6402708	326	Private	United Wambo	1.1	2.5	13.2	16.7	25
302772	6403528	327-332	Private Privately owned	United Wambo HVO	0.8	2.2	13.1	16.1	25
303027	6403398	328-338	Private Privately owned	United Wambo HVO	0.9	2.3	13.1	16.3	25
303108	6403168	329	Private	United Wambo	0.9	2.3	13.1	16.4	25
303139	6403141	330-358	Private Privately owned	United Wambo HVO	0.9	2.3	13.1	16.4	25
303207	6403191	332-359	Private Privately owned	United Wambo HVO	1.0	2.4	13.1	16.4	25
303212	6403086	333-367	Private Privately owned	United Wambo HVO	1.0	2.3	13.1	16.4	25
303267	6403082	334-366	Private Privately owned	United Wambo HVO	1.0	2.4	13.1	16.5	25
302769	6402966	335-339	Private Privately owned	United Wambo HVO	0.9	2.2	13.1	16.1	25
302801	6402991	336-340	Private Privately owned	United Wambo HVO	0.9	2.2	13.1	16.1	25
302865	6403056	337-342	Private Privately owned	United Wambo HVO	0.9	2.2	13.1	16.2	25
302913	6403113	338-344	Private Privately owned	United Wambo HVO	0.9	2.2	13.1	16.2	25
304735	6399136	343-452	Private	United Wambo HVO	2.2	1.6	13.2	17.0	25
302500	6401591	343-465	Mine Owned (Doyles Creek) Other mine owned property	United Wambo HVO	0.8	1.7	13.1	15.6	25
303625	6399131	344	Private	United Wambo	1.5	1.2	13.1	15.8	25
304242	6397875	346-456	Private Privately owned	United Wambo HVO	1.6	1.0	13.1	15.6	25
303607	6400693	347	Mine Owned (Doyles Creek)	United Wambo	1.2	1.9	13.1	16.2	25
304348	6397600	348-457	Private Privately owned	United Wambo HVO	1.4	0.9	13.1	15.4	25
301521	6404890	349	Private	United Wambo	0.5	1.8	13.0	15.3	25
301406	6404797	349	Private	United Wambo	0.5	1.8	13.0	15.3	25
301023	6404866	349	Private	United Wambo	0.4	1.7	13.0	15.1	25

Easting	Northing	ID	Description	Source	Increment due to United Wambo (Year 6)	Increment due to HVO South (Stage 2)	Other non-modelled sources + MTW (19.5 – 6.6 + MTW)	Cumulative	Criteria
301097	6404799	349	Private	United Wambo	0.4	1.7	13.0	15.1	25
303158	6402798	352-418	Private Privately owned	United Wambo HVO	1.0	2.3	13.1	16.4	25
303481	6402798	353-422	Private Privately owned	United Wambo HVO	1.1	2.4	13.2	16.7	25
303424	6402691	355-382	Private Privately owned	United Wambo HVO	1.1	2.4	13.1	16.6	25
303328	6402521	356-414-415	Private Privately owned Privately owned	United Wambo HVO HVO	1.0	2.3	13.1	16.5	25
303343	6402502	357-413	Private Privately owned	United Wambo HVO	1.0	2.3	13.1	16.5	25
303346	6402489	358	Private	United Wambo	1.0	2.3	13.1	16.5	25
303686	6402493	362-399	Private Privately owned	United Wambo HVO	1.2	2.5	13.2	16.8	25
303666	6402503	363-397	Private Privately owned	United Wambo HVO	1.2	2.5	13.2	16.8	25
303658	6402525	364-400	Private Privately owned	United Wambo HVO	1.2	2.5	13.2	16.8	25
303634	6402540	365-366-401-402	Private Private Privately owned Privately owned	United Wambo United Wambo HVO HVO	1.2	2.5	13.2	16.8	25
303562	6402483	366-404	Private Privately owned	United Wambo HVO	1.1	2.4	13.2	16.7	25
303608	6402572	367-367-403-405	Private Private Privately owned Privately owned	United Wambo United Wambo HVO HVO	1.1	2.5	13.2	16.8	25
303589	6402594	368-406	Private Privately owned	United Wambo HVO	1.1	2.5	13.2	16.8	25
303506	6402436	370-408	Private Privately owned	United Wambo HVO	1.1	2.4	13.1	16.6	25
312817	6387567	379	Private	United Wambo	0.2	0.4	13.8	14.4	25
313151	6387268	380	Private	United Wambo	0.2	0.3	13.8	14.3	25
313579	6386816	381	Private	United Wambo	0.2	0.3	13.8	14.2	25
311979	6386607	382	Private	United Wambo	0.1	0.3	13.3	13.7	25
311133	6386566	383	Private	United Wambo	0.1	0.2	13.2	13.6	25
311448	6386574	384	Private	United Wambo	0.1	0.2	13.3	13.6	25
311060	6386262	386	Private	United Wambo	0.1	0.2	13.2	13.5	25
311421	6386218	388	Private	United Wambo	0.1	0.2	13.2	13.5	25
312703	6386286	397	Private	United Wambo	0.1	0.3	13.3	13.7	25
313264	6386618	400	Private	United Wambo	0.1	0.3	13.6	14.0	25
313406	6386484	400	Private	United Wambo	0.1	0.3	13.5	14.0	25
313476	6386458	401	Private	United Wambo	0.1	0.3	13.5	14.0	25
313267	6386456	402	Private	United Wambo	0.1	0.3	13.5	13.9	25
318010	6399404	474-162	Private Privately owned	United Wambo HVO	0.3	7.6	14.0	21.9	25
318010	6399449	474-161	Private Privately owned	United Wambo HVO	0.3	7.5	14.0	21.7	25
319024	6403132	483-471	Private Privately owned	United Wambo HVO	0.1	2.8	13.1	16.0	25
317883	6399178	485-160	Private Privately owned	United Wambo HVO	0.3	8.7	14.1	23.2	25
317978	6399821	486-256	Private Privately owned	United Wambo HVO	0.2	6.6	13.8	20.6	25
317994	6399960	486	Private	United Wambo	0.2	6.2	13.8	20.2	25
318103	6399611	487-258	Private Privately owned	United Wambo HVO	0.2	6.7	13.9	20.9	25
318114	6399572	487-163	Private Privately owned	United Wambo HVO	0.2	6.8	13.9	21.0	25
318028	6399103	487-261	Private Privately owned	United Wambo HVO	0.3	8.3	14.1	22.7	25
318181	6399198	487-260	Private Privately owned	United Wambo HVO	0.3	7.5	14.0	21.8	25
318671	6399230	488	Private	United Wambo	0.2	5.8	13.9	19.9	25
318751	6399233	489	Private	United Wambo	0.2	5.6	13.8	19.7	25

Easting	Northing	ID	Description	Source	Increment due to United Wambo (Year 6)	Increment due to HVO South (Stage 2)	Other non-modelled sources + MTW (19.5 – 6.6 + MTW)	Cumulative	Criteria
318795	6399314	490-246	Private Privately owned	United Wambo HVO	0.2	5.4	13.8	19.4	25
318879	6399292	491-247	Private Privately owned	United Wambo HVO	0.2	5.3	13.8	19.3	25
318807	6399092	492-244	Private Privately owned	United Wambo HVO	0.2	5.7	13.9	19.8	25
318655	6398582	493-124	Private Privately owned	United Wambo HVO	0.3	7.1	14.1	21.5	25
318658	6398206	495-123	Private Privately owned	United Wambo HVO	0.3	8.2	14.2	22.8	25
312816	6386787	495	Private	United Wambo	0.1	0.3	13.5	14.0	25
318504	6398457	496-120	Private Privately owned	United Wambo HVO	0.3	8.0	14.2	22.5	25
318530	6398040	497-121	Private Privately owned	United Wambo HVO	0.3	9.4	14.4	24.2	25
316545	6398650	500	Mine Owned (Yancoal)	United Wambo	0.5	25.2	15.0	40.6	25
303441	6402666	504-381	Private Privately owned	United Wambo HVO	1.1	2.4	13.1	16.6	25
314359	6394718	91	Other mine owned property	HVO	15.1	11.8	20.0	47.0	25
315789	6393546	109	Other mine owned property	HVO	5.0	8.8	36.3	50.1	25
316208	6397277	114	Yancoal	HVO	1.0	66.1	17.0	84.1	25
318052	6396001	116	Yancoal	HVO	0.8	22.9	17.2	40.9	25
317982	6397794	117	Yancoal	HVO	0.4	14.9	15.0	30.3	25
318452	6396156	119	Yancoal	HVO	0.6	16.5	16.2	33.3	25
316576	6399022	158	Yancoal	HVO	0.5	20.7	14.7	35.9	25
318110	6396180	165	Yancoal	HVO	0.7	20.3	16.7	37.7	25
318679	6399194	245	Privately owned	HVO	0.2	5.9	13.9	20.0	25
318211	6397179	259	Yancoal	HVO	0.5	15.3	15.3	31.1	25
311622	6393147	271	Other mine owned property	HVO	5.4	1.5	15.2	22.1	25
306942	6401324	314	Yancoal	HVO	2.4	5.9	13.5	21.8	25
307078	6402503	316	Yancoal	HVO	1.6	6.7	13.5	21.8	25
308525	6401179	319	Yancoal	HVO	2.3	11.9	13.8	28.0	25
304021	6402284	322	Privately owned	HVO	1.3	2.6	13.2	17.2	25
303908	6402342	323	Privately owned	HVO	1.3	2.6	13.2	17.0	25
302367	6403296	325	Privately owned	HVO	0.8	2.1	13.1	15.9	25
302343	6404253	326	Privately owned	HVO	0.7	2.1	13.1	15.8	25
302163	6404341	327	Privately owned	HVO	0.6	2.0	13.0	15.7	25
303132	6403565	329	Privately owned	HVO	0.9	2.3	13.1	16.3	25
302791	6403834	331	Privately owned	HVO	0.8	2.2	13.1	16.1	25
303137	6403310	353	Privately owned	HVO	0.9	2.3	13.1	16.4	25
303096	6403185	357	Privately owned	HVO	0.9	2.3	13.1	16.4	25
303257	6403134	364	Privately owned	HVO	1.0	2.4	13.1	16.5	25
303280	6403103	365	Privately owned	HVO	1.0	2.4	13.1	16.5	25
303224	6403105	368	Privately owned	HVO	1.0	2.4	13.1	16.5	25
303332	6403032	369	Privately owned	HVO	1.0	2.4	13.1	16.5	25
303517	6402907	378	Privately owned	HVO	1.1	2.5	13.2	16.7	25
303559	6402853	379	Privately owned	HVO	1.1	2.5	13.2	16.7	25
303681	6402747	387	Privately owned	HVO	1.1	2.5	13.2	16.8	25
303678	6402583	391-392	Privately owned Privately owned	HVO HVO	1.2	2.5	13.2	16.8	25

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Easting	Northing	ID	Description	Source	Increment due to United Wambo (Year 6)	Increment due to HVO South (Stage 2)	Other non-modelled sources + MTW (19.5 – 6.6 + MTW)	Cumulative	Criteria
303726	6402547	393	Privately owned	HVO	1.2	2.5	13.2	16.9	25
303694	6402565	394	Privately owned	HVO	1.2	2.5	13.2	16.8	25
303695	6402649	395	Privately owned	HVO	1.2	2.5	13.2	16.8	25
303492	6402491	420	Privately owned	HVO	1.1	2.4	13.1	16.6	25
303289	6403152	424	Privately owned	HVO	1.0	2.4	13.1	16.5	25
303276	6401567	426	Privately owned	HVO	1.1	2.1	13.1	16.2	25
301417	6404773	438	Privately owned	HVO	0.5	1.8	13.0	15.3	25
306435	6399488	442	Other mine owned property	HVO	7.5	3.4	13.3	24.3	25
307852	6402955	444	Yancoal	HVO	1.4	9.0	13.6	24.0	25
316079	6403182	445	Other mine owned property	HVO	0.2	6.8	13.4	20.4	25
313816	6404016	446	Other mine owned property	HVO	0.3	10.7	13.5	24.4	25
313521	6401905	447	Yancoal	HVO	0.6	21.5	14.0	36.0	25
306912	6402169	448	Yancoal	HVO	1.7	6.0	13.5	21.2	25
308513	6400854	450	Yancoal	HVO	2.5	12.1	13.8	28.3	25
304381	6398349	455	Privately owned	HVO	1.9	1.1	13.1	16.2	25
303092	6398949	461	Other mine owned property	HVO	1.3	1.0	13.1	15.4	25
302224	6398995	468	Other mine owned property	HVO	0.9	0.9	13.0	14.8	25
319005	6401802	472	Privately owned	HVO	0.1	3.3	13.2	16.6	25

Table 6 Predicted annual average $PM_{2.5}$ concentrations

Easting	Northing	ID	Description	Source	Increment due to United Wambo (Year 6)	Increment due to HVO South (Stage 2)	Other non-modelled sources + MTW (19.5 – 6.6 + MTW)	Cumulative	Criteria
314700	6394357	0-99	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	2.5	1.4	7.5	11.4	8
314120	6394634	0-79	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	3.8	1.3	7.1	12.2	8
313389	6386388	C	Private	United Wambo	0.0	0.0	6.1	6.2	8
313259	6387527	0	Mine Owned (Yancoal)	United Wambo	0.1	0.1	6.2	6.3	8
314589	6386598	D	AGL Energy	United Wambo	0.0	0.1	6.2	6.3	8
315920	6386135	0	Mine Owned (Yancoal)	United Wambo	0.0	0.1	6.2	6.3	8
316264	6386291	0	Mine Owned (Yancoal)	United Wambo	0.0	0.1	6.4	6.5	8
316321	6386706	0	Mine Owned (Yancoal)	United Wambo	0.1	0.1	6.5	6.6	8
316040	6387020	0	Mine Owned (Yancoal)	United Wambo	0.1	0.1	6.5	6.6	8
312067	6390410	0	Mine Owned (Wambo)	United Wambo	0.2	0.1	6.4	6.6	8
314570	6394587	0-96	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	3.1	1.6	7.4	12.1	8
314371	6394736	0	Mine Owned (Wambo)	United Wambo	3.9	1.6	7.3	12.8	8
314347	6394888	0-90	Mine Owned (Yancoal) Yancoal	United Wambo HVO	4.4	1.8	7.2	13.5	8
315017	6395104	0-105	Mine Owned (Yancoal) Yancoal	United Wambo HVO	2.4	4.4	7.6	14.4	8
316146	6394315	0	Mine Owned (Yancoal)	United Wambo	1.2	9.7	9.2	20.0	8
318608	6398555	E-122	Private Privately owned	United Wambo HVO	0.1	1.0	6.3	7.4	8
318011	6397794	0-265	Mine Owned (Yancoal) Yancoal	United Wambo HVO	0.1	1.9	6.4	8.5	8
318130	6397356	0-118	Mine Owned (Yancoal) Yancoal	United Wambo HVO	0.1	2.1	6.5	8.7	8
318792	6399220	0-257	Mine Owned (Yancoal) Privately owned	United Wambo HVO	0.1	0.8	6.2	7.1	8
318700	6399350	0	Mine Owned (Yancoal)	United Wambo	0.1	0.8	6.2	7.1	8
317759	6402132	0	Mine Owned (Yancoal)	United Wambo	0.0	0.7	6.1	6.8	8
319611	6403391	F	Private	United Wambo	0.0	0.3	6.1	6.4	8
319745	6404139	0	Mine Owned (Ashton)	United Wambo	0.0	0.3	6.0	6.3	8
315016	6402359	0	Mine Owned (Yancoal)	United Wambo	0.1	1.5	6.2	7.8	8
315206	6402509	0	Mine Owned (Yancoal)	United Wambo	0.1	1.3	6.2	7.6	8
314324	6402357	0	Mine Owned (Yancoal)	United Wambo	0.1	1.9	6.2	8.2	8
313949	6402173	0	Mine Owned (Yancoal)	United Wambo	0.1	2.4	6.2	8.7	8
307462	6400065	0-313	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	0.7	0.8	6.2	7.7	8
306906	6399341	0-306	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	1.5	0.5	6.1	8.2	8
307244	6399249	0-302	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	1.7	0.6	6.1	8.5	8
307143	6399273	0-303	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	1.7	0.6	6.1	8.5	8
303604	6402327	Crown-396	Crown Land Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303329	6402615	Crown-386-410	Crown Land Crown owned Crown owned	United Wambo HVO HVO	0.2	0.3	6.1	6.6	8

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Easting	Northing	ID	Description	Source	Increment due to United Wambo (Year 6)	Increment due to HVO South (Stage 2)	Other non-modelled sources + MTW (19.5 – 6.6 + MTW)	Cumulative	Criteria
303337	6402604	Crown	Crown Land	United Wambo	0.2	0.3	6.1	6.6	8
305651	6400600	0-439	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	0.5	0.5	6.1	7.1	8
314465	6394859	0-94	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	4.0	1.9	7.3	13.2	8
307733	6402907	0-467	Mine Owned (Yancoal) Yancoal	United Wambo HVO	0.3	1.2	6.2	7.7	8
307840	6403103	0	Mine Owned (Yancoal)	United Wambo	0.3	1.2	6.2	7.7	8
307532	6402321	0-320	Mine Owned (Yancoal) Yancoal	United Wambo HVO	0.4	1.1	6.2	7.7	8
306969	6402070	0-315	Mine Owned (Yancoal) Yancoal	United Wambo HVO	0.4	0.8	6.2	7.4	8
307016	6401319	0	Mine Owned (Yancoal)	United Wambo	0.5	0.8	6.2	7.4	8
309977	6402453	0	Mine Owned (Yancoal)	United Wambo	0.3	3.0	6.2	9.5	8
311206	6390558	0	Mine Owned (Wambo)	United Wambo	0.1	0.1	6.3	6.6	8
315143	6386683	0	Mine Owned (Yancoal)	United Wambo	0.0	0.1	6.3	6.4	8
315060	6386183	0	Mine Owned (Yancoal)	United Wambo	0.0	0.0	6.2	6.3	8
315212	6386299	0	Mine Owned (Yancoal)	United Wambo	0.0	0.1	6.2	6.3	8
315758	6386466	0	Mine Owned (Yancoal)	United Wambo	0.0	0.1	6.3	6.4	8
314336	6392898	0	Mine Owned (Yancoal)	United Wambo	1.1	0.4	7.4	8.8	8
314201	6393069	0-78	Mine Owned (Yancoal) Yancoal	United Wambo HVO	1.2	0.4	7.3	8.9	8
315908	6390572	0	Mine Owned (Yancoal)	United Wambo	0.3	0.2	8.5	9.0	8
316141	6389566	0	Mine Owned (Yancoal)	United Wambo	0.2	0.1	7.6	7.9	8
307101	6399106	0-304	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	2.1	0.6	6.1	8.8	8
313160	6388755	2	Mine Owned (Yancoal)	United Wambo	0.1	0.1	6.3	6.5	8
313271	6388488	3	Private	United Wambo	0.1	0.1	6.3	6.4	8
312974	6386930	4	Mine Owned (Yancoal)	United Wambo	0.0	0.0	6.2	6.3	8
313163	6388181	4	Mine Owned (Yancoal)	United Wambo	0.1	0.1	6.3	6.4	8
303519	6402664	4	Private	United Wambo	0.2	0.3	6.1	6.6	8
312518	6387011	4	Mine Owned (Yancoal)	United Wambo	0.0	0.0	6.2	6.3	8
313347	6387867	6	Private	United Wambo	0.1	0.1	6.3	6.4	8
312920	6387731	7	Private	United Wambo	0.1	0.1	6.2	6.3	8
313743	6388999	8	Mine Owned (Yancoal)	United Wambo	0.1	0.1	6.4	6.6	8
314482	6394445	11-93	Mine Owned (Yancoal) Yancoal	United Wambo HVO	2.9	1.3	7.4	11.6	8
309426	6402046	11	Mine Owned (Yancoal)	United Wambo	0.4	2.7	6.2	9.3	8
308518	6401341	11-449	Mine Owned (Yancoal) Yancoal	United Wambo HVO	0.5	1.6	6.2	8.3	8
305929	6400010	16-308	Private Privately owned	United Wambo HVO	0.7	0.5	6.1	7.2	8
305825	6400250	17	Private	United Wambo	0.6	0.5	6.1	7.2	8
305736	6400345	18-441	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	0.6	0.5	6.1	7.2	8
314149	6394567	19-77	Private	United Wambo HVO	3.5	1.2	7.2	11.9	8
315587	6393904	22	Mine Owned (Glencore)	United Wambo	1.5	1.5	8.9	11.9	8
310074	6389857	25	Private	United Wambo	0.1	0.1	6.2	6.4	8
306142	6399900	28-309	Mine	United Wambo HVO	0.8	0.5	6.1	7.4	8
306112	6399966	28	Mine	United Wambo	0.8	0.5	6.1	7.4	8
304258	6399106	30	Private	United Wambo	0.3	0.2	6.1	6.6	8

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Easting	Northing	ID	Description	Source	Increment due to United Wambo (Year 6)	Increment due to HVO South (Stage 2)	Other non-modelled sources + MTW (19.5 – 6.6 + MTW)	Cumulative	Criteria
304542	6398538	33	Private	United Wambo	0.4	0.2	6.1	6.6	8
309406	6389457	35	Private	United Wambo	0.1	0.1	6.2	6.3	8
308673	6389438	35	Private	United Wambo	0.1	0.1	6.1	6.3	8
305790	6399782	39-310	Private Privately owned	United Wambo HVO	0.6	0.4	6.1	7.1	8
305926	6399697	40	Mine	United Wambo	0.7	0.4	6.1	7.2	8
304187	6401020	41-432	Private Privately owned	United Wambo HVO	0.3	0.3	6.1	6.7	8
304400	6400638	41-433	Private Privately owned	United Wambo HVO	0.3	0.3	6.1	6.7	8
303707	6398041	42	Private	United Wambo	0.3	0.1	6.1	6.5	8
305740	6400605	43-312	Private Privately owned	United Wambo HVO	0.6	0.5	6.1	7.2	8
305128	6401582	44-434	Private Privately owned	United Wambo HVO	0.4	0.5	6.1	6.9	8
304391	6402029	47-321	Private Privately owned	United Wambo HVO	0.3	0.4	6.1	6.8	8
304406	6398806	48-453	Private Privately owned	United Wambo HVO	0.4	0.2	6.1	6.6	8
303991	6399029	49-459	Private Privately owned	United Wambo HVO	0.3	0.2	6.1	6.6	8
305378	6401082	50	Private	United Wambo	0.4	0.5	6.1	7.0	8
305371	6401182	50-317	Private Privately owned	United Wambo HVO	0.4	0.5	6.1	7.0	8
305424	6401054	50-311	Private Privately owned	United Wambo HVO	0.5	0.5	6.1	7.1	8
304009	6402249	52	Private	United Wambo	0.3	0.4	6.1	6.7	8
304164	6402131	52-324	Private Privately owned	United Wambo HVO	0.3	0.4	6.1	6.7	8
304146	6401941	53-431	Private	United Wambo HVO	0.3	0.4	6.1	6.7	8
303990	6402018	54-429	Private Privately owned	United Wambo HVO	0.3	0.4	6.1	6.7	8
305041	6401315	56-436	Private Privately owned	United Wambo HVO	0.4	0.4	6.1	6.9	8
303674	6401773	58-428	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303709	6401932	59-430	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.7	8
303628	6401737	60-427	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303672	6401711	60	Private	United Wambo	0.2	0.3	6.1	6.6	8
303243	6401558	61	Private	United Wambo	0.2	0.3	6.1	6.6	8
303347	6403156	62-362	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
302823	6401180	65-464	Mine Owned (Doyles Creek) Other mine owned property	United Wambo HVO	0.2	0.2	6.1	6.5	8
303375	6402578	68-411	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303594	6398843	75-462	Private Privately owned	United Wambo HVO	0.3	0.2	6.1	6.5	8
302335	6404279	95	Private	United Wambo	0.1	0.3	6.1	6.5	8
302215	6404447	95	Private	United Wambo	0.1	0.3	6.1	6.5	8
303155	6403047	98-370	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303229	6403235	105-360	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
302488	6403896	106-330	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.5	8
303563	6402427	107-398	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303599	6402669	113-389	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303580	6402686	113-388	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303461	6402510	115-407	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303152	6402874	116-372	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
302662	6402765	122-416	Mine Owned (Doyles Creek) Other mine owned property	United Wambo HVO	0.2	0.3	6.1	6.5	8
305207	6401500	133	Private	United Wambo	0.4	0.5	6.1	7.0	8
303057	6403344	135-347	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
302975	6403164	143-346	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8

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Easting	Northing	ID	Description	Source	Increment due to United Wambo (Year 6)	Increment due to HVO South (Stage 2)	Other non-modelled sources + MTW (19.5 – 6.6 + MTW)	Cumulative	Criteria
303308	6402357	144-419	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303082	6403276	146-351	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
302690	6403469	148-335	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.5	8
302625	6403418	148-334	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.5	8
303357	6402970	150-377	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303276	6402868	151-375	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303423	6402758	156-383	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303381	6402773	156-384	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303442	6398629	163-458	Private Privately owned	United Wambo HVO	0.3	0.1	6.1	6.5	8
303115	6403298	168-352	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
302218	6402651	170-466	Private Other mine owned property	United Wambo HVO	0.2	0.3	6.1	6.5	8
302999	6403290	171-349	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303257	6402924	174-373	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303239	6402934	174-371	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
302943	6403133	175-345	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303130	6403214	180-356	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303262	6402901	186-374	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303466	6402612	187-380	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303127	6398998	188	Mine Owned (Doyles Creek)	United Wambo	0.2	0.2	6.1	6.5	8
302917	6403432	198-337	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303047	6403238	202-350	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303302	6402543	204-412	Department of Education and Communities Crown owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
302879	6403079	205-343	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303399	6402544	206-409	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303166	6403236	211	Private	United Wambo	0.2	0.3	6.1	6.6	8
303184	6403276	211-355	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
302019	6404601	230-437	Private Privately owned	United Wambo HVO	0.1	0.3	6.1	6.5	8
303365	6402742	240-385	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
302757	6403624	256-336	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.5	8
303205	6403302	261-354	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303254	6403256	276-361	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303181	6403017	277-417	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303007	6403201	277	Crown Land	United Wambo	0.2	0.3	6.1	6.6	8
303316	6403133	280-363	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303033	6403315	281-348	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
302773	6404011	281-328	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.5	8
303619	6402638	282-390-423	Private Privately owned Privately owned	United Wambo HVO HVO	0.2	0.3	6.1	6.6	8
303611	6402649	282	Private	United Wambo	0.2	0.3	6.1	6.6	8
302830	6403026	283-341	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
302953	6403358	286	Private	United Wambo	0.2	0.3	6.1	6.6	8
302914	6401913	287-425	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.5	8
303478	6402864	291-376	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
304801	6398881	320-451	Private Privately owned	United Wambo HVO	0.4	0.2	6.1	6.7	8
302224	6399025	322	Mine Owned (Doyles	United Wambo	0.2	0.1	6.1	6.4	8

Easting	Northing	ID	Description	Source	Increment due to United Wambo (Year 6)	Increment due to HVO South (Stage 2)	Other non-modelled sources + MTW (19.5 – 6.6 + MTW)	Cumulative	Criteria
			Creek)						
302650	6403523	325-333	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.5	8
303536	6402728	326	Private	United Wambo	0.2	0.3	6.1	6.6	8
303573	6402776	326-421	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303570	6402708	326	Private	United Wambo	0.2	0.3	6.1	6.6	8
302772	6403528	327-332	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.5	8
303027	6403398	328-338	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303108	6403168	329	Private	United Wambo	0.2	0.3	6.1	6.6	8
303139	6403141	330-358	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303207	6403191	332-359	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303212	6403086	333-367	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303267	6403082	334-366	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
302769	6402966	335-339	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.5	8
302801	6402991	336-340	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.5	8
302865	6403056	337-342	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
302913	6403113	338-344	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
304735	6399136	343-452	Private	United Wambo HVO	0.4	0.2	6.1	6.7	8
302500	6401591	343-465	Mine Owned (Doyles Creek) Other mine owned property	United Wambo HVO	0.2	0.2	6.1	6.5	8
303625	6399131	344	Private	United Wambo	0.3	0.2	6.1	6.5	8
304242	6397875	346-456	Private Privately owned	United Wambo HVO	0.3	0.1	6.1	6.5	8
303607	6400693	347	Mine Owned (Doyles Creek)	United Wambo	0.2	0.3	6.1	6.6	8
304348	6397600	348-457	Private Privately owned	United Wambo HVO	0.3	0.1	6.1	6.5	8
301521	6404890	349	Private	United Wambo	0.1	0.3	6.0	6.4	8
301406	6404797	349	Private	United Wambo	0.1	0.3	6.0	6.4	8
301023	6404866	349	Private	United Wambo	0.1	0.2	6.0	6.4	8
301097	6404799	349	Private	United Wambo	0.1	0.2	6.0	6.4	8
303158	6402798	352-418	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303481	6402798	353-422	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303424	6402691	355-382	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303328	6402521	356-414-415	Private Privately owned Privately owned	United Wambo HVO HVO	0.2	0.3	6.1	6.6	8
303343	6402502	357-413	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303346	6402489	358	Private	United Wambo	0.2	0.3	6.1	6.6	8
303686	6402493	362-399	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.7	8
303666	6402503	363-397	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.7	8
303658	6402525	364-400	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.7	8
303634	6402540	365-366-401-402	Private Private Privately owned Privately owned	United Wambo United Wambo HVO HVO	0.2	0.3	6.1	6.7	8
303562	6402483	366-404	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303608	6402572	367-367-403-405	Private Private Privately owned Privately owned	United Wambo United Wambo HVO HVO	0.2	0.3	6.1	6.6	8
303589	6402594	368-406	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
303506	6402436	370-408	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
312817	6387567	379	Private	United Wambo	0.1	0.1	6.2	6.3	8
313151	6387268	380	Private	United Wambo	0.1	0.1	6.2	6.3	8
313579	6386816	381	Private	United Wambo	0.0	0.1	6.2	6.3	8
311979	6386607	382	Private	United Wambo	0.0	0.0	6.1	6.2	8

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Easting	Northing	ID	Description	Source	Increment due to United Wambo (Year 6)	Increment due to HVO South (Stage 2)	Other non-modelled sources + MTW (19.5 – 6.6 + MTW)	Cumulative	Criteria
311133	6386566	383	Private	United Wambo	0.0	0.0	6.1	6.2	8
311448	6386574	384	Private	United Wambo	0.0	0.0	6.1	6.2	8
311060	6386262	386	Private	United Wambo	0.0	0.0	6.1	6.1	8
311421	6386218	388	Private	United Wambo	0.0	0.0	6.1	6.1	8
312703	6386286	397	Private	United Wambo	0.0	0.0	6.1	6.2	8
313264	6386618	400	Private	United Wambo	0.0	0.0	6.2	6.2	8
313406	6386484	400	Private	United Wambo	0.0	0.0	6.1	6.2	8
313476	6386458	401	Private	United Wambo	0.0	0.0	6.2	6.2	8
313267	6386456	402	Private	United Wambo	0.0	0.0	6.1	6.2	8
318010	6399404	474-162	Private Privately owned	United Wambo HVO	0.1	1.0	6.3	7.4	8
318010	6399449	474-161	Private Privately owned	United Wambo HVO	0.1	1.0	6.3	7.4	8
319024	6403132	483-471	Private Privately owned	United Wambo HVO	0.0	0.4	6.1	6.5	8
317883	6399178	485-160	Private Privately owned	United Wambo HVO	0.1	1.2	6.3	7.6	8
317978	6399821	486-256	Private Privately owned	United Wambo HVO	0.1	0.9	6.2	7.2	8
317994	6399960	486	Private	United Wambo	0.1	0.8	6.2	7.1	8
318103	6399611	487-258	Private Privately owned	United Wambo HVO	0.1	0.9	6.2	7.2	8
318114	6399572	487-163	Private Privately owned	United Wambo HVO	0.1	0.9	6.2	7.2	8
318028	6399103	487-261	Private Privately owned	United Wambo HVO	0.1	1.1	6.3	7.5	8
318181	6399198	487-260	Private Privately owned	United Wambo HVO	0.1	1.0	6.3	7.4	8
318671	6399230	488	Private	United Wambo	0.1	0.8	6.2	7.1	8
318751	6399233	489	Private	United Wambo	0.1	0.8	6.2	7.1	8
318795	6399314	490-246	Private Privately owned	United Wambo HVO	0.1	0.7	6.2	7.0	8
318879	6399292	491-247	Private Privately owned	United Wambo HVO	0.1	0.7	6.2	7.0	8
318807	6399092	492-244	Private Privately owned	United Wambo HVO	0.1	0.8	6.2	7.1	8
318655	6398582	493-124	Private Privately owned	United Wambo HVO	0.1	1.0	6.3	7.3	8
318658	6398206	495-123	Private Privately owned	United Wambo HVO	0.1	1.1	6.3	7.5	8
312816	6386787	495	Private	United Wambo	0.0	0.0	6.2	6.2	8
318504	6398457	496-120	Private Privately owned	United Wambo HVO	0.1	1.1	6.3	7.5	8
318530	6398040	497-121	Private Privately owned	United Wambo HVO	0.1	1.3	6.3	7.7	8
316545	6398650	500	Mine Owned (Yancoal)	United Wambo	0.2	3.3	6.4	9.9	8
303441	6402666	504-381	Private Privately owned	United Wambo HVO	0.2	0.3	6.1	6.6	8
314359	6394718	91	Other mine owned property	HVO	3.9	1.6	7.2	12.7	8
315789	6393546	109	Other mine owned property	HVO	1.2	1.2	9.7	12.1	8
316208	6397277	114	Yancoal	HVO	0.3	8.5	6.8	15.6	8
318052	6396001	116	Yancoal	HVO	0.2	3.0	6.9	10.1	8
317982	6397794	117	Yancoal	HVO	0.1	2.0	6.4	8.5	8
318452	6396156	119	Yancoal	HVO	0.2	2.2	6.7	9.0	8
316576	6399022	158	Yancoal	HVO	0.1	2.8	6.4	9.3	8
318110	6396180	165	Yancoal	HVO	0.2	2.7	6.8	9.6	8
318679	6399194	245	Privately owned	HVO	0.1	0.8	6.2	7.1	8
318211	6397179	259	Yancoal	HVO	0.1	2.0	6.5	8.7	8
311622	6393147	271	Other mine owned property	HVO	1.0	0.2	6.5	7.6	8
306942	6401324	314	Yancoal	HVO	0.5	0.8	6.2	7.4	8
307078	6402503	316	Yancoal	HVO	0.4	0.9	6.2	7.4	8
308525	6401179	319	Yancoal	HVO	0.5	1.6	6.2	8.3	8

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Easting	Northing	ID	Description	Source	Increment due to United Wambo (Year 6)	Increment due to HVO South (Stage 2)	Other non-modelled sources + MTW (19.5 – 6.6 + MTW)	Cumulative	Criteria
304021	6402284	322	Privately owned	HVO	0.3	0.4	6.1	6.7	8
303908	6402342	323	Privately owned	HVO	0.2	0.4	6.1	6.7	8
302367	6403296	325	Privately owned	HVO	0.2	0.3	6.1	6.5	8
302343	6404253	326	Privately owned	HVO	0.1	0.3	6.1	6.5	8
302163	6404341	327	Privately owned	HVO	0.1	0.3	6.1	6.5	8
303132	6403565	329	Privately owned	HVO	0.2	0.3	6.1	6.6	8
302791	6403834	331	Privately owned	HVO	0.2	0.3	6.1	6.5	8
303137	6403310	353	Privately owned	HVO	0.2	0.3	6.1	6.6	8
303096	6403185	357	Privately owned	HVO	0.2	0.3	6.1	6.6	8
303257	6403134	364	Privately owned	HVO	0.2	0.3	6.1	6.6	8
303280	6403103	365	Privately owned	HVO	0.2	0.3	6.1	6.6	8
303224	6403105	368	Privately owned	HVO	0.2	0.3	6.1	6.6	8
303332	6403032	369	Privately owned	HVO	0.2	0.3	6.1	6.6	8
303517	6402907	378	Privately owned	HVO	0.2	0.3	6.1	6.6	8
303559	6402853	379	Privately owned	HVO	0.2	0.3	6.1	6.6	8
303681	6402747	387	Privately owned	HVO	0.2	0.4	6.1	6.7	8
303678	6402583	391-392	Privately owned Privately owned	HVO HVO	0.2	0.3	6.1	6.7	8
303726	6402547	393	Privately owned	HVO	0.2	0.4	6.1	6.7	8
303694	6402565	394	Privately owned	HVO	0.2	0.3	6.1	6.7	8
303695	6402649	395	Privately owned	HVO	0.2	0.4	6.1	6.7	8
303492	6402491	420	Privately owned	HVO	0.2	0.3	6.1	6.6	8
303289	6403152	424	Privately owned	HVO	0.2	0.3	6.1	6.6	8
303276	6401567	426	Privately owned	HVO	0.2	0.3	6.1	6.6	8
301417	6404773	438	Privately owned	HVO	0.1	0.3	6.0	6.4	8
306435	6399488	442	Other mine owned property	HVO	1.0	0.5	6.1	7.6	8
307852	6402955	444	Yancoal	HVO	0.3	1.2	6.2	7.7	8
316079	6403182	445	Other mine owned property	HVO	0.1	0.9	6.1	7.1	8
313816	6404016	446	Other mine owned property	HVO	0.1	1.4	6.1	7.7	8
313521	6401905	447	Yancoal	HVO	0.2	2.8	6.3	9.2	8
306912	6402169	448	Yancoal	HVO	0.4	0.8	6.2	7.3	8
308513	6400854	450	Yancoal	HVO	0.6	1.6	6.2	8.3	8
304381	6398349	455	Privately owned	HVO	0.3	0.2	6.1	6.6	8
303092	6398949	461	Other mine owned property	HVO	0.2	0.1	6.1	6.4	8
302224	6398995	468	Other mine owned property	HVO	0.2	0.1	6.1	6.4	8
319005	6401802	472	Privately owned	HVO	0.0	0.5	6.1	6.6	8
314700	6394357	0-99	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	2.5	1.4	7.5	11.4	8
314120	6394634	0-79	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	3.8	1.3	7.1	12.2	8
313389	6386388	C	Private	United Wambo	0.0	0.0	6.1	6.2	8
313259	6387527	0	Mine Owned (Yancoal)	United Wambo	0.1	0.1	6.2	6.3	8
314589	6386598	D	AGL Energy	United Wambo	0.0	0.1	6.2	6.3	8
315920	6386135	0	Mine Owned (Yancoal)	United Wambo	0.0	0.1	6.2	6.3	8
316264	6386291	0	Mine Owned (Yancoal)	United Wambo	0.0	0.1	6.4	6.5	8

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Easting	Northing	ID	Description	Source	Increment due to United Wambo (Year 6)	Increment due to HVO South (Stage 2)	Other non-modelled sources + MTW (19.5 – 6.6 + MTW)	Cumulative	Criteria
316321	6386706	0	Mine Owned (Yancoal)	United Wambo	0.1	0.1	6.5	6.6	8
316040	6387020	0	Mine Owned (Yancoal)	United Wambo	0.1	0.1	6.5	6.6	8
312067	6390410	0	Mine Owned (Wambo)	United Wambo	0.2	0.1	6.4	6.6	8
314570	6394587	0-96	Mine Owned (Wambo) Other mine owned property	United Wambo HVO	3.1	1.6	7.4	12.1	8

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Attachment 2: Model Results as Contour Plots

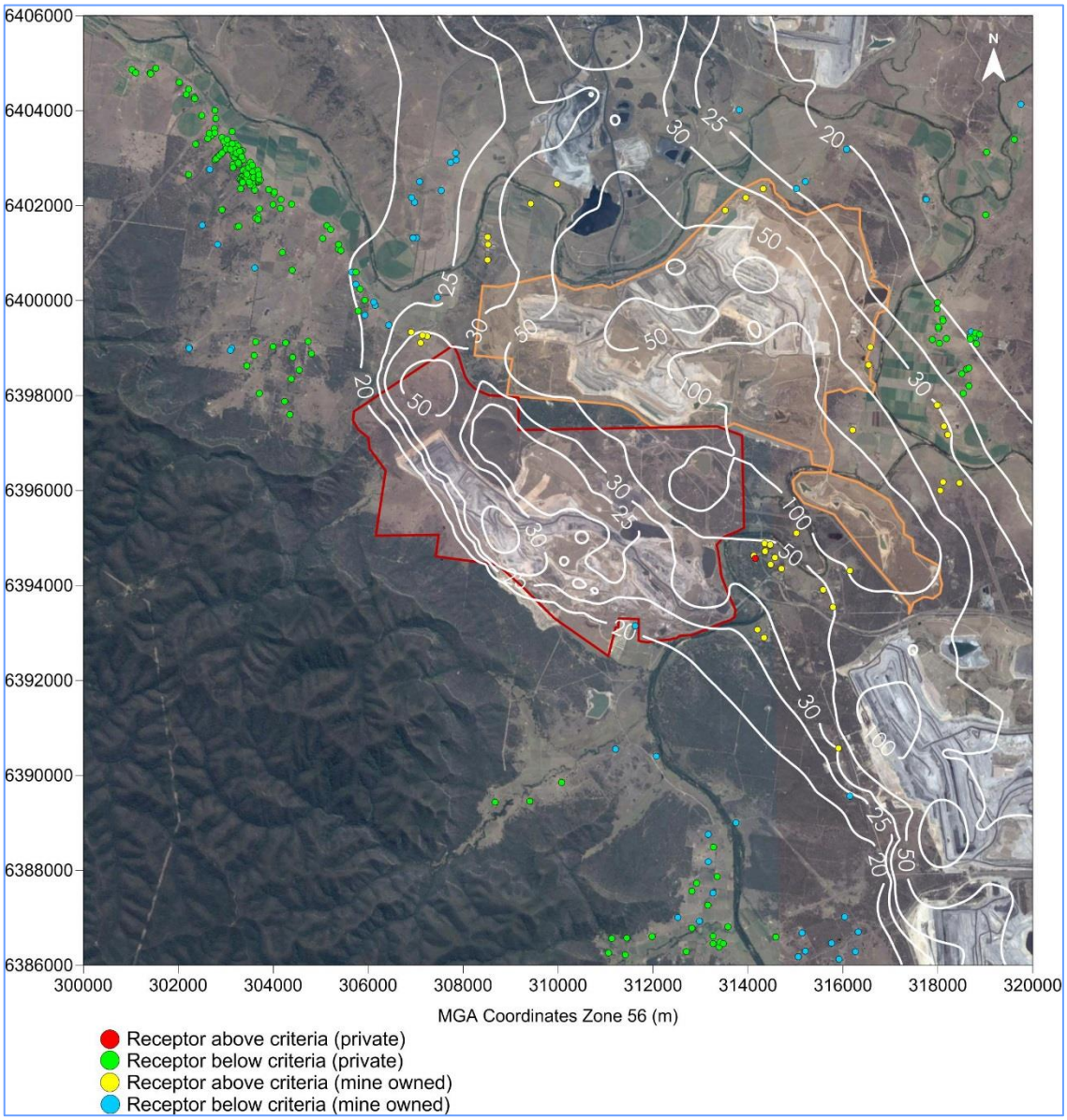

Figure 5 Predicted cumulative annual average PM_{10} concentrations due to the proposed projects, other mines and background levels

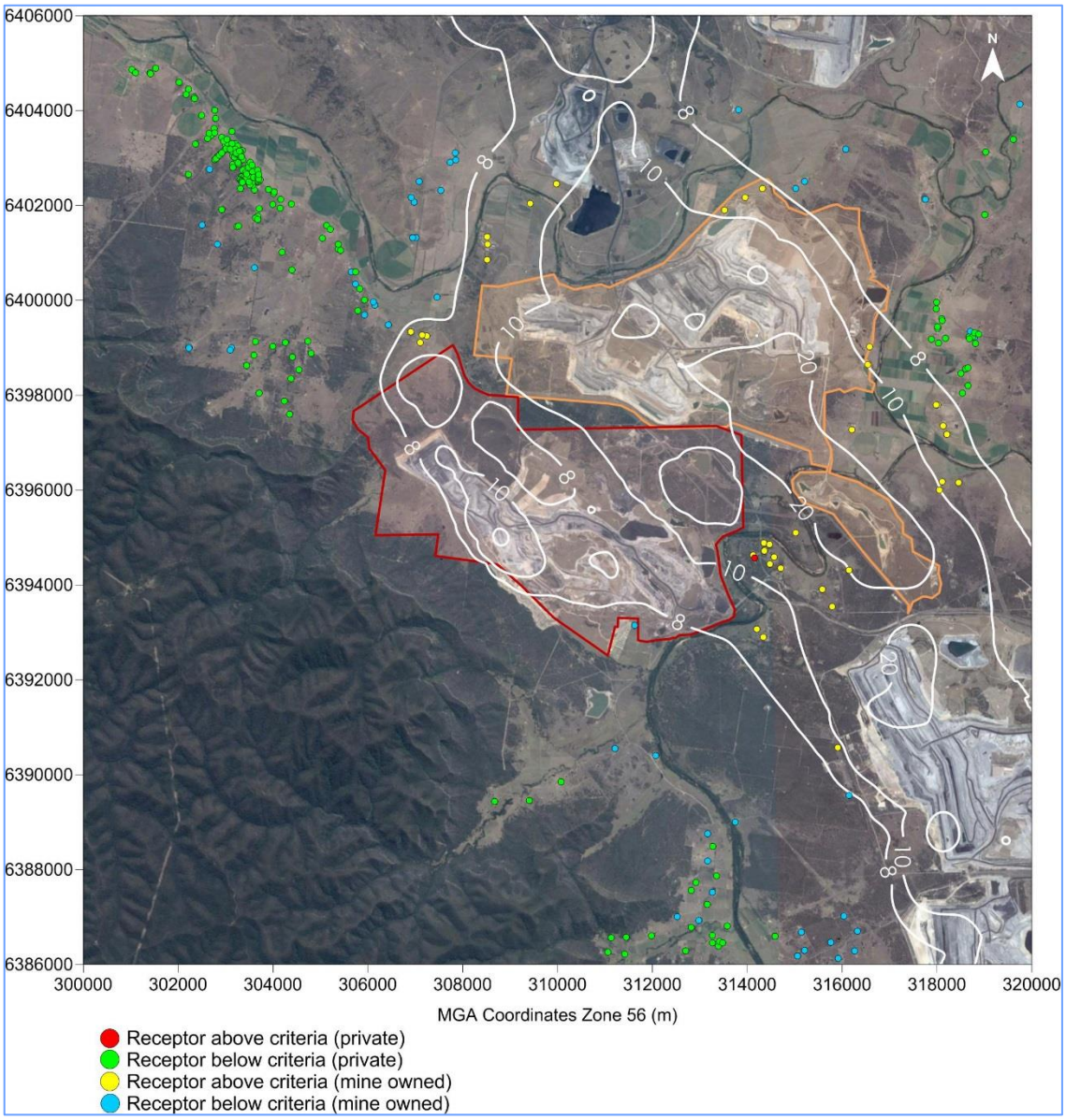

Figure 6 Predicted cumulative annual average $PM_{2.5}$ concentrations due to the proposed projects, other mines and background levels

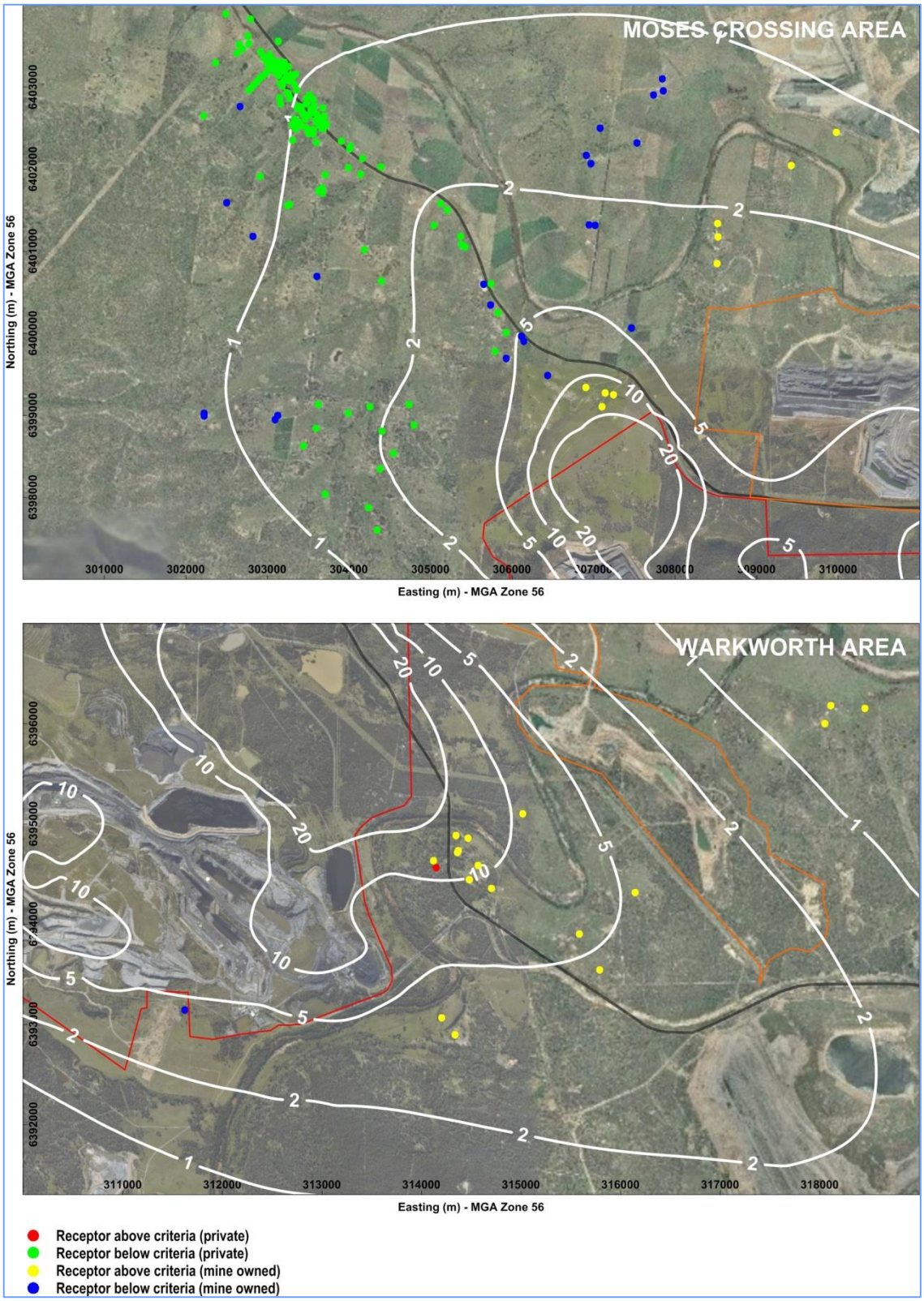

Figure 7 Predicted annual average PM_{10} concentrations due to United Wambo Year 6

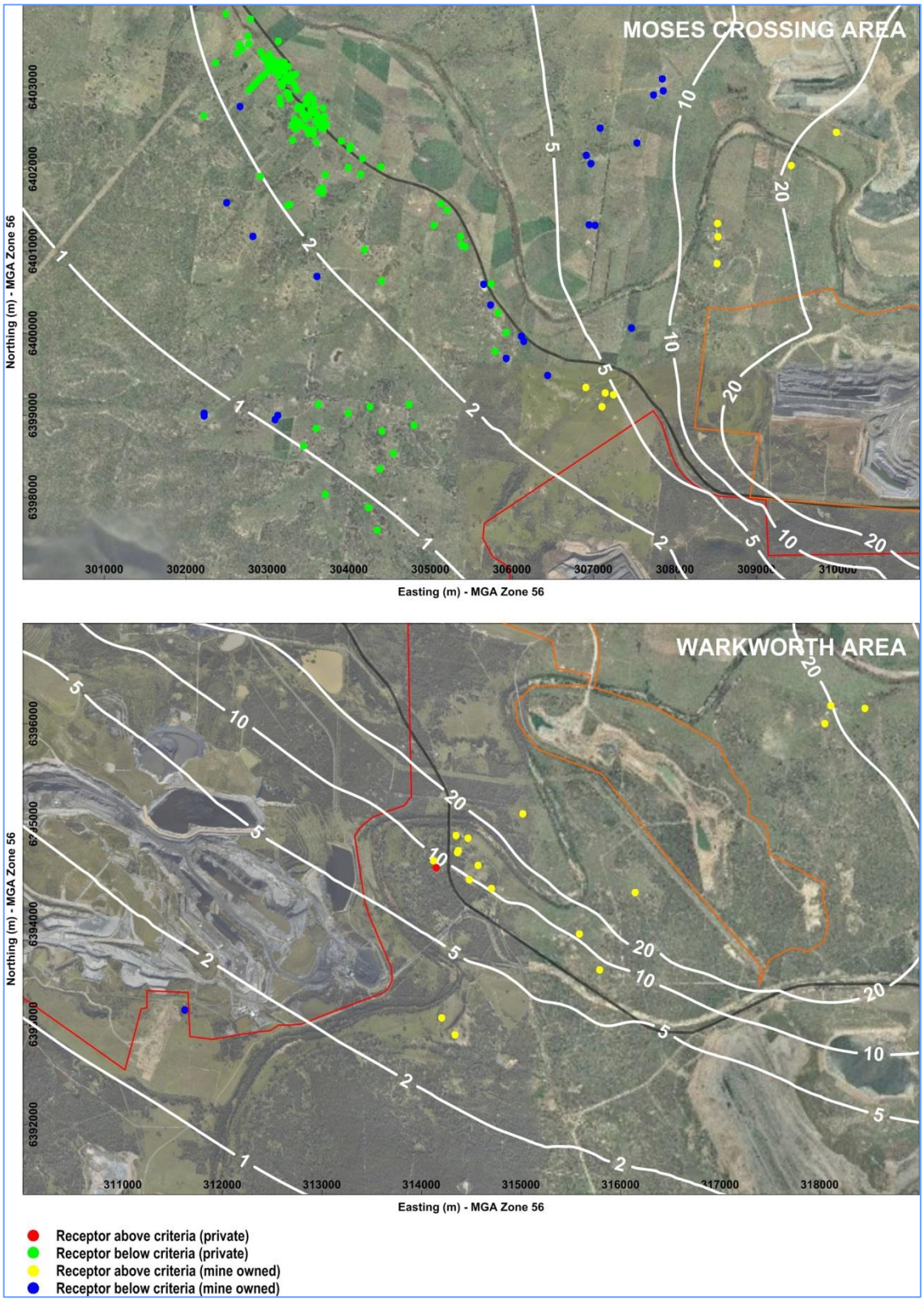

Figure 8 Predicted annual average PM_{10} concentrations due to HVO South Stage 2

18 September 2017

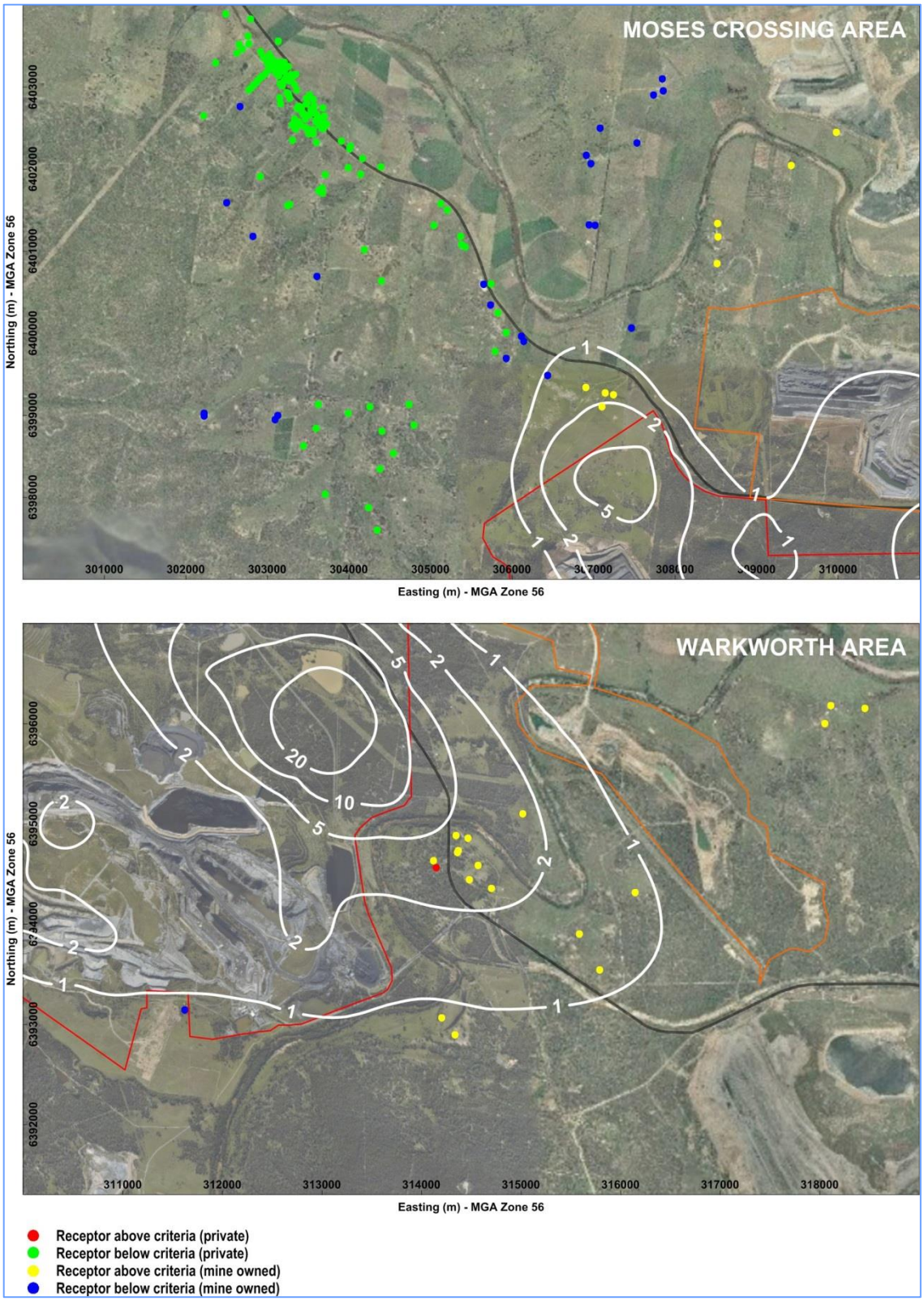

Figure 9 Predicted annual average $PM_{2.5}$ concentrations due to United Wambo Year 6

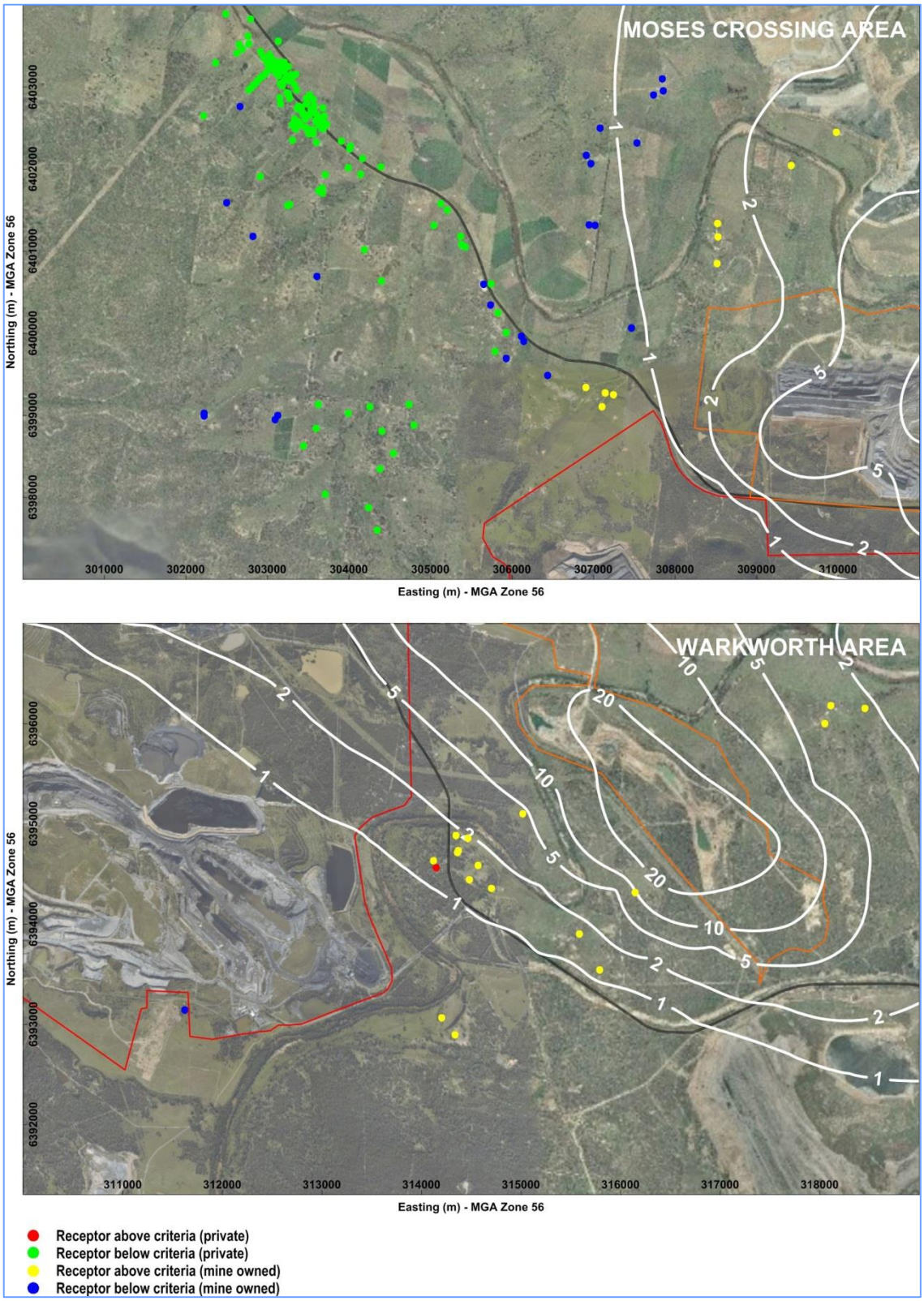

Figure 10 Predicted annual average $PM_{2.5}$ concentrations due to HVO South Stage 2

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Attachment 3: Updated HVO South Inventory – Stage 2.

ACTIVITY	TSP emission (kg/y)	Intensity	Units	Emission Factor	Units	Variable 1	Units	Variable 2	Units	Variable 3	Units	Variable 4	Units	Variable 5	Units	Variable 6	Units
OB - Topsoil removal (Cheshunt)	1,322	91,200	tonnes/year	0.03	kg/t											50	% Control
OB - Topsoil removal (Riverview)	-	-	tonnes/year	0.03	kg/t											50	% Control
OB - Topsoil removal (South Lemington Pit 2)	1,322	91,200	tonnes/year	0.03	kg/t											50	% Control
OB - Topsoil removal (South Lemington Pit 1)	-	-	tonnes/year	0.03	kg/t											50	% Control
OB - Drilling (Cheshunt)	17,667	99,814	holes/year	0.59	kg/hole											70	% Control
OB - Drilling (Riverview)	-	-	holes/year	0.59	kg/hole											70	% Control
OB - Drilling (South Lemington Pit 2)	-	-	holes/year	0.59	kg/hole											70	% Control
OB - Drilling (South Lemington Pit 1)	3,533	19,963	holes/year	0.59	kg/hole											70	% Control
OB - Blasting (Cheshunt)	18,166	503	blasts/year	36	kg/blast	3,000	Average area of blast in square metres										
OB - Blasting (Riverview)	-	-	blasts/year	36	kg/blast	3,000	Average area of blast in square metres										
OB - Blasting (South Lemington Pit 2)	-	-	blasts/year	36	kg/blast	3,000	Average area of blast in square metres										
OB - Blasting (South Lemington Pit 1)	3,633	101	blasts/year	36	kg/blast	3,000	Average area of blast in square metres										
OB - Dragline (Cheshunt)		-	bcm/year	0.022	kg/bcm	5	drop height in m	2	moisture content in %								
OB - Dragline (Riverview)	826,979	37,685,874	bcm/year	0.022	kg/bcm	5	drop height in m	2	moisture content in %								
OB - Dragline (South Lemington Pit 2)		-	bcm/year	0.022	kg/bcm	5	drop height in m	2	moisture content in %								
OB - Dragline (South Lemington Pit 1)		-	bcm/year	0.022	kg/bcm	5	drop height in m	2	moisture content in %								
OB - Loading OB to haul truck (Cheshunt)	257,736	136,413,197	tonnes/year	0.00189	kg/t	1.596	average of (wind speed/2.2)^1.3	2	moisture content in %								
OB - Loading OB to haul truck (Riverview)	-	-	tonnes/year	0.00189	kg/t	1.596	average of (wind speed/2.2)^1.3	2	moisture content in %								
OB - Loading OB to haul truck (South Lemington Pit 2)	42,956	22,735,533	tonnes/year	0.00189	kg/t	1.596	average of (wind speed/2.2)^1.3	2	moisture content in %								
OB - Loading OB to haul truck (South Lemington Pit 1)	38,660	20,461,979	tonnes/year	0.00189	kg/t	1.596	average of (wind speed/2.2)^1.3	2	moisture content in %								
OB - Hauling to emplacement area (Cheshunt)	2,210,630	136,413,197	tonnes/year	0.108	kg/t	222	tonnes/load	8.5	km/return trip	2.8	kg/VKT	1.7	% silt content	275	Ave GMV (tonnes)	85	% Control
OB - Hauling to emplacement area (Riverview)	-	-	tonnes/year	0.000	kg/t	222	tonnes/load	0.0	km/return trip	2.8	kg/VKT	1.7	% silt content	275	Ave GMV (tonnes)	85	% Control
OB - Hauling to emplacement area (South Lemington Pit 2 to Pit 1)	76,760	4,547,107	tonnes/year	0.113	kg/t	222	tonnes/load	8.9	km/return trip	2.8	kg/VKT	1.7	% silt content	275	Ave GMV (tonnes)	85	% Control
OB - Hauling to emplacement area (South Lemington Pit 2 to Cheshur	303,930	18,188,426	tonnes/year	0.111	kg/t	222	tonnes/load	8.8	km/return trip	2.8	kg/VKT	1.7	% silt content	275	Ave GMV (tonnes)	85	% Control
OB - Hauling to emplacement area (South Lemington Pit 1)	35,584	6,820,660	tonnes/year	0.035	kg/t	222	tonnes/load	2.7	km/return trip	2.8	kg/VKT	1.7	% silt content	275	Ave GMV (tonnes)	85	% Control
OB - Hauling to emplacement area (South Lemington Pit 1 to Cheshur	215,851	13,641,320	tonnes/year	0.105	kg/t	222	tonnes/load	8.3	km/return trip	2.8	kg/VKT	1.7	% silt content	275	Ave GMV (tonnes)	85	% Control
OB - Emplacing at area (Cheshunt)	317,875	168,242,943	tonnes/year	0.00189	kg/t	1.596	average of (wind speed/2.2)^1.3	2	moisture content in %								
OB - Emplacing at area (Riverview)	-	-	tonnes/year	0.00189	kg/t	1.596	average of (wind speed/2.2)^1.3	2	moisture content in %								
OB - Emplacing at area (South Lemington Pit 2)	8,591	4,547,107	tonnes/year	0.00189	kg/t	1.596	average of (wind speed/2.2)^1.3	2	moisture content in %								
OB - Emplacing at area (South Lemington Pit 1)	12,887	6,820,660	tonnes/year	0.00189	kg/t	1.596	average of (wind speed/2.2)^1.3	2	moisture content in %								
OB - Dozers in pit (Cheshunt)	783,499	46,817	hours/year	16.7	kg/h	10	silt content in %	2	moisture content in %								
OB - Dozers in pit (Riverview)	-	-	hours/year	16.7	kg/h	10	silt content in %	2	moisture content in %								
OB - Dozers in pit (South Lemington Pit 2)	97,937	5,852	hours/year	16.7	kg/h	10	silt content in %	2	moisture content in %								
OB - Dozers in pit (South Lemington Pit 1)	97,937	5,852	hours/year	16.7	kg/h	10	silt content in %	2	moisture content in %								
OB - Dozers on dump and rehab (Cheshunt)	979,374	58,521	hours/year	16.7	kg/h	10	silt content in %	2	moisture content in %								
OB - Dozers on dump and rehab (Riverview)	-	-	hours/year	16.7	kg/h	10	silt content in %	2	moisture content in %								
OB - Dozers on dump and rehab (South Lemington Pit 2)	97,937	5,852	hours/year	16.7	kg/h	10	silt content in %	2	moisture content in %								
OB - Dozers on dump and rehab (South Lemington Pit 1)	-	-	hours/year	16.7	kg/h	10	silt content in %	2	moisture content in %								
CL - Drilling (Cheshunt)	631	21,049	holes/year	0.10	kg/hole											70	% Control
CL - Drilling (Riverview)	-	-	holes/year	0.10	kg/hole											70	% Control
CL - Drilling (South Lemington Pit 2)	-	-	holes/year	0.10	kg/hole											70	% Control

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ACTIVITY	TSP emission (kg/y)	Intensity	Units	Emission Factor	Units	Variable 1	Units	Variable 2	Units	Variable 3	Units	Variable 4	Units	Variable 5	Units	Variable 6	Units
CL - Drilling (South Lemington Pit 1)	126	4,210	holes/year	0.10	kg/hole											70	% Control
CL - Blasting (Cheshunt)	3,675	102	blasts/year	36	kg/blast	3,000	Area of blast in square metres										
CL - Blasting (Riverview)	-	-	blasts/year	36	kg/blast	3,000	Area of blast in square metres										
CL - Blasting (South Lemington Pit 2)	-	-	blasts/year	36	kg/blast	3,000	Area of blast in square metres										
CL - Blasting (South Lemington Pit 1)	735	20	blasts/year	36	kg/blast	3,000	Area of blast in square metres										
CL - Dozers ripping/pushing/clean-up (Cheshunt)	-	-	hours/year	23.9	kg/h	5	silt content in %	6	moisture content in %								
CL - Dozers ripping/pushing/clean-up (Riverview)	279,873	11,704	hours/year	23.9	kg/h	5	silt content in %	6	moisture content in %								
CL - Dozers ripping/pushing/clean-up (South Lemington Pit 2)	-	-	hours/year	23.9	kg/h	5	silt content in %	6	moisture content in %								
CL - Dozers ripping/pushing/clean-up (South Lemington Pit 1)	139,937	5,852	hours/year	23.9	kg/h	5	silt content in %	6	moisture content in %								
CL - Loading ROM coal to haul truck (Cheshunt)	-	-	tonnes/year	0.068	kg/t	6	moisture content in %										
CL - Loading ROM coal to haul truck (Riverview)	1,351,066	20,000,000	tonnes/year	0.068	kg/t	6	moisture content in %										
CL - Loading ROM coal to haul truck (South Lemington Pit 2)	-	-	tonnes/year	0.068	kg/t	6	moisture content in %										
CL - Loading ROM coal to haul truck (South Lemington Pit 1)	6,755	100,000	tonnes/year	0.068	kg/t	6	moisture content in %										
CL - Hauling ROM to hopper - HVCPP	739,325	20,000,000	tonnes/year	0.246	kg/t	222	tonnes/load	19.5	km/return trip	2.8	kg/VKT	1.7	% silt content	275	Ave GMV (tonnes)	85	% Control
CL - Hauling ROM to stockpile at LCPP	2,000	100,000	tonnes/year	0.133	kg/t	222	tonnes/load	10.5	km/return trip	2.8	kg/VKT	1.7	% silt content	275	Ave GMV (tonnes)	85	% Control
CHPP - Unloading ROM to hopper - HVCPP	675,533	20,000,000	tonnes/year	0.068	kg/t	6	moisture content in %									50	% Control
CHPP - Rehandle ROM at hopper - HVCPP	135,107	2,000,000	tonnes/year	0.068	kg/t	6	moisture content in %										
CHPP - Dozer pushing ROM coal - HVCPP	35,868	1,500	hours/year	23.9	kg/h	5	silt content in %	6	moisture content in %								
CHPP - Dozer pushing Product coal - HVCPP	14,126	1,500	hours/year	9.4	kg/h	4	silt content in %	10	moisture content in %								
CHPP - Loading Product coal to stockpile - HVCPP	2,263	15,200,000	tonnes/year	0.00020	kg/t	1.596	average of (wind speed/2.2)^1.3	10	moisture content in %							25	% Control
CHPP - Loading Product coal to train - HVCPP	1,824	15,200,000	tonnes/year	0.00040	kg/t											70	% Control
CHPP - Loading rejects - HVCPP	596	3,000,000	tonnes/year	0.00020	kg/t	1.596	average of (wind speed/2.2)^1.3	10	moisture content in %								
CHPP - Hauling rejects - HVCPP	110,899	3,000,000	tonnes/year	0.246	kg/t	222	tonnes/load	19.5	km/return trip	2.8	kg/VKT	1.7	% silt content	275	Ave GMV (tonnes)	85	% Control
CHPP - Unloading rejects - HVCPP	596	3,000,000	tonnes/year	0.00020	kg/t	1.596	average of (wind speed/2.2)^1.3	10	moisture content in %								
CHPP - Unloading ROM to stockpile - LCPP	3,378	100,000	tonnes/year	0.068	kg/t	6	moisture content in %									50	% Control
CHPP - Rehandle ROM at stockpile - LCPP	676	10,000	tonnes/year	0.068	kg/t	6	moisture content in %										
CHPP - Dozer pushing ROM coal - LCPP	35,868	1,500	hours/year	23.9	kg/h	5	silt content in %	6.0	moisture content in %								
WE - Overburden emplacement areas - Cheshunt	393,733	561.8	ha	876	kg/ha/year											20	% Control
WE - Overburden emplacement areas - Riverview	152,073	217.0	ha	876	kg/ha/year											20	% Control
WE - Overburden emplacement areas - South Lemington Pit 2	10,342	14.8	ha	876	kg/ha/year											20	% Control
WE - Overburden emplacement areas - South Lemington Pit 1	53,290	76.0	ha	876	kg/ha/year											20	% Control
WE - Open pit - Cheshunt	477,202	544.8	ha	876	kg/ha/year												
WE - Open pit - Riverview	35,906	41.0	ha	876	kg/ha/year												
WE - Open pit - South Lemington Pit 2	38,103	43.5	ha	876	kg/ha/year												
WE - Open pit - South Lemington Pit 1	36,951	42.2	ha	876	kg/ha/year												
WE - Active rehab	3,422	13.0	ha	876	kg/ha/year											70	% Control
WE - ROM stockpiles - HVCPP	1,752	4.0	ha	876	kg/ha/year											50	% Control
WE - ROM stockpiles - LCPP	1,752	4.0	ha	876	kg/ha/year											50	% Control
WE - Product stockpiles - HVCPP	2,190	5.0	ha	876	kg/ha/year											50	% Control
Grading roads	45,288	147,168	km	0.62	kg/VKT	8	speed of graders in km/h									50	% Control
Total TSP emissions (kg/yr)	**11,243,628**																