Pacific Environment Limited

Consulting • Technologies • Monitoring • Toxicology

6 November 2013

Daniel Sullivan
Hansen Bailey on behalf of Anglo American Metallurgical Coal

Re: Response to SKM Review Comments on the EA and PPR Air Quality Impact Assessments for the Drayton South Project.

Dear Daniel,

1 INTRODUCTION AND BACKGROUND

This letter is in response to the issues raised in the review of the Drayton South Air Quality and Greenhouse Gas Impact Assessment (AQIA), completed on behalf of Department of Planning and infrastructure (DP&I) by SKM (dated 4 October 2013). The peer review undertaken by SKM provided comment on a number of aspects of both the EA AQIA (**PAEHolmes 2012**) and the revised air quality modelling presented in the response to submissions (**Pacific Environment 2013**). A response to each is provided below.

2 ADEQUACY OF AIR QUALITY MODELLING

2.1 Comment 1 – Interpretation of impact assessment criterion

The review seeks clarification on the way in which the 50 µg/m^3 criterion has been interpreted; that is, project only or cumulative, and how the "150 µg/m^3 acquisition criteria" relates to the assessment of predicted impacts.

The 50 µg/m^3 criterion has been interpreted as a cumulative criterion, however modelling results are presented as both project alone and cumulative. Section 8.2 of the AQIA presents 24-hour PM_{10} predictions for project alone impact. Section 8.3 of the AQIA presents cumulative 24-hour average impacts. Cumulative impact analysis is not presented for every receptor, rather representative receptors in key areas in the vicinity of the project are assessed. This is useful to inform the best possible locations where dust management and monitoring can be focused during operations. In both sections an analysis of the number of days exceeding 50 µg/m^3 is presented. Presenting predictions for project alone is useful as it provides an indication of which receptors are exceeding 50 µg/m^3 from the project alone, which obviously then also exceed 50 µg/m^3 cumulatively.

The concept of acquisition criteria is introduced in Table 8-4, however some explanatory text should have been provided. Acquisition criteria are referenced in contemporary project approvals and consent conditions issued by DP&I. Short-term criteria for property acquisition are outlined on the basis of predicted air quality, with an Applicant required to acquire land on request when the maximum 24-hour average PM_{10} level exceeds 50 µg/m^3 (Proposal alone) and 150 µg/m^3 (cumulatively) at any residence on privately-owned land or on more than 25% of any privately-owned land. Long term criteria for property acquisition (annual average PM_{10}, TSP, Dust Deposition) are the same as impact assessment criteria.

Pacific Environment Operations Pty Ltd
Suite 1, Level 1, 146 Arthur St
North Sydney, NSW 2060

(ASX: PEH) ABN: 86 127 101 642
www.pacific-environment.com
Ph: +61 2 9870 0900

In conclusion, analysis is in three ways, as follows:

- Project alone maximum 24-hour PM_{10} concentration and number of days over 50 $\mu g/m^3$ - presented to demonstrate project alone compliance with impact assessment criterion and for comparison against the DP&I acquisition criteria of 50 $\mu g/m^3$.
- Cumulative number of days over 50 $\mu g/m^3$ - presented to demonstrate cumulative compliance with impact assessment criterion.
- Cumulative number of days over 150 $\mu g/m^3$ - presented for comparison against the DP&I cumulative acquisition criteria of 150 $\mu g/m^3$.

It is noted that the AQIA conclusions present a summary of residences that have the potential to experience dust concentrations above the impact assessment criteria. It is clarified that in Table 11-1 of the EA AQIA the residences shown are those where 24-hour PM_{10} concentrations above 50 $\mu g/m^3$ occurs due to the project alone. The reader should also refer to Section 8.3 of the EA AQIA for information related to cumulative 24-hour PM_{10} impacts.

2.2 Comment 2 – Model choice

The peer reviewer has agreed that the use of CALPUFF is appropriate. No response required.

2.3 Comment 3 – Choice of meteorological met year

The review seeks clarification on why 2005 was chosen for assessment and in particular why 2011 data were not used as a new meteorological station was installed in November 2010.

Firstly, the AQIA commenced in early 2011 and therefore a full year of 2011 meteorological data was not available. A detailed analysis of the available meteorological data found that the best available representative data was from 2005.

Furthermore, subsequent analysis of the 2011 meteorological data has identified an anomalous north-northeasterly wind component in autumn (see **Figure 2-1**). This wind direction does not appear in any other year, including more recent 2012 data. In addition, there is only 88% of data available for 2011 with data missing from mid-April through all of May.

On this basis, even if a full year of data were available, 2011 would not have been chosen as the representative year.

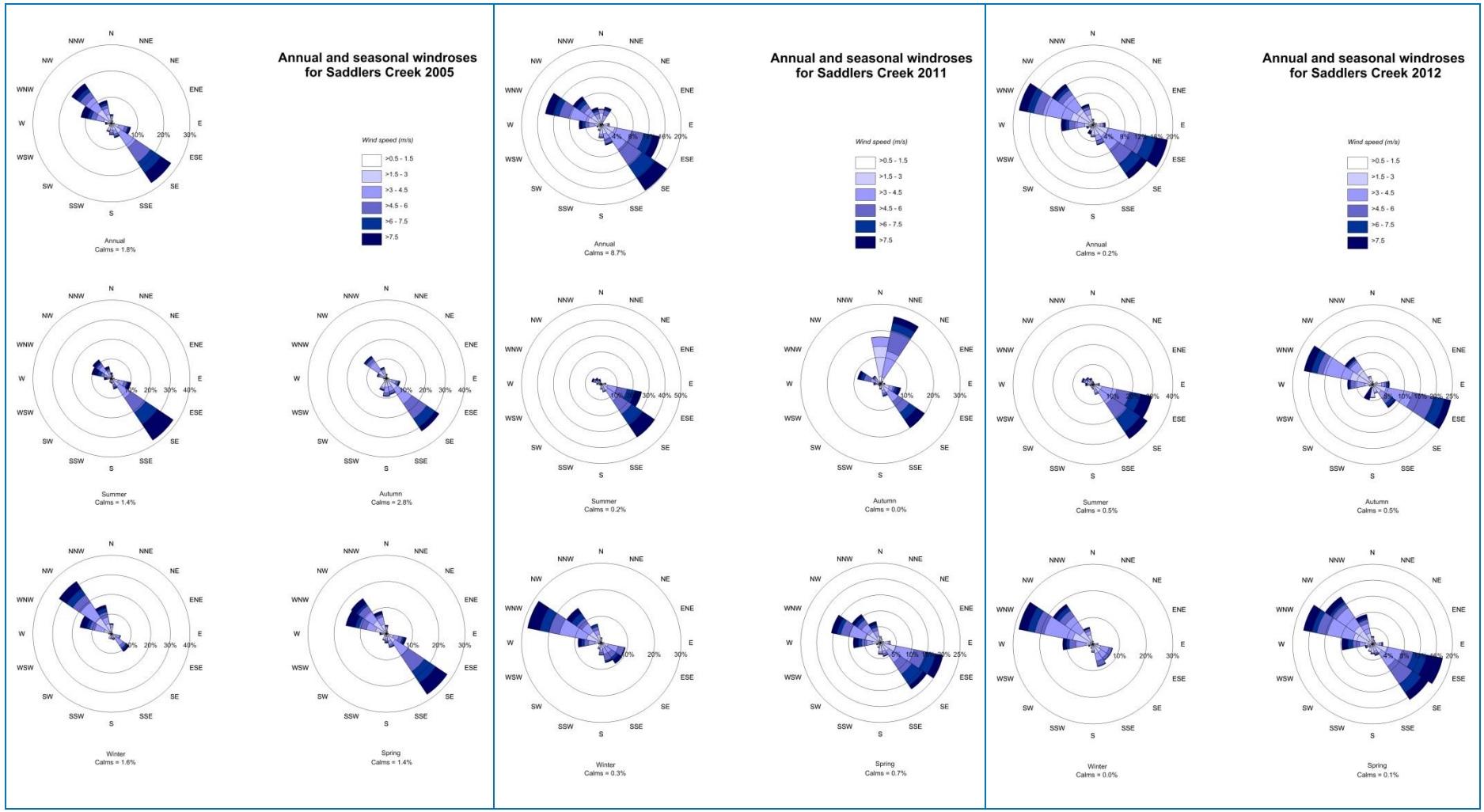


Figure 2-1: Annual and seasonal windroses for Saddlers Creek (Drayton South) for 2005, 2011 and 2012.

2.4 Comment 4 – TAPM set up

The review states that the TAPM grid centre coordinates (lat/long) do not match the presented UTM coordinates and that the grid centre coordinates do not match the project site. The reviewer seeks confirmation that this is simply a typographical error.

The grid centre information on page 25 Section 5.3 and Table E1 in Appendix F is a typographical error and does not represent an error in model set up. The model set up information as modelled is provided in **Table 2.1**.

Table 2.1: TAPM set up

TAPM (v 4.0.4)	
Number of grids (spacing)	30 km, 10 km, 3 km, 1km
Number of grid points	45 x 45 x 35
Year of analysis	January 2005 – December 2005
Centre of domain	32^{0}20.5' S, 151^{0}18' E (340.0014 km E, 6420.422km S)

The review has requested an explanation of the reason for using the 3km grid resolution TAPM as an input into CALMET instead of the TAPM grid run at 1km resolution.

The reviewer concludes that both points are *unlikely* to change the outcome of the assessment or are not significant to the outcome of the assessment.

However, to clarify, the 3km TAPM 3D.dat was used as an *initial guess field* for the CALMET modelling for the outer domain which was run at 2.5km grid spacing. The 1km TAPM grid would not have covered the CALMET outer domain and could not therefore have been used. The outer domain was chosen to cover a large area to maximise the number of surface station data that can be incorporated in the model.

It is also noted that, although the 3km TAPM 3D.dat was also included as an input for the inner CALMET modelling domain, this was only done to force the model to run. The hybrid model set up meant that the inclusion of the outer domain as an initial guess field negated the inclusion of TAPM 3D.dat, however a bug requires the file to be referenced. The configuration of this CALMET file setup has been reviewed by the developers of CALPUFF and they have confirmed that the outer nest is incorporated and not the TAPM 3D.dat.

The review states that the preferred modelling method is to make sure the model boundaries are as far away as possible from the central region of interest. The reviewer points out that the Project is located near the western edge of the 3km TAPM domain.

The reviewer does note that this is unlikely to change the outcome of the assessment.

A CALMET is a diagnostic model, boundary issues are not as significant for the meteorological model. Any influence of the terrain features to the west of the modelling domain would have been captured in both the TAPM and outer CALMET modelling, which was used as an initial guess field in CALMET.

Additionally, the reviewer notes that due to the use of onsite meteorological data, the location of the inner domain close to the western boundary is not significant and unlikely to change the outcomes of the assessment.

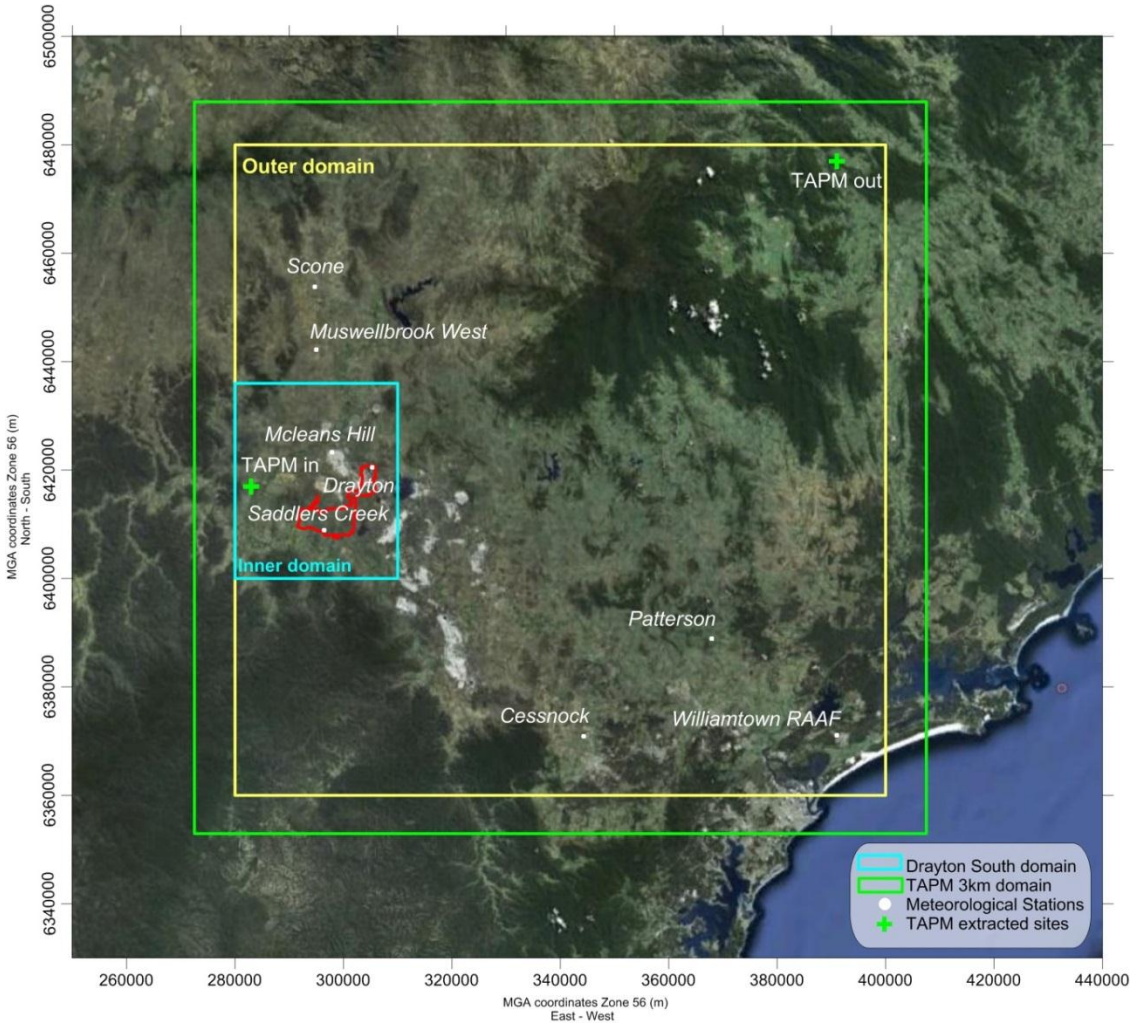


Figure 2-2: Modelling domain

2.5 Comment 5 – Moisture content

The reviewer states that the moisture content in Table 7.3 is 7.5% for coal which is inconsistent with the 9% value for moisture content for coal used in the emissions inventories in Appendix C.

The moisture content of 7.5% in Table 7.3 is a typographical error. The moisture content of 9% in Appendix C is correct and is used in emissions estimates for modelling. The moisture content of coal was confirmed by the client during the information gathering stage of the pre-feasibility study.

2.6 Comment 6 – Spatially varying background

The reviewer states that the spatially varying background grid produces some low background annual average PM_{10} concentrations in certain areas (i.e. 3$\mu g/m^3$ monitoring site DF-05). The review goes on to state that the assumed background at key receptor areas are in sensible ranges and the approach therefore presents no significant issue.

Although the reviewer states that the approach presents no significant issue, some additional clarification on the approach is provided to explain the assumed lower "background" closer to mining sources.

The "spatially varying background" is perhaps a slightly misleading term. Instead, it could be described as a "spatially varying model calibration plus background". We know from experience that our model over predicts close to mining sources. This is demonstrated when we model existing mining operations for a past year (in this case 2005) and compare the model predictions to monitoring data collected in 2005 at each site in the domain.

The "background" from other sources is taken as the difference between predicted and measured. The difference between predicted and measured is small at monitoring locations close to mining (and sometimes negative), due to the tendency of the model to over predict the contribution from mining in the near field. The difference between predicted and measured is larger further away (the modelled contribution from mining is more accurate at distance).

The result of this, when applied as a varying background grid, is that lower concentrations are added to mining locations and higher concentrations are added further away. At distance, the adjustment better reflects the actual background (~11 – 13 $\mu g/m^3$). At distances closer to mining, this therefore becomes a combination of varying background and model calibration.

2.7 Comment 7 – Emissions activities not included

The review notes that graders were not included in the emissions estimates and that emissions from hauling does not include the contribution of exhaust; brake wear and tyre wear.

For both points the reviewer concludes that these are unlikely to change the outcome of the assessment and are insignificant points.

We do clarify, however that no graders were included in the assessment as in pit haul roads will be maintained by Dozers, which have been accounted for in the inventory. All out of pit main roads will be maintained by sweepers which are a recommendation of the use of "Dust-A-Side" based on discussions with the supplier.

Also, the field testing completed to develop the emission factors for unpaved roads found that the wheel generated dust component dominated over the other components (vehicle exhaust, brake wear and tire wear). Therefore, our emissions estimates capture the vast majority of emissions, a point the reviewer makes when he says these additional emissions would be insignificant relative to emissions from the road surface.

2.8 Comment 8 – Tables 7.4 and Appendix C inconsistencies

The review identifies some inconsistency between emissions totals between the report and the appendices.

The emissions summary tables presented in Appendix C of the EA AQIA were from previous versions of the emissions inventory and do not reflect what has been modelled for the EA AQIA. Due to many changes to mine plans as the project progressed, there were a large number of iterations in both emissions estimates and modelling and unfortunately the tables in Appendix C were not updated by PAEHolmes prior to publishing the EA AQIA. Table 7.4 of the AQIA represents the emissions totals that were modelled. The correct tables are provided for the reviewer in **Appendix A** of this report. These emission inventories are those that the modelling files were based on and reflect the information in Table 7.3.

To re-assure the reviewer, we have provided evidence of the model inputs, showing the correct emissions totals generated for modelling (**Appendix B**).

2.9 Comment 9 – Random checks on emission calculations

The review identified an apparent error in the emissions calculations in Year 5 Dozers on Coal based on formula provided in Appendix C and moisture content in Table 7.3.

As discussed in **Section 2.5**, there was a typographical error in Table 7.3 and the correct moisture content for coal that has been adopted throughout the EA AQIA is 9%. In addition, Equation 5 in Appendix C had a minor typographical error with the moisture variable raised to the power of 1.4 instead of 1.3. In the final emissions inventories the correct equation was used (see below).

The emission factor formula that was used in the final emission inventories for the modelling is provided below.

AP-42 11.9 Table 11.9-2 $$E_{TSP} = 35.6 \times \frac{s^{1.2}}{M^{1.3}} \quad (kg|hour)$$

When the inputs of moisture content of 9% and silt content of 5% are used in the formula the emission factor is 14.1 kg/h which is consistent with the final inventories used in the modelling and shown in **Appendix A**.

2.10 Comment 10 – Inconsistencies in total waste and ROM coal movements between Table 7.2 and emission inventories in Appendix C

The review identifies some inconsistencies between material totals of overburden in Table 7.2 and the emission inventories in Appendix C. These include examples from Year 5 shown in a summary table below.

Activity	*Table 7.2 (Mbcm)*	*Table 7.2 (Mt)*	*Table C.12-5 (Mt)*
Overburden handled by excavator (Whynot)	*9.81*	*22.6 (converted assuming 2.3 t/bcm)*	*9.2*
ROM coal handled (Whynot)	*-*	*2*	*1.5*
Total waste (overburden)	*38.13*	*87.7 (converted assuming 2.3 t/bcm)*	*49.6*

The emissions summary tables presented in Appendix C of the EA AQIA were from previous versions of the emissions inventory and do not reflect what has been modelled for the EA AQIA. Due to many changes to mine plans as the project progressed, there were a large number of iterations in both emissions estimates and modelling and unfortunately the tables in Appendix C were not updated by PAEHolmes prior to publishing the EA AQIA. The values in Table 7.2 of the EA AQIA were correct and represent a summary of material handling that the final emission calculations were based on for modelling. The correct and final emission tables are provided for the reviewer in **Appendix A** of this report. It is noted that the conversion factor from Mbcm to Mt used in the EA AQIA was 2.4 which results in a higher waste volume than the 2.3 conversion factor assumed in the review (see **Table 2.2**).

Table 2.2: Comparison of modelled material movement

Activity	Table 7.2 (Mbcm)	Table 7.2 (Mt)	Table A.3 (tonnes)
Overburden handled by excavator (Whynot)	9.81	22.6 (converted assuming 2.3 t/bcm)	23.54 (converted assuming 2.4 t/bcm)
ROM coal handled (Whynot)	-	2	2,002,098
Total waste (overburden)	38.13	87.7 (converted assuming 2.3 t/bcm)	91.51 (converted assuming 2.4 t/bcm)

2.11 Comment 11 – Figure E3 predicted impacts were higher for Mine Plan 1 compared to Mine Plan 2

The review suggested that there is a typographical error in the labelling of Figure E3 in Appendix F.

The labelling in this figure is correct. Mine plans 1 for year 10 originally resulted in low emissions, however due to changes to the mine schedule in mine plan 2 v1 the impacts became greater. These impacts instigated further modifications to the mine scheduling which reduced impacts in mine plans 2 v2.

2.12 Comment 12 – Haul road source spacing

The review states that the sources along the haul routes are at approximately 1km spacing which is a large distance when representing a line source and unlikely to be representative of the actual pattern of dust concentrations along the haul routes.

The review concludes that this issue is unlikely to affect the conclusions of the assessment as these sources are not close to sensitive receptors. The relatively large spacing for the main haul road was based on the commonly applied separation guidance of one-quarter the distance to the nearest receptor (**NZ MfE, 2004**). The distance to closest receptors from each end of the main haul road is 3 km to 4 km and on this basis, the separation distance is not unreasonable. For activities closer to receptors, it is preferable to increase the number of sources and for all in-pit sources, including hauling, the source separation distances were generally less than 1km.

2.13 Comment 13 – No modelled sources in active mining areas

The review states that there are no sources presented in Figure C-9 over active mining areas and seeks a clearer explanation.

The sources presented in Figure C-9 are only those for the adjusted out of pit hauling (replaced by a conveyor between Drayton South and coal processing at Drayton). The modelling results presented in Section 8.11 compare the predicted ground level concentrations from out of pit hauling with the conveyor option (replacing hauling sources only). As all other activities remain the same, only those sources that would change were presented for comparison, to investigate the reduction in impact that the change would make.

2.14 Comment 14 – model information was not available

The review has mentioned they could not assess the following model set up parameters:

- *Landuse map*
- *Source allocation lists*
- *Modelled source dimensions*

A landuse map is provided in **Figure 2-3** and the GEO.dat can be provided on request. The source allocation lists are provided in **Appendix C** and the modelled source dimensions are provided in **Table 2.3**.

Table 2.3: Source dimensions

Source type	Sigma Y (m)	Sigma Z (m)	Height (m)
Volume	10	2	2

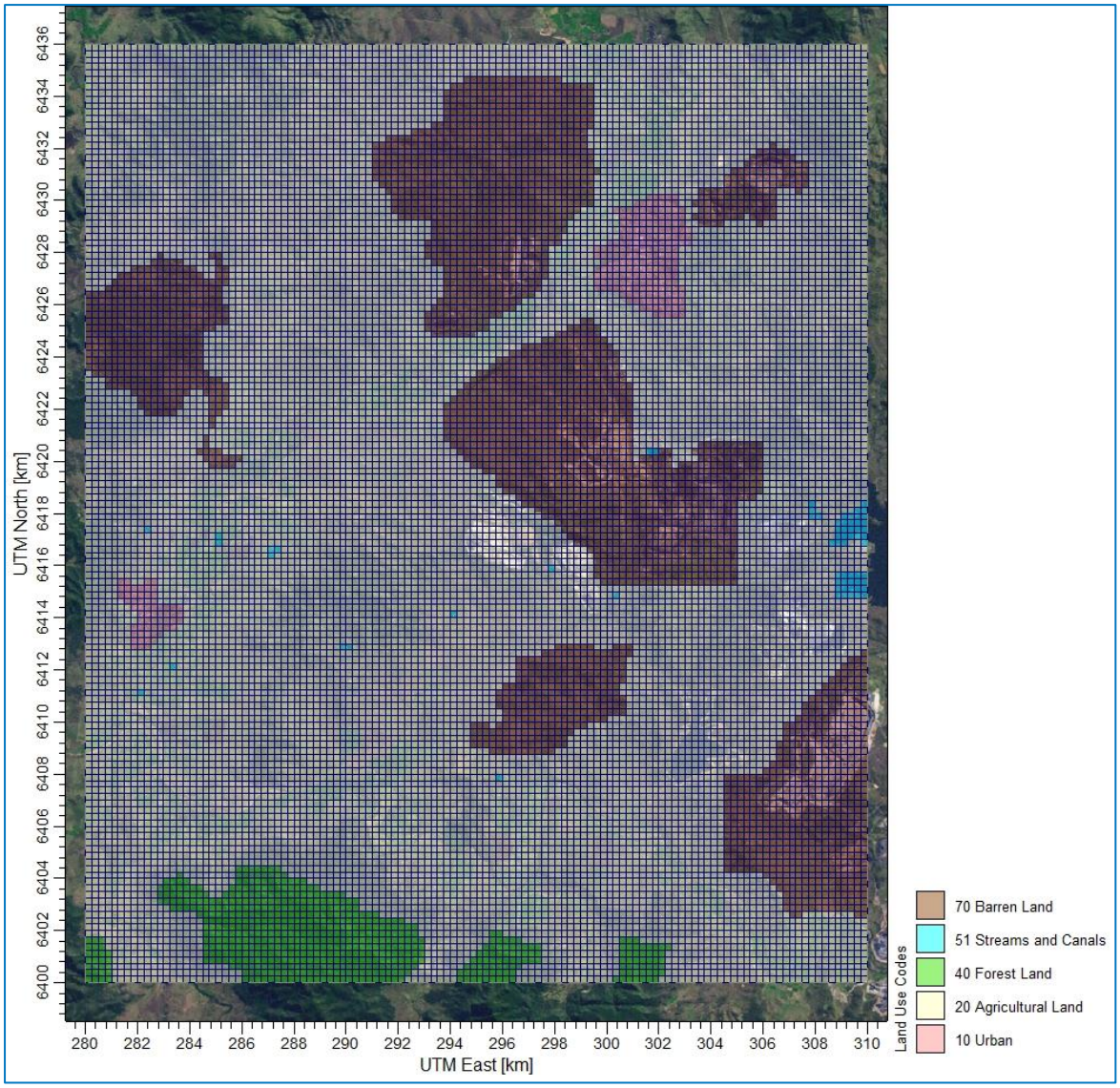


Figure 2-3: Landuse map

3 BEST PRACTICE DUST MANAGEMENT

The review does not appear to have any issue with the consideration of best practice dust management and states that it is consistent with the current state of knowledge regarding measures to minimise particulate emissions from coal mine activities in Australia.

Recommendations provided by the reviewer will be considered for incorporation into the Air Quality Management Plans that will be prepared for the project on approval.

4 ADDITIONAL MEASURES

Recommendations provided by the reviewer will be considered for incorporation into the Air Quality Management Plans that will be prepared for the project on approval.

5 RESPONSE TO SUBMISSIONS

5.1 Comment 15 - Interpretation of impact assessment criterion

The review seeks clarification on the way in which the 50 µg/m³ criterion has been interpreted as in comment 1.

Please see response in **Section 2.1**.

5.2 Comment 16 & 17 – Choice of worst case years

The review states that due to inconsistencies between the material amounts in Table 7.2 in the October 2012 EA AQIA and the tables in Appendix C that the choice of Year 10 and Year 15 needs to be reconsidered as Year 5 would have the highest material handling and therefore potentially be considered 'worst-case'.

The inconsistencies between the material amounts in Table 7.2 have been clarified in **Section 2.10**. Although year 5 had a significant amount of material moved across the entire mine complex, it is the location of the material handling and movement that is important in terms of the impact on sensitive receptor locations south of the mine. Years 10 and 15 have higher waste movement from Redbank when compared to Year 5 which is why they are considered worst case years in terms of impact. The total waste movement for each mine area for years 5, 10 and 15 are highlighted in red in **Table 5.1** (Table 7.2 of AQIA). Comparison of these highlighted values shows that Year 5 relative to Years 10 and 15 are smaller in all pits except Blakefield. The reason for the higher total waste movement from the mine complex in Year 5 is due to all areas being operational, however as mentioned above there are mine areas which have greater impacts compared to others. This analysis has led to several changes to the mine plans aimed at reduce impacts to sensitive receptors. Year 5 was found to be worst case year in earlier iterations of the mine plans, however once mine plan changes were made it was apparent that Year 10 and Year 15 were worst case (both in terms of total emission estimates and modelling of ground level concentrations) and therefore these years were the focus of the additional modelling.

Table 5.1: Open cut and highwall ROM coal and waste production schedule (PAEHolmes 2012)

Pit ID	Material removed		Year 3	Year 5	Year 10	Year 15	Year 20	Year 27
Whynot	Waste (Mbcm)	Dragline	10.41	7.14	11.01	10.29	11.51	7.04
		Excavator	2.81	9.81	10.05	8.62	17.79	0
		Partings	0.34	0.46	0.66	0.54	0.86	0.07
		Total	13.56	**17.41**	**21.72**	**19.45**	30.15	7.11
	ROM coal (kT)	Total	1,553	2,002	3,072	2,369	3,938	551
Blakefield	Waste (Mbcm)	Dragline	5.52	9.31	4.59	2.2	0	0
		Excavator	0.05	0.56	0.32	0	0	0
		Partings	0.07	0.08	0.04	0.03	0	0
		Total	5.64	**9.96**	**4.95**	**2.20**	0	0
	ROM coal (kT)	Total	722	815	292	98	564	0
Redbank	Waste (Mbcm)	Dragline	0	0	0	0	0	0
		Excavator	6.20	6.63	9.31	10	0	0
		Partings	0.32	0.38	0.36	0.34	0	0
		Total	6.53	**7.02**	**9.66**	**10.71**	0	0
	ROM coal (kT)	Total	1,226	1,436	2,480	1,389	900	0
Houston	Waste (Mbcm)	Dragline	0	0	0	2.67	3.18	0
		Excavator	11.43	3.66	0	1.64	2.81	0
		Partings	0.16	0.08	0	0.07	0.12	0
		Total	11.59	**3.74**	**0**	**4.39**	6.12	0
	ROM coal (kT)	Total	2,069	973	0	754	989	0
Total Waste (Mbcm)			**37.32**	**38.13**	**36.33**	**36.75**	**36.27**	**7.11**
Total ROM (kT)			**5,570**	**5,226**	**5,845**	**4,610**	**6,391**	**551**

5.3 Comment 18 - Dozer calculations

The review states the calculation of Dozers on coal should be checked due to the apparent errors seen in tables of Appendix C of the EA AQIA.

As discussed in the response in **Section 2.9** the calculated emissions from Dozers on coal are confirmed to be correct in the final emissions inventories and modelling that was undertaken.

5.4 Comment 19 – Reductions as a result of emission reductions

The review states that it seems reasonable that the 30% reduction in emissions compared to the original project should result in predicted annual concentration reductions of around 30% given that the most significant dust generating activities were targeted.

No response required.

5.5 Comment 20 – Moisture and Silt measurements

The review seeks clarification on how representative the single measurement values for silt and moisture are of long term values and recommend that the emission factors for activities that are sensitive to silt and moisture (dozers, hauling) should be verified if the project is approved.

Site specific measurements have been taken for silt and moisture in an effort to improve the accuracy of the emission factors used for the assessment. The reviewer acknowledges that this is the preferred approach for calculating emissions. However, the reviewer has two main issues with the site specific measurements taken.

1. That only a single sample was taken in February 2013 and in the three days preceding 62mm of rainfall was recorded.
2. That the measured values for silt were not in the range for which the emission factors were tested.

The two most significant activities for which these silt and moisture contents are important are:

- Dozers on overburden
- Hauling on unsealed roads.

Adopting the site specific silt and moisture contents for these two activities accounts for much of the emission reductions achieved for the revised modelling, in conjunction with the additional controls implemented.

Hauling

The review questions the representativeness of a single sample taken in February 2013. Additional samples were taken at Drayton on the 4th October 2013 (see **Table 5.2**) and the results were similar, suggesting the values used in the modelling are representative. The silt content for the October sampling ranged from 0.7% to 1% (not including North pit ring road, as the road is unused), compared to 0.4% measured in February. It is also noted that the results presented in **Table 5.2** include samples taken from a road treated with "Dustbloc" (Level 3 haul road) as well as roads treated with water.

The silt content of the main haul roads (0.4% - 1.1%) is lower than typical haul roads on coal mines in the Hunter Valley (~3%). Although the site specific results fall outside the range of silt contents for which the emission factor equation has been tested, it is still the most appropriate emission factor to use and site specific silt contents are preferable to using indicative values.

In summary, follow up sampling in October 2013 has obtained similar values to those measured previously. On this basis, the silt content adopted for emission estimates used in the revised modelling as part of the RTS are considered to be representative. Although the silt content falls outside the range tested for the emission factor equation, it is still considered to be the most appropriate approach for use in the assessment.

It is noted that moisture content is not a variable used in the emission factor equation for hauling and review comments related to rainfall prior to sampling are not therefore addressed for this activity. It is noted, however, that the moisture contents measured in February 2013 and in October 2013 are similar and there was little or no rainfall in the days preceding the October sampling.

Table 5.2: Recent silt and moisture samples taken at Drayton 4th October 2013

Sample Number	Location	Silt fraction (% < 75 µg)	Moisture (%)
1	Level 3 haul road	0.7	0.9
2	Level 5 haul road	0.7	0.7
3	West haul road	1.6	0.7
4	North pit ring road	4.3	1.1
5	Haul road	1.1	1.4

Dozers on overburden

The review questions the representativeness of a single sample taken in February 2013, with rainfall occurring in preceding days. Also the measured silt content falls outside the range for which the emission factor equation has been tested.

The measured silt content for active overburden at Drayton was 1.8% and the measured moisture content was 10.9%. No additional measurements have been taken at Drayton for this activity, however recent bulk samples of overburden have been tested for silt and moisture content at two mines in the Hunter Valley and one in the Gunnedah area, collected as part of a current ACARP project.

The average silt content obtained from these sites was 4.6%. Measurements ranged between 1.2% - and 9.6% with a standard deviation of 2.2. The site specific measurements at Drayton fall within these ranges and within two standard deviations of the mean. Accordingly it is considered that the site specific silt content obtained for Drayton Mine is appropriate for use in the model.

The average moisture content obtained from the other sites was 5.6%, ranging between 3.8% and 7.9% with a standard deviation of 1.3. Although the measurements at Drayton are higher than other sites, the difference isn't considered significant. If the average moisture content from measurements at these other sites were used in the emission inventory, the total site emissions would increase by less than 1%, an increase that would not change the conclusions or outcomes of the assessment.

The review highlights the need to verify the emission factors based on silt and moisture content measurements if the project is approved. The proponent commits to validating the emissions factors through additional silt and moisture testing, which can then feed into the air quality management for the site.

5.6 Concluding comment

Finally, the review seeks confirmation that the identified anomalies in the assessment (comments 15 to 20) should be addressed to confirm that there would be no more than one privately owned residence impacted by emissions from the project.

We have responded to each of the identified anomalies in comments 15 and 20 above and believe that the modelling results presented remain valid, the conclusions of the assessment do not change and only one privately owned residence is predicted to be impacted by emissions from the project, noting that this refers to project alone impacts.

Please let us know if you require any additional supporting information. We would be happy to discuss this with the reviewer as required.

Sincerely,

Ronan Kellaghan
Principal Air Quality Consultant
Pacific Environment Limited

Khalia Hill
Atmospheric Scientist
Pacific Environment Limited

6 REFERENCES

NZ MFE (2004). Good Practice Guide for Atmospheric Dispersion Modelling. New Zealand Ministry for the Environment, Wellington.

PAEHolmes (2012) "Drayton South Air Quality and Greenhouse Gas Impact Assessment", prepared for Hansen Baily on behalf of Anglo American Metallurgical Coal. October 2012

Pacific Environment (2013) "Drayton South modelling with revised assumptions", prepared for Hansen Baily on behalf of Anglo American Metallurgical Coal. April 2013

Appendix A. ESTIMATION OF DUST EMISSIONS

Table A.1: Year 3A – Drayton South Emissions Calculations

ACTIVITY	TSP emissions (kg/y)	Intensity	units	Emission factor	units	Variable 1	units	Variable 2	units	Variable 3	units	Variable 4	Units	Variable 5	Units	Controls	Units
WHYNOT																	
Topsoil Removal & Site preparation - Dozers on Whynot	17,998	2,151	h/y	16.7	kg/h	10	silt content in %	2	moisture content in %							50	% control
Topsoil removal - Sh/Cx/FELs loading topsoil - Whynot	249	266,920	t/y	0.0019	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %							50	% control
Topsoil removal - Hauling topsoil to emplacement area (east) - Whynot	2,513	133,460	t/y	0.075	kg/t	177	t/load	229.0	Vehicle gross mass (t)	3.5	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
Topsoil removal - Hauling topsoil to emplacement area (west) - Whynot	2,132	133,460	t/y	0.064	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.9	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
Topsoil removal - Emplacing topsoil at emplacement area - Whynot	497	266,920	t/y	0.002	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %								
OB - Drilling - Whynot	3,241	18,312	holes/y	0.59	kg/hole											70	% control
OB - Blasting - Whynot	11,254	80	blasts/y	141	kg/blast	7427	Area of blast in square metres										
OB - Dozers on Dragline OB in-pit - Whynot	32,026	2,558	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dragline removal of OB - Whynot	309,391	10,411,741	bcm/y	0.0297	kg/m3 (lo	7	drop distance in m	2.5	moisture content in %								
OB - Dozers on Excavtor OB in-pit - Whynot	19,795	1,581	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Excavator loading OB to haul truck - Whynot	9,192	6,745,377	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling excavator OB to emplacement area (east) - Whynot	63,508	3,372,688	t/y	0.075	kg/t	177	t/load	229.0	Vehicle gross mass (t)	3.5	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
OB - Hauling excavator OB to emplacement area (west) - Whynot	53,870	3,372,688	t/y	0.064	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.9	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
OB - Dozers on OB haul roads (east) - Whynot	4,489	359	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers on OB haul roads (west) - Whynot	4,489	359	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Emplacing excavator OB at emplacement area - Whynot	9,192	6,745,377	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Dozers on OB emplacement area - Whynot	51,822	4,139	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers in-pit ancillary tasks - Whynot	40,247	3,214	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers ripping/pushing/clean-up Partings - Whynot	17,538	1,401	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Loading partings to haul trucks - Whynot	1,110	814,871	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling partings to emplacement area (east) - Whynot	7,672	407,436	t/y	0.075	kg/t	177	t/load	229.0	Vehicle gross mass (t)	3.5	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
OB - Hauling partings to emplacement area (west) - Whynot	6,508	407,436	t/y	0.064	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.9	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
OB - Emplacing Partings at emplacement area - Whynot	1,110	814,871	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
CL - Drilling coal - Whynot	1,617	9,138	holes/y	0.59	kg/hole											70	% control
CL - Blasting coal - Whynot	6,496	46	blasts/y	141	kg/blast	7427	Area of blast in square metres										
CL - Dozers ripping/pushing/clean-up ROM in-pit - Whynot	58,257	4,127	h/y	14.116	kg/h	5	silt content in %	9	moisture content in %								
CL - Sh/Cx/FCLs loading open coal to trucks - Whynot	64,492	1,552,982	t/y	0.042	kg/t	9	moisture content in %										
CL - Hauling open coal in-pit roads (east) - Whynot	17,539	776,491	t/y	0.090	kg/t	70	t/load	65.0	Vehicle gross mass (t)	3	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad (east) - Whynot	99,999	776,491	t/y	0.86	kg/t	70	t/load	65.0	Vehicle gross mass (t)	28	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Hauling open coal in-pit roads (middle) - Whynot	14,888	776,491	t/y	0.077	kg/t	70	t/load	65.0	Vehicle gross mass (t)	2	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad (middle) - Whynot	91,283	776,491	t/y	0.78	kg/t	70	t/load	65.0	Vehicle gross mass (t)	25	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Unloading ROM to ROM stockpiles/hopper - Whynot	4,659	1,552,982	t/y	0.01	kg/t											70	% control
CL - Handle coal at CHPP - Whynot	326	1,552,982	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Rehandle ROM coal at stockpiles/hopper - Whynot	1,553	155,298	t/y	0.01	kg/t												
BLAKEFIELD																	
Topsoil removeal & site preparation - Dozers on Blakefield	7,537	901	h/y	16.7	kg/h	10	silt content in %	2	moisture content in %							50	% control
Topsoil removal - Sh/Ex/FELs loading topsoil - Blakefield	65	69,522	t/y	0.0019	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %							50	% control
Topsoil removal - Hauling topsoil to emplacement area - Blakefield	1,057	69,522	t/y	0.061	kg/t	177	t/truck load	229.0	Vehicle gross mass (t)	2.8	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
Topsoil removal - Emplacing topsoil at emplacement area - Blakefield	129	69,522	t/y	0.0019	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %								
OB - Drilling - Blakefield	1,424	8,048	holes/y	0.59	kg/hole											70	% control
OB - Blasting for excavator removal - Blakefield	4,946	35	blasts/y	141	kg/blast	7427	Area of blast in square metres										
OB - Dozers on Dragline OB in-pit - Blakefield	16,743	1,337	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dragline removal of OB - Blakefield	163,950	5,517,311	bcm/y	0.030	kg/m3 (lo	7	drop distance in m	2.5	moisture content in %								
OB - Dozers on Excavator OB in-pit - Blakefield	367	29	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Excavator loading OB to haul truck - Blakefield	170	125,090	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling to emplacement area - Blakefield	1,901	125,090	t/y	0.061	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.8	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
OB - Dozers on OB haul roads - Blakefield	166	13	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Emplacing at emplacement area - Blakefield	170	125,090	t/y	0.00136	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Dozers on OB emplacement area - Blakefield	17,110	1,366	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers in-pit ancillary tasks - Blakefield	18,720	1,495	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers ripping/pushing/clean-up Partings - Blakefield	603	48	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Loading partings to trucks - Blakefield	229	167,953	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling partings to epmlacement area - Blakefield	2,553	167,953	t/y	0.061	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.8	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
OB - Emplacing partings at emplacement area - Blakefield	229	167,953	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
CL - Drilling coal - Blakefield	752	4,250	holes/y	0.59	kg/hole											70	% control
CL - Blasting coal - Blakefield	3,021	21	blasts/y	141	kg/blast	7427	Area of blast in square metres										
CL - Dozers ripping/pushing/clean-up ROM in-pit - Blakefield	12,496	885	h/y	14.116	kg/h	5	silt content in %	9	moisture content in %								
CL - Sh/Cx/FCLs loading open coal to trucks - Blakefield	29,997	722,327	t/y	0.042	kg/t	9	moisture content in %										
CL - Hauling open coal in-pits roads - Blakefield	8,220	722,327	t/y	0.046	kg/t	70	t/load	65.0	Vehicle gross mass (t)	1.5	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad - Blakefield	107,765	722,327	t/y	0.99	kg/t	70	t/load	65.0	Vehicle gross mass (t)	31.9	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Unloading ROM to ROM stockpiles/hopper - Blakefield	2,167	722,327	t/y	0.010	kg/t											70	% control
CL - Handle coal at CHPP - Blakefield	152	722,327	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Rehandle ROM coal at stockpiles/hopper - Blakefield	722	72,233	t/y	0.01	kg/t												

ACTIVITY	TSP emissions (kg/y)	Intensity	units	Emission factor	units	Variable 1	units	Variable 2	units	Variable 3	units	Variable 4	Units	Variable 5	Units	Controls	Units
REDBANK																	
Topsoil removal - Dozers/Excavators stripping topsoil - Redbank	3,886	929	h/y	8.4	kg/h	10	silt content in %	2	moisture content in %							50	% control
Topsoil removal - Sh/Ex/FELs loading topsoil - Redbank	273	292,969	t/y	0.0019	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %							50	% control
Topsoil removal - Hauling topsoil to emplacement area (north) - Redbank	3,044	219,727	t/y	0.055	kg/t	177	t/truck load	229.0	Vehicle gross mass (t)	2.6	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
Topsoil removal - Hauling topsoil to emplacement area (south) - Redbank	843	73,242	t/y	0.046	kg/t	177	t/truck load	229.0	Vehicle gross mass (t)	2.1	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
Topsoil removal - Emplacing topsoil at emplacement area - Redbank	546	292,969	t/y	0.0019	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %								
OB - Drilling for excavator removal - Redbank	1,326	7,494	holes/y	0.59	kg/hole											70	% control
OB - Blasting for excavator removal - Redbank	4,606	33	blasts/y	141	kg/blast	7427	Area of blast in square metres										
OB - Dozers on Excavator OB in-pit - Redbank	43,696	3,490	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Excavator loading OB to haul truck - Redbank	20,289	14,889,472	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling to emplacement area (north) - Redbank	154,706	11,167,104	t/y	0.055	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.6	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
OB - Hauling to emplacement area (south) - Redbank	42,832	3,722,368	t/y	0.046	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.1	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
OB - Dozers on OB haul roads (north) - Redbank	9,909	791	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers on OB haul roads (south) - Redbank	9,909	791	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Emplacing at emplacement area - Redbank	20,289	14,889,472	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Dozers on OB emplacement area -Redbank	43,696	3,490	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers in-pit ancillary tasks - Redbank	31,778	2,538	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers ripping/pushing/clean-up Partings - Redbank	14,178	1,132	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Loading partings to trucks - Redbank	1,062	779,421	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling partings to epmlacement area (north) - Redbank	8,098	584,566	t/y	0.055	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.6	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
OB - Hauling partings to epmlacement area (south) - Redbank	2,242	194,855	t/y	0.046	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.1	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
OB - Emplacing partings at emplacement area - Redbank	1,062	779,421	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
CL - Drilling coal - Redbank	1,277	7,215	holes/y	0.59	kg/hole											70	% control
CL - Blasting coal - Redbank	5,129	36	blasts/y	141	kg/blast	7427	Area of blast in square metres										
CL - Dozers ripping/pushing/clean-up ROM in-pit - Redbank	41,392	2,932	h/y	14.116	kg/h	5	silt content in %	9	moisture content in %								
CL - Sh/Cx/FCLs loading open coal to trucks - Redbank	50,920	1,226,181	t/y	0.042	kg/t	9	moisture content in %										
CL - Hauling open coal in-pits roads - Redbank	36,604	1,226,181	t/y	0.12	kg/t	70	t/load	65.0	Vehicle gross mass (t)	3.8	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad - Redbank	180,114	1,226,181	t/y	0.98	kg/t	70	t/load	65.0	Vehicle gross mass (t)	31.4	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Unloading ROM to ROM stockpiles/hopper - Redbank	3,679	1,226,181	t/y	0.010	kg/t											70	% control
CL - Handle coal at CHPP - Redbank	257	1,226,181	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Rehandle ROM coal at stockpiles/hopper - Redbank	1,226	122,618	t/y	0.01	kg/t												
HOUSTON																	
Topsoil Removal - Dozers/Excavators stripping topsoil - Houston	14,930	1,784	h/y	16.7	kg/h	10	silt content in %	2	moisture content in %							50	% control
Topsoil removal - Sh/Ex/FELs loading topsoil - Houston	157	168,297	t/y	0.0019	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %							50	% control
Topsoil removal - Hauling topsoil to emplacement area - Houston	2,304	168,297	t/y	0.055	kg/t	177	t/truck load	229.0	Vehicle gross mass (t)	2.5	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
Topsoil removal - Emplacing topsoil at emplacement area - Houston	313	168,297	t/y	0.0019	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %								
OB - Drilling for excavator removal - Houston	2,444	13,807	holes/y	0.59	kg/hole											70	% control
OB - Blasting for excavator removal - Houston	8,486	60	blasts/y	141	kg/blast	7427	Area of blast in square metres										
OB - Dozers on Excavator OB in-pit - Houston	80,503	6,429	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Excavator loading OB to haul truck - Houston	37,381	27,431,844	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling to emplacement area - Houston	375,562	27,431,844	t/y	0.055	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.5	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
OB - Dozers on OB haul roads - Houston	36,511	2,916	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Emplacing at emplacement area - Houston	37,381	27,431,844	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Dozers on OB emplacement area - Houston	80,503	6,429	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers in-pit ancillary tasks - Houston	53,616	4,282	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers ripping/pushing/clean-up Partings - Houston	9,285	742	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Loading partings to trucks - Houston	531	389,649	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling partings to epmlacement area - Houston	5,335	389,649	t/y	0.055	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.5	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
OB - Emplacing partings at emplacement area - Houston	531	389,649	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
CL - Dozers ripping/pushing/clean-up ROM in-pit - Houston	82,989	5,879	h/y	14.116	kg/h	5.0	silt content in %	9	moisture content in %								
CL - Sh/Cx/FCLs loading open coal to trucks - Houston	85,913	2,068,809	t/y	0.042	kg/t	9.0	moisture content in %										
CL - Hauling open coal in-pits roads (east) - Houston	18,108	1,034,404	t/y	0.070	kg/t	70	t/load	65.0	Vehicle gross mass (t)	2.2	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal in-pits roads (west) - Houston	13,577	1,034,404	t/y	0.053	kg/t	70	t/load	65.0	Vehicle gross mass (t)	1.7	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad (east) - Houston	128,743	1,034,404	t/y	0.83	kg/t	70	t/load	65.0	Vehicle gross mass (t)	26.6	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Hauling open coal to ROM pad (west) - Houston	136,628	1,034,404	t/y	0.88	kg/t	70	t/load	65.0	Vehicle gross mass (t)	28.2	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Unloading ROM to ROM stockpiles/hopper - Houston	6,206	2,068,809	t/y	0.01	kg/t											70	% control
CL - Handle coal at CHPP - Houston	434	2,068,809	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Rehandle ROM coal at stockpiles/hopper - Houston	2,069	206,881	t/y	0.01	kg/t												
ROM/REJECTS HANDLING																	
CL - Dozers ROM Coal Handling & Rejects - ROM stockpile	81,371	5,765	h/y	14.12	kg/h	5	silt content in %	9	moisture content in %								
CL - Loading rejects	-	1,392,575	t/y	Rejects very wet therefore no dust													
CL - Transporting rejects	68,280	1,392,575	t/y	0.20	kg/t	91	t/load	117.9	Vehicle gross mass (t)	6.2	km/return trip	2.85	kg/VKT	3	% silt content	75	% control
CL - Unloading rejects	-	1,392,575	t/y	Rejects very wet therefore no dust													
PRODUCT COAL																	
CL - Loading product stockpile	405	3,409,398	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	11	moisture content in %							25	% control
CL - Loading product coal to trains	540	3,409,398	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	11	moisture content in %								

ACTIVITY	TSP emissions (kg/y)	Intensity	units	Emission factor	units	Variable 1	units	Variable 2	units	Variable 3	units	Variable 4	Units	Variable 5	Units	Controls	Units
WIND EROSION																	
WE - OB dump & disturbed area - Whynot - Uncontrolled	221,206	63	ha	0.4	kg/ha/h	8760	h/y										
WE - OB dump & disturbed area - Whynot - Controlled	12,289	7	ha	0.4	kg/ha/h	8760	h/y									50	% control
WE - OB dump& disturbed area - Blakefield - Uncontrolled	56,404	16	ha	0.4	kg/ha/h	8760	h/y										
WE - OB dump& disturbed area - Blakefield - Controlled	3,134	2	ha	0.4	kg/ha/h	8760	h/y									50	% control
WE - OB dump& disturbed area - Redbank - Uncontrolled	205,960	59	ha	0.4	kg/ha/h	8760	h/y										
WE - OB dump& disturbed area - Redbank - Controlled	11,442	7	ha	0.4	kg/ha/h	8760	h/y									50	% control
WE - OB dump& disturbed area - Houston - Uncontrolled	212,828	61	ha	0.4	kg/ha/h	8760	h/y										
WE - OB dump& disturbed area - Houston- Controlled	11,824	7	ha	0.4	kg/ha/h	8760	h/y									50	% control
WE - Open mining area - Whynot	122,477	35	ha	0.4	kg/ha/h	8760	h/y										
WE - Open mining area - Blakefield	31,900	9	ha	0.4	kg/ha/h	8760	h/y										
WE - Open mining area - Redbank	134,430	38	ha	0.4	kg/ha/h	8760	h/y										
WE - Open mining area - Houston	77,224	22	ha	0.4	kg/ha/h	8760	h/y										
WE - ROM stockpiles	7,358	6	ha	0.4	kg/ha/h	8760	h/y									65	% control
WE - Product stockpiles	52,560	15	ha	0.4	kg/ha/h	8760	h/y										

Table A.2: Year 3B – Drayton South Emissions Calculations

ACTIVITY	TSP emissions (kg/y)	Intensity	units	Emission factor	units	Variable 1	units	Variable 2	units	Variable 3	units	Variable 4	Units	Variable 5	Units	Controls	Units
WHYNOT																	
Topsoil Removal & Site preparation - Dozers on Whynot	17,998	2,151	h/y	16.7	kg/h	10	silt content in %	2	moisture content in %							50	% control
Topsoil removal - Sh/Cx/FELs loading topsoil - Whynot	251	266,920	t/y	0.0019	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %							50	% control
Topsoil removal - Hauling topsoil to emplacement area (east) - Whynot	2,513	133,460	t/y	0.075	kg/t	177	t/load	229.0	Vehicle gross mass (t)	3.5	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
Topsoil removal - Hauling topsoil to emplacement area (west) - Whynot	2,132	133,460	t/y	0.064	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.9	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
Topsoil removal - Emplacing topsoil at emplacement area - Whynot	502	266,920	t/y	0.0019	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %								
OB - Drilling - Whynot	3,241	18,312	holes/y	0.59	kg/hole											70	% control
OB - Blasting - Whynot	11,254	80	blasts/y	141	kg/blast	7427	Area of blast in square metres										
OB - Dozers on Dragline OB in-pit - Whynot	32,026	2,558	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dragline removal of OB - Whynot	309,391	10,411,741	bcm/y	0.030	kg/m3 (loo	7	drop distance in m	2.5	moisture content in %								
OB - Dozers on Excavtor OB in-pit - Whynot	19,795	1,581	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Excavator loading OB to haul truck - Whynot	9,288	6,745,377	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling excavator OB to emplacement area (east) - Whynot	63,508	3,372,688	t/y	0.075	kg/t	177	t/load	229.0	Vehicle gross mass (t)	3.5	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
OB - Hauling excavator OB to emplacement area (west) - Whynot	53,870	3,372,688	t/y	0.064	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.9	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
OB - Dozers on OB haul roads (east) - Whynot	4,489	359	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers on OB haul roads (west) - Whynot	4,489	359	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Emplacing excavator OB at emplacement area - Whynot	9,288	6,745,377	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Dozers on OB emplacement area - Whynot	51,822	4,139	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers in-pit ancillary tasks - Whynot	40,247	3,214	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers ripping/pushing/clean-up Partings - Whynot	17,538	1,401	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Loading partings to haul trucks - Whynot	1,122	814,871	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling partings to emplacement area (east) - Whynot	7,672	407,436	t/y	0.075	kg/t	177	t/load	229.0	Vehicle gross mass (t)	3.5	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
OB - Hauling partings to emplacement area (west) - Whynot	6,508	407,436	t/y	0.064	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.9	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
OB - Emplacing Partings at emplacement area - Whynot	1,122	814,871	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
CL - Drilling coal - Whynot	1,617	9,138	holes/y	0.59	kg/hole											70	% control
CL - Blasting coal - Whynot	6,496	46	blasts/y	141	kg/blast	7427	Area of blast in square metres										
CL - Dozers ripping/pushing/clean-up ROM in-pit - Whynot	58,257	4,127	h/y	14.116	kg/h	5.0	silt content in %	9	moisture content in %								
CL - Sh/Cx/FCLs loading open coal to trucks - Whynot	64,492	1,552,982	t/y	0.042	kg/t	9.0	moisture content in %										
CL - Hauling open coal in-pit roads (east) - Whynot	17,539	776,491	t/y	0.090	kg/t	70	t/load	65.0	Vehicle gross mass (t)	3	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad (east) - Whynot	99,999	776,491	t/y	0.859	kg/t	70	t/load	65.0	Vehicle gross mass (t)	28	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Hauling open coal in-pit roads (middle) - Whynot	14,888	776,491	t/y	0.077	kg/t	70	t/load	65.0	Vehicle gross mass (t)	2	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad (middle) - Whynot	91,283	776,491	t/y	0.78	kg/t	70	t/load	65.0	Vehicle gross mass (t)	25	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Unloading ROM to ROM stockpiles/hopper - Whynot	4,659	1,552,982	t/y	0.010	kg/t											70	% control
CL - Handle coal at CHPP - Whynot	326	1,552,982	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Rehandle ROM coal at stockpiles/hopper - Whynot	1,553	155,298	t/y	0.01	kg/t												
BLAKEFIELD																	
Site preparation - Dozers on Blakefield	7,537	901	h/y	16.7	kg/h	10	silt content in %	2	moisture content in %							50	% control
Topsoil removal - Sh/Ex/FELs loading topsoil - Blakefield	65	69,522	t/y	0.0019	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %							50	% control
Topsoil removal - Hauling topsoil to emplacement area - Blakefield	1,057	69,522	t/y	0.061	kg/t	177	t/truck load	229.0	Vehicle gross mass (t)	2.8	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
Topsoil removal - Emplacing topsoil at emplacement area - Blakefield	131	69,522	t/y	0.0019	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %								
OB - Drilling - Blakefield	1,424	8,048	holes/y	0.59	kg/hole											70	% control
OB - Blasting for excavator removal - Blakefield	4,946	35	blasts/y	141	kg/blast	7427	Area of blast in square metres										
OB - Dozers on Dragline OB in-pit - Blakefield	16,743	1,337	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dragline removal of OB - Blakefield	163,950	5,517,311	bcm/y	0.030	kg/m3 (loo	7	drop distance in m	2.5	moisture content in %								
OB - Dozers on Excavator OB in-pit - Blakefield	367	29	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Excavator loading OB to haul truck - Blakefield	172	125,090	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling to emplacement area - Blakefield	1,901	125,090	t/y	0.061	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.8	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
OB - Dozers on OB haul roads - Blakefield	166	13	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Emplacing at emplacement area - Blakefield	172	125,090	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Dozers on OB emplacement area -Blakefield	17,110	1,366	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers in-pit ancillary tasks - Blakefield	18,720	1,495	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers ripping/pushing/clean-up Partings - Blakefield	603	48	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Loading partings to trucks - Blakefield	231	167,953	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling partings to epmlacement area - Blakefield	2,553	167,953	t/y	0.061	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.8	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
OB - Emplacing partings at emplacement area - Blakefield	231	167,953	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
CL - Drilling coal - Blakefield	752	4,250	holes/y	0.59	kg/hole											70	% control
CL - Blasting coal - Blakefield	3,021	21	blasts/y	140.83	kg/blast	7427	Area of blast in square metres										
CL - Dozers ripping/pushing/clean-up ROM in-pit - Blakefield	12,496	885	h/y	14.116	kg/h	5.0	silt content in %	9	moisture content in %								
CL - Sh/Cx/FCLs loading open coal to trucks - Blakefield	29,997	722,327	t/y	0.042	kg/t	9.0	moisture content in %										
CL - Hauling open coal in-pits roads - Blakefield	8,220	722,327	t/y	0.046	kg/t	70	t/load	65.0	Vehicle gross mass (t)	1.5	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad - Blakefield	107,765	722,327	t/y	0.995	kg/t	70	t/load	65.0	Vehicle gross mass (t)	31.9	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Unloading ROM to ROM stockpiles/hopper - Blakefield	2,167	722,327	t/y	0.010	kg/t											70	% control
CL - Handle coal at CHPP - Blakefield	152	722,327	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Rehandle ROM coal at stockpiles/hopper - Blakefield	722	72,233	t/y	0.01	kg/t												

ACTIVITY	TSP emissions (kg/y)	Intensity	units	Emission factor	units	Variable 1	units	Variable 2	units	Variable 3	units	Variable 4	Units	Variable 5	Units	Controls	Units
REDBANK																	
Topsoil removal - Dozers/Excavators stripping topsoil - Redbank	7,772	929	h/y	16.7	kg/h	10	silt content in %	2	moisture content in %							50	% control
Topsoil removal - Sh/Ex/FELs loading topsoil - Redbank	276	292,969	t/y	0.0019	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %							50	% control
Topsoil removal - Hauling topsoil to emplacement area (north) - Redbank	3,044	219,727	t/y	0.055	kg/t	177	t/truck load	229.0	Vehicle gross mass (t)	2.6	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
Topsoil removal - Hauling topsoil to emplacement area (south) - Redbank	843	73,242	t/y	0.046	kg/t	177	t/truck load	229.0	Vehicle gross mass (t)	2.1	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
Topsoil removal - Emplacing topsoil at emplacement area - Redbank	551	292,969	t/y	0.0019	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %								
OB - Drilling for excavator removal - Redbank	1,326	7,494	holes/y	0.59	kg/hole											70	% control
OB - Blasting for excavator removal - Redbank	4,606	33	blasts/y	141	kg/blast	7427	Area of blast in square metres										
OB - Dozers on Excavator OB in-pit - Redbank	43,696	3,490	h/y	12.5214	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Excavator loading OB to haul truck - Redbank	20,502	14,889,472	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling to emplacement area (north) - Redbank	154,706	11,167,104	t/y	0.055	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.6	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
OB - Hauling to emplacement area (south) - Redbank	42,832	3,722,368	t/y	0.046	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.1	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
OB - Dozers on OB haul roads (north) - Redbank	9,909	791	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers on OB haul roads (south) - Redbank	9,909	791	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Emplacing at emplacement area - Redbank	20,502	14,889,472	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Dozers on OB emplacement area -Redbank	43,696	3,490	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers in-pit ancillary tasks - Redbank	31,778	2,538	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers ripping/pushing/clean-up Partings - Redbank	14,178	1,132	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Loading partings to trucks - Redbank	1,073	779,421	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling partings to epmlacement area (north) - Redbank	8,098	584,566	t/y	0.055	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.6	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
OB - Hauling partings to epmlacement area (south) - Redbank	2,242	194,855	t/y	0.046	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.1	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
OB - Emplacing partings at emplacement area - Redbank	1,073	779,421	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
CL - Drilling coal - Redbank	1,277	7,215	holes/y	0.59	kg/hole											70	% control
CL - Blasting coal - Redbank	5,129	36	blasts/y	141	kg/blast	7427	Area of blast in square metres										
CL - Dozers ripping/pushing/clean-up ROM in-pit - Redbank	41,392	2,932	h/y	14.116	kg/h	5.0	silt content in %	9	moisture content in %								
CL - Sh/Cx/FCLs loading open coal to trucks - Redbank	50,920	1,226,181	t/y	0.042	kg/t	9.0	moisture content in %										
CL - Hauling open coal in-pits roads - Redbank	36,604	1,226,181	t/y	0.12	kg/t	70	t/load	65.0	Vehicle gross mass (t)	3.8	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad - Redbank	180,114	1,226,181	t/y	0.98	kg/t	70	t/load	65.0	Vehicle gross mass (t)	31.4	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Unloading ROM to ROM stockpiles/hopper - Redbank	3,679	1,226,181	t/y	0.010	kg/t											70	% control
CL - Handle coal at CHPP - Redbank	257	1,226,181	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Rehandle ROM coal at stockpiles/hopper - Redbank	1,226	122,618	t/y	0.01	kg/t												
HOUSTON																	
Topsoil Removal - Dozers/Excavators stripping topsoil - Houston	14,930	1,784	h/y	16.7	kg/h	10	silt content in %	2	moisture content in %							50	% control
Topsoil removal - Sh/Ex/FELs loading topsoil - Houston	158	168,297	t/y	0.0019	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %							50	% control
Topsoil removal - Hauling topsoil to emplacement area - Houston	2,304	168,297	t/y	0.055	kg/t	177	t/truck load	229.0	Vehicle gross mass (t)	2.5	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
Topsoil removal - Emplacing topsoil at emplacement area - Houston	317	168,297	t/y	0.0019	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %								
OB - Drilling for excavator removal - Houston	2,444	13,807	holes/y	0.59	kg/hole											70	% control
OB - Blasting for excavator removal - Houston	8,486	60	blasts/y	141	kg/blast	7427	Area of blast in square metres										
OB - Dozers on Excavator OB in-pit - Houston	80,503	6,429	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Excavator loading OB to haul truck - Houston	37,772	27,431,844	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling to emplacement area - Houston	375,562	27,431,844	t/y	0.055	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.5	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
OB - Dozers on OB haul roads - Houston	36,511	2,916	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Emplacing at emplacement area - Houston	37,772	27,431,844	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Dozers on OB emplacement area - Houston	80,503	6,429	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers in-pit ancillary tasks - Houston	53,616	4,282	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers ripping/pushing/clean-up Partings - Houston	9,285	742	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Loading partings to trucks - Houston	537	389,649	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling partings to epmlacement area - Houston	5,335	389,649	t/y	0.055	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.5	km/return trip	3.85	kg/VKT	3	% silt content	75	% control
OB - Emplacing partings at emplacement area - Houston	537	389,649	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
CL - Dozers ripping/pushing/clean-up ROM in-pit - Houston	82,989	5,879	h/y	14.116	kg/h	5.0	silt content in %	9	moisture content in %								
CL - Sh/Cx/FCLs loading open coal to trucks - Houston	85,913	2,068,809	t/y	0.042	kg/t	9.0	moisture content in %										
CL - Hauling open coal in-pits roads (east) - Houston	18,108	1,034,404	t/y	0.070	kg/t	70	t/load	65.0	Vehicle gross mass (t)	2.2	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal in-pits roads (west) - Houston	13,577	1,034,404	t/y	0.053	kg/t	70	t/load	65.0	Vehicle gross mass (t)	1.7	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad (east) - Houston	128,743	1,034,404	t/y	0.83	kg/t	70	t/load	65.0	Vehicle gross mass (t)	26.6	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Hauling open coal to ROM pad (west) - Houston	136,628	1,034,404	t/y	0.88	kg/t	70	t/load	65.0	Vehicle gross mass (t)	28.2	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Unloading ROM to ROM stockpiles/hopper - Houston	6,206	2,068,809	t/y	0.01	kg/t											70	% control
CL - Handle coal at CHPP - Houston	434	2,068,809	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Rehandle ROM coal at stockpiles/hopper - Houston	2,069	206,881	t/y	0.01	kg/t												
ROM/REJECTS HANDLING																	
CL - Dozers ROM Coal Handling & Rejects - ROM stockpile	81,371	5,765	h/y	14.12	kg/h	5.0	silt content in %	9.0	moisture content in %								
CL - Loading rejects	-	1,392,575	t/y	Rejects very wet therefore no dust													
CL - Transporting rejects	68,280	1,392,575	t/y	0.20	kg/t	91	t/load	117.9	Vehicle gross mass (t)	6.2	km/return trip	2.85	kg/VKT	3	% silt content	75	% control
CL - Unloading rejects	-	1,392,575	t/y	Rejects very wet therefore no dust													
PRODUCT COAL																	
CL - Loading product stockpile	405	3,409,398	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	11.0	moisture content in %							25	% control
CL - Loading product coal to trains	540	3,409,398	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	11.0	moisture content in %								

ACTIVITY	TSP emissions (kg/y)	Intensity	units	Emission factor	units	Variable 1	units	Variable 2	units	Variable 3	units	Variable 4	Units	Variable 5	Units	Controls	Units
WIND EROSION																	
WE - OB dump & disturbed area - Whynot - Uncontrolled	221,206	63	ha	0.4	kg/ha/h	8760	h/y										
WE - OB dump & disturbed area - Whynot - Controlled	12,289	7	ha	0.4	kg/ha/h	8760	h/y									50	% control
WE - OB dump & disturbed area - Blakefield - Uncontrolled	56,404	16	ha	0.4	kg/ha/h	8760	h/y										
WE - OB dump & disturbed area - Blakefield - Controlled	3,134	2	ha	0.4	kg/ha/h	8760	h/y									50	% control
WE - OB dump& disturbed area - Redbank - Uncontrolled	205,960	59	ha	0.4	kg/ha/h	8760	h/y										
WE - OB dump& disturbed area - Redbank - Controlled	11,442	7	ha	0.4	kg/ha/h	8760	h/y									50	% control
WE - OB dump& disturbed area - Houston - Uncontrolled	99,034	28	ha	0.4	kg/ha/h	8760	h/y										
WE - OB dump& disturbed area - Houston- Controlled	5,502	3	ha	0.4	kg/ha/h	8760	h/y									50	% control
WE - Open mining area- Whynot	122,477	35	ha	0.4	kg/ha/h	8760	h/y										
WE - Open mining area - Blakefield	31,900	9	ha	0.4	kg/ha/h	8760	h/y										
WE - Open mining area - Redbank	134,430	38	ha	0.4	kg/ha/h	8760	h/y										
WE - Open mining area - Houston	77,224	22	ha	0.4	kg/ha/h	8760	h/y										
WE - ROM stockpiles	7,358	6	ha	0.4	kg/ha/h	8760	h/y									65	% control
WE - Product stockpiles	52,560	15	ha	0.4	kg/ha/h	8760	h/y										

Table A.3: Year 5 – Drayton South Emissions Calculations

ACTIVITY	TSP emissions (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
WHYNOT																	
Topsoil removal & Site preparation - Dozers on Whynot	22,829	2,728	h/y	16.7	kg/h	10	silt content in %	2	moisture content in %							50	% control
Topsoil removal - Sh/Ex/FELs loading topsoil - Whynot	234	251,627	t/y	0.0019	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %							50	% control
Topsoil removal - Hauling topsoil to emplacement area (east) - Whynot	2,875	125,814	t/y	0.091	kg/t	177	t/load	229.0	Vehicle gross mass (t)	4.2	km/return trip	3.84644	kg/VKT	3	% silt content	75	% control
Topsoil removal - Hauling topsoil to emplacement area (west) - Whynot	2,567	125,814	t/y	0.082	kg/t	177	t/load	229.0	Vehicle gross mass (t)	3.8	km/return trip	3.84644	kg/VKT	3	% silt content	75	% control
Topsoil removal - Emplacing topsoil at emplacement area - Whynot	469	251,627	t/y	0.0019	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %								
OB - Drilling - Whynot	3,283	18,547	holes/y	0.59	kg/hole											70	% control
OB - Blasting - Whynot	22,795	96	blasts/y	237	kg/blast	10505	Area of blast in square metres										
OB - Dozers on Dragline OB in-pit - Whynot	26,037	2,079	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dragline removal of OB - Whynot	212,061	7,136,365	bcm/y	0.030	kg/m3 (loose)	7	drop distance in m	2.5	moisture content in %								
OB - Dozers on Excavotor OB in-pit - Whynot	68,533	5,473	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Excavator loading OB to haul truck - Whynot	32,089	23,544,938	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling excavator OB to emplacement area (east) - Whynot	269,007	11,772,469	t/y	0.091	kg/t	177	t/load	229.0	Vehicle gross mass (t)	4.2	km/return trip	3.84644	kg/VKT	3	% silt content	75	% control
OB - Hauling excavator OB to emplacement area (west) - Whynot	240,226	11,772,469	t/y	0.082	kg/t	177	t/load	229.0	Vehicle gross mass (t)	3.8	km/return trip	3.84644	kg/VKT	3	% silt content	75	% control
OB - Dozers on OB haul roads (east) - Whynot	15,541	1,241	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers on OB haul roads (west) - Whynot	15,541	1,241	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB- Emplacing excavator OB at emplacement area - Whynot	32,089	23,544,938	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Dozers on OB emplacement area - Whynot	94,570	7,553	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers in-pit ancillary tasks - Whynot	55,308	4,417	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers ripping/pushing/clean-up Partings - Whynot	23,575	1,883	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Loading partings to haul trucks - Whynot	1,516	1,112,503	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling partings to emplacement area (east) - Whynot	12,711	556,252	t/y	0.091	kg/t	177	t/load	229.0	Vehicle gross mass (t)	4.2	km/return trip	3.84644	kg/VKT	3	% silt content	75	% control
OB - Hauling partings to emplacement area (west) - Whynot	11,351	556,252	t/y	0.082	kg/t	177	t/load	229.0	Vehicle gross mass (t)	3.8	km/return trip	3.84644	kg/VKT	3	% silt content	75	% control
OB - Emplacing Partings at emplacement area - Whynot	1,516	1,112,503	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
CL - Drilling coal and partings - Whynot	1,688	9,536	holes/y	0.59	kg/hole											70	% control
CL - Blasting coal and partings - Whynot	4,982	49	blasts/y	101.76	kg/blast	5981	Area of blast in square metres										
CL - Dozers ripping/pushing/clean-up ROM in-pit - Whynot	76,106	5,392	h/y	14.12	kg/h	5	silt content in %	9	moisture content in %								
CL - Sh/Ex/FELs loading open coal to trucks - Whynot	83,142	2,002,098	t/y	0.042	kg/t	9	moisture content in %										
CL - Hauling open coal in-pit roads (east) - Whynot	23,329	1,001,049	t/y	0.09	kg/t	70	t/load	65.0	Vehicle gross mass (t)	3.0	km/return trip	2.18239	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad (east) - Whynot	123,618	1,001,049	t/y	0.82	kg/t	70	t/load	65.0	Vehicle gross mass (t)	26.4	km/return trip	2.18239	kg/VKT	3	% silt content	85	% control
CL - Hauling open coal in-pit roads (middle) - Whynot	20,630	1,001,049	t/y	0.08	kg/t	70	t/load	65.0	Vehicle gross mass (t)	2.6	km/return trip	2.18239	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad (middle) - Whynot	133,702	1,001,049	t/y	0.89	kg/t	70	t/load	65.0	Vehicle gross mass (t)	28.6	km/return trip	2.18239	kg/VKT	3	% silt content	85	% control
CL - Unloading ROM to ROM stockpiles/hopper - Whynot	6,006	2,002,098	t/y	0.01	kg/t											70	% control
CL- Handle coal at CHPP - Whynot	420	2,002,098	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Rehandle ROM coal at stockpiles/hopper - Whynot	2,002	200,210	t/y	0.01	kg/t												
BLAKEFIELD																	
Topsoil removal & Site preparation - Dozers on Blakefield	12,532	1,498	h/y	16.7	kg/h	10	silt content in %	2	moisture content in %							50	% control
Topsoil removal - Sh/Ex/FELs loading topsoil - Blakefield	135	144,980	t/y	0.0019	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %							50	% control
Topsoil removal - Hauling (25%) topsoil to emplacement area - Blakefield (east)	447	36,245	t/y	0.049	kg/t	177	t/truck load	229.0	Vehicle gross mass (t)	2.3	km/return trip	3.84644	kg/VKT	3	% silt content	75	% control
Topsoil removal - Hauling (75%) topsoil to emplacement area - Blakefield (west)	2,043	108,735	t/y	0.075	kg/t	177	t/truck load	229.0	Vehicle gross mass (t)	3.5	km/return trip	3.84644	kg/VKT	3	% silt content	75	% control
Topsoil removal - Emplacing topsoil at emplacement area - Blakefield	40	144,980	t/y	0.00027	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %								
OB - Drilling - Blakefield	2,014	11,376	holes/y	0.59	kg/hole											70	% control
OB - Blasting - Blakefield	13,981	59	blasts/y	237	kg/blast	10505	Area of blast in square metres										
OB - Dozers on Dragline OB in-pit - Blakefield	23,132	1,847	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dragline removal of OB - Blakefield	276,789	9,314,606	bcm/y	0.030	kg/m3 (loose)	7	drop distance in m	2.5	moisture content in %								
OB - Dozers on Excavator OB in-pit - Blakefield	3,935	314	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Excavator loading OB to haul truck - Blakefield	1,843	1,352,037	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling excavator (25%) OB to emplacement area - Blakefield (east)	4,169	338,009	t/y	0.049	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.3	km/return trip	3.84644	kg/VKT	3	% silt content	75	% control
OB - Hauling excavator (75%) OB to emplacement area - Blakefield (west)	19,050	1,014,028	t/y	0.075	kg/t	177	t/load	229.0	Vehicle gross mass (t)	3.5	km/return trip	3.84644	kg/VKT	3	% silt content	75	% control
OB - Dozers on OB haul roads (east) - Blakefield	892	71	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers on OB haul roads (west) - Blakefield	4,828	386	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Emplacing excavator OB at emplacement area - Blakefield	1,843	1,352,037	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Dozers on OB emplacement area - Blakefield	27,067	2,162	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers in-pit ancillary tasks - Blakefield	22,513	1,798	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers ripping/pushing/clean-up Partings - Blakefield	1,251	100	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - loading partings to trucks - Blakefield	265	194,396	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling (25%) partings to emplacement area - Blakefield (east)	599	48,599	t/y	0.049	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.3	km/return trip	3.84644	kg/VKT	3	% silt content	75	% control
OB - Hauling (75%) partings to emplacement area - Blakefield (west)	2,739	145,797	t/y	0.075	kg/t	177	t/load	229.0	Vehicle gross mass (t)	3.5	km/return trip	3.84644	kg/VKT	3	% silt content	75	% control
OB - Emplacing partings to emplacement area - Blakefield	53	194,396	t/y	0.00027	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
CL - Drilling coal - Blakefield	687	3,882	holes/y	0.59	kg/hole											70	% control
CL - Blasting coal - Blakefield	2,028	20	blasts/y	101.76	kg/blast	5981	Area of blast in square metres										
CL - Dozers ripping/pushing/clean-up ROM in-pit - Blakefield	17,422	1,234	h/y	14.12	kg/h	5	silt content in %	9	moisture content in %								
CL - Sh/Ex/FELs loading open coal to trucks - Blakefield	33,844	814,964	t/y	0.04	kg/t	9	moisture content in %										
CL - Hauling open (25%) coal in-pit roads - Blakefield (east)	4,370	203,741	t/y	0.1	kg/t	70	t/load	65.0	Vehicle gross mass (t)	2.8	km/return trip	2.18239	kg/VKT	3	% silt content	75	% control
CL - Hauling open (25%) coal to ROM pad - Blakefield (east)	30,745	203,741	t/y	1.01	kg/t	70	t/load	65.0	Vehicle gross mass (t)	32.3	km/return trip	2.18239	kg/VKT	3	% silt content	85	% control
CL - Hauling open (75%) coal in-pit roads - Blakefield (west)	13,111	611,223	t/y	0.09	kg/t	70	t/load	65.0	Vehicle gross mass (t)	2.8	km/return trip	2.18239	kg/VKT	3	% silt content	75	% control
CL - Hauling open (75%) coal to ROM pad - Blakefield (west)	101,651	611,223	t/y	1.11	kg/t	70	t/load	65.0	Vehicle gross mass (t)	35.6	km/return trip	2.18239	kg/VKT	3	% silt content	85	% control
CL - Unloading ROM to ROM stockpiles/hopper - Blakefield	2,445	814,964	t/y	0.010	kg/t											70	% control
CL - Handle coal at CHPP - Blakefield	171	814,964	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Rehandle ROM coal at stockpiles/hopper - Blakefield	815	81,496	t/y	0.01	kg/t												

ACTIVITY	TSP emissions (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
REDBANK																	
Topsoil removal & Site preparation - Dozers on Redbank	8,176	977	h/y	16.7	kg/h	10	silt content in %	2	moisture content in %							50	% control
Topsoil removal - Sh/Ex/FELs loading topsoil - Redbank	107	114,430	t/y	0.0019	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %							50	% control
Topsoil removal - Hauling topsoil to emplacement area (north) - Redbank	1,287	85,823	t/y	0.06	kg/t	177	t/truck load	229.0	Vehicle gross mass (t)	2.8	km/return trip	3.84644	kg/VKT	3	% silt content	75	% control
Topsoil removal - Hauling topsoil to emplacement area (south) - Redbank	381	28,608	t/y	0.05	kg/t	177	t/truck load	229.0	Vehicle gross mass (t)	2.5	km/return trip	3.84644	kg/VKT	3	% silt content	75	% control
Topsoil removal - Emplacing topsoil at emplacement area - Redbank	213	114,430	t/y	0.0019	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %								
OB - Drilling for excavator removal - Redbank	1,160	6,553	holes/y	0.59	kg/hole											70	% control
OB - Blasting for excavator removal - Redbank	8,054	34	blasts/y	237	kg/blast	10505	Area of blast in square metres										
OB - Dozers on Excavator OB in-pit - Redbank	46,345	3,701	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Excavator loading OB to haul truck - Redbank	21,700	15,922,263	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling to emplacement area (north) - Redbank	179,061	11,941,697	t/y	0.06	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.8	km/return trip	3.84644	kg/VKT	3	% silt content	75	% control
OB - Hauling to emplacement area (south) - Redbank	53,070	3,980,566	t/y	0.05	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.5	km/return trip	3.84644	kg/VKT	3	% silt content	75	% control
OB - Dozers on OB haul roads (north) - Redbank	10,510	839	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers on OB haul roads (south) - Redbank	10,510	839	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Emplacing at emplacement area - Redbank	21,700	15,922,263	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Dozers on OB emplacement area -Redbank	46,345	3,701	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers in-pit ancillary tasks - Redbank	39,666	3,168	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers ripping/pushing/clean-up Partings - Redbank	17,161	1,371	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Loading partings to trucks - Redbank	1,254	920,071	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling partings to epmlacement area (north) - Redbank	10,347	690,053	t/y	0.06	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.8	km/return trip	3.84644	kg/VKT	3	% silt content	75	% control
OB - Hauling partings to epmlacement area (south) - Redbank	3,067	230,018	t/y	0.05	kg/t	177	t/load	229.0	Vehicle gross mass (t)	2.5	km/return trip	3.84644	kg/VKT	3	% silt content	75	% control
OB - Emplacing partings at emplacement area - Redbank	1,254	920,071	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
CL - Drilling coal - Redbank	1,211	6,839	holes/y	0.59	kg/hole											70	% control
CL - Blasting coal - Redbank	3,573	35	blasts/y	101.76	kg/blast	5981	Area of blast in square metres										
CL - Dozers ripping/pushing/clean-up ROM in-pit - Redbank	50,472	3,576	h/y	14.12	kg/h	5	silt content in %	9	moisture content in %								
CL - Sh/Ex/FELs loading open coal to trucks - Redbank	59,628	1,435,862	t/y	0.042	kg/t	9	moisture content in %										
CL - Hauling open coal in-pit roads - Redbank	50,384	1,435,862	t/y	0.14	kg/t	70	t/load	65.0	Vehicle gross mass (t)	4.5	km/return trip	2.18239	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad - Redbank	210,672	1,435,862	t/y	0.98	kg/t	70	t/load	65.0	Vehicle gross mass (t)	31.4	km/return trip	2.18239	kg/VKT	3	% silt content	85	% control
CL - Unloading ROM to ROM stockpiles/hopper - Redbank	4,308	1,435,862	t/y	0.01	kg/t											70	% control
CL - Handle coal at CHPP - Redbank	301	1,435,862	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Rehandle ROM coal at stockpiles/hopper - Redbank	1,436	143,586	t/y	0.01	kg/t												
HOUSTON																	
Topsoil removal & Site preparation - Dozers on Houston	4,700	562	h/y	16.7	kg/h	10	silt content in %	2	moisture content in %							50	% control
Topsoil removal - Sh/Ex/FELs loading topsoil - Houston	93	99,453	t/y	0.0019	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %							50	% control
Topsoil removal - Hauling topsoil to emplacement area - Houston	1,728	99,453	t/y	0.07	kg/t	177	t/truck load	229.0	Vehicle gross mass (t)	3.2	km/return trip	3.84644	kg/VKT	3	% silt content	75	% control
Topsoil removal - Emplacing topsoil at emplacement area - Houston	185	99,453	t/y	0.0019	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %								
OB - Drilling for excavator removal - Houston	639	3,612	holes/y	0.59	kg/hole											70	% control
OB - Blasting for excavator removal - Houston	4,440	19	blasts/y	237	kg/blast	10505	Area of blast in square metres										
OB - Dozers on Excavator OB in-pit - Houston	25,548	2,040	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Excavator loading OB to haul truck - Houston	11,962	8,777,141	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling to emplacement area - Houston	152,496	8,777,141	t/y	0.069	kg/t	177	t/load	229.0	Vehicle gross mass (t)	3.2	km/return trip	3.84644	kg/VKT	3	% silt content	75	% control
OB - Dozers on OB haul roads - Houston	11,587	925	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB- Emplacing at emplacement area - Houston	11,962	8,777,141	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Dozers on OB emplacement area - Houston	25,548	2,040	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers in-pit ancillary tasks - Houston	26,874	2,146	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers ripping/pushing/clean-up Partings - Houston	4,806	384	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Loading partings to trucks - Houston	276	202,598	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling partings to emplacement area (east) - Houston	3,520	202,598	t/y	0.07	kg/t	177	t/load	229.0	Vehicle gross mass (t)	3.2	km/return trip	3.84644	kg/VKT	3	% silt content	75	% control
CL - Emplacing partings at emplacement area - Houston	276	202,598	t/y	0.0014	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
CL - Highwall transfer point - Houston (Y7)	145	637,271	t/y	0.0002	kg/t	1.57	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Highwall conveyor - Redbank	17	0.0048	ha	0.4	kg/ha/h	8760	h/y										
CL - Dozers ripping/pushing/clean-up ROM (in-pit) - Houston	39,758	2,817	h/y	14.12	kg/h	5	silt content in %	9	moisture content in %								
CL - Sh/Ex/FELs loading open coal to trucks - Houston	66,864	1,610,102	t/y	0.042	kg/t	9	moisture content in %										
CL - Hauling open coal in-pit roads (east) - Houston	13,905	805,051	t/y	0.069	kg/t	70	t/load	65.0	Vehicle gross mass (t)	2.2	km/return trip	2.18239	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal in-pit roads (west) - Houston	10,027	805,051	t/y	0.05	kg/t	70	t/load	65.0	Vehicle gross mass (t)	1.6	km/return trip	2.18239	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad (east) - Houston	98,022	805,051	t/y	0.81	kg/t	70	t/load	65.0	Vehicle gross mass (t)	26.0	km/return trip	2.18239	kg/VKT	3	% silt content	85	% control
CL - Hauling open coal to ROM pad (west) - Houston	106,259	805,051	t/y	0.88	kg/t	70	t/load	65.0	Vehicle gross mass (t)	28.2	km/return trip	2.18239	kg/VKT	3	% silt content	85	% control
CL - Unloading ROM to ROM stockpiles/hopper - Houston	4,830	1,610,102	t/y	0.010	kg/t											70	% control
CL- Handle coal at CHPP - Houston	338	1,610,102	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Rehandle ROM coal at stockpiles/hopper - Houston	1,610	161,010	t/y	0.01	kg/t												
ROM/REJECTS HANDLING																	
CL - Dozers ROM Coal Handling & Rejects - ROM stockpile	81,371	5,765	h/y	14.12	kg/h	5	silt content in %	9	moisture content in %								
CL - Loading rejects	-	1,465,757	t/y	Rejects very wet therefore no dust													
CL - Transporting rejects	71,868	1,465,757	t/y	0.20	kg/t	91	t/load	117.9	Vehicle gross mass (t)	6.2	km/return trip	2.85347	kg/VKT	3	% silt content	75	% control
CL - Unloading rejects	-	1,465,757	t/y	Rejects very wet therefore no dust													
PRODUCT COAL																	
CL- Loading product stockpile	689	5,801,811	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	11	moisture content in %							25	% control
CL - Loading product coal to trains	919	5,801,811	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	11	moisture content in %								

ACTIVITY	TSP emissions (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
WIND EROSION																	
WE - OB dump & disturbed area - Whynot - Uncontrolled	284,833	81	ha	0.4	kg/ha/h	8760	h/y										
WE - OB dump & disturbed area - Whynot - Controlled	15,824	9	ha	0.4	kg/ha/h	8760	h/y									50	% control
WE - OB dump& disturbed area - Blakefield - Uncontrolled	159,847	46	ha	0.4	kg/ha/h	8760	h/y										
WE - OB dump& disturbed area - Blakefield - Controlled	8,880	5	ha	0.4	kg/ha/h	8760	h/y									50	% control
WE - OB dump& disturbed area - Redbank - Uncontrolled	304,573	87	ha	0.4	kg/ha/h	8760	h/y										
WE - OB dump& disturbed area - Redbank - Controlled	16,921	10	ha	0.4	kg/ha/h	8760	h/y									50	% control
WE - OB dump & disturbed area - Houston - Uncontrolled	158,947	45	ha	0.4	kg/ha/h	8760	h/y										
WE - OB dump & disturbed area - Houston - Controlled	8,830	5	ha	0.4	kg/ha/h	8760	h/y									50	% control
WE - Open mining area- Whynot	281,582	80	ha	0.4	kg/ha/h	8760	h/y										
WE - Open mining area - Blakefield	162,239	46	ha	0.4	kg/ha/h	8760	h/y										
WE - Open mining area - Redbank	128,052	37	ha	0.4	kg/ha/h	8760	h/y										
WE - Open mining area - Houston	111,292	32	ha	0.4	kg/ha/h	8760	h/y										
WE - ROM stockpiles	7,358	6	ha	0.4	kg/ha/h	8760	h/y									65	% control
WE - Product stockpiles	52,560	15	ha	0.4	kg/ha/h	8760	h/y										

Table A.4: Year 10 – Drayton South Emissions Calculations

ACTIVITY	TSP emissions (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
WHYNOT																	
Topsoil removal & Site preparation - Dozers on Whynot	30,319	3,623	h/y	16.7	kg/h	10	silt content in %	2	moisture content in %							50	% control
Topsoil removal - Sh/Ex/FELs loading topsoil - Whynot	174	185,253	t/y	0.0019	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %							50	% control
Topsoil removal - Hauling topsoil to emplacement area (east) - Whynot	2,499	92,626	t/y	0.10794	kg/t	222	t/load	275.0	Vehicle gross mass (t)	5.7	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
Topsoil removal - Hauling topsoil to emplacement area (west) - Whynot	1,666	92,626	t/y	0.07195	kg/t	222	t/load	275.0	Vehicle gross mass (t)	3.8	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
Topsoil removal - Emplacing topsoil at emplacement area - Whynot	349	185,253	t/y	0.0019	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %								
OB - Drilling - Whynot	4,596	25,964	holes/y	0.59	kg/hole											70	% control
OB - Blasting - Whynot	30,981	128	blasts/y	241	kg/blast	10638	Area of blast in square metres										
OB - Dozers on Dragline OB in-pit - Whynot	40,707	3,251	h/y	12.5	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dragline removal of OB - Whynot	327,232	11,012,155	bcm/y	0.0297	kg/m3 (loose)	7	drop distance in m	2.5	moisture content in %								
OB - Dozers on Excavator OB in-pit - Whynot	36,851	2,943	h/y	12.5	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Excavator loading OB to haul truck - Whynot	33,197	24,110,314	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling excavator OB to emplacement area (east) - Whynot	325,304	12,055,157	t/y	0.10794	kg/t	222	t/load	275.0	Vehicle gross mass (t)	5.7	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Hauling excavator OB to emplacement area (west) - Whynot	216,831	12,055,157	t/y	0.07195	kg/t	222	t/load	275.0	Vehicle gross mass (t)	3.8	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Dozers on OB haul roads (east) - Whynot	16,713	1,335	h/y	12.5	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers on OB haul roads (west) - Whynot	16,713	1,335	h/y	12.5	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Emplacing excavator OB at emplacement area - Whynot	33,197	24,110,314	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Dozers on OB emplacement area - Whynot	77,558	6,194	h/y	12.5	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers in-pit ancillary tasks - Whynot	89,698	7,164	h/y	12.5	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers ripping/pushing/clean-up Partings - Whynot	32,241	2,575	h/y	12.5	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Loading partings to haul trucks - Whynot	2,175	1,579,656	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling partings to emplacement area (east) - Whynot	21,313	789,828	t/y	0.10794	kg/t	222	t/load	275.0	Vehicle gross mass (t)	5.7	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Hauling partings to emplacement area (west) - Whynot	14,206	789,828	t/y	0.07195	kg/t	222	t/load	275.0	Vehicle gross mass (t)	3.8	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Emplacing Partings at emplacement area - Whynot	2,175	1,579,656	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
CL - Drilling coal and partings - Whynot	2,410	13,615	holes/y	0.5900	kg/hole											70	% control
CL - Blasting coal and partings - Whynot	1,257	65	blasts/y	19.4495	kg/blast	1985	Area of blast in square metres										
CL - Dozers ripping/pushing/clean-up ROM in-pit - Whynot	116,553	8,257	h/y	14.1156	kg/h	5	silt content in %	9	moisture content in %								
CL - Sh/Ex/FELs loading open coal to trucks - Whynot	127,591	3,072,435	t/y	0.04153	kg/t	9	moisture content in %										
CL - Hauling open coal in-pit roads (east) - Whynot	53,618	1,536,217	t/y	0.13961	kg/t	70	t/load	65.0	Vehicle gross mass (t)	4	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad (east) - Whynot	197,781	1,536,217	t/y	0.85830	kg/t	70	t/load	65.0	Vehicle gross mass (t)	28	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Hauling open coal in-pit roads (middle) - Whynot	32,041	1,536,217	t/y	0.08343	kg/t	70	t/load	65.0	Vehicle gross mass (t)	3	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad (middle) - Whynot	209,433	1,536,217	t/y	0.90887	kg/t	70	t/load	65.0	Vehicle gross mass (t)	29	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Unloading ROM to ROM stockpiles/hopper - Whynot	9,217	3,072,435	t/y	0.010	kg/t											70	% control
CL- Handle coal at CHPP - Whynot	645	3,072,435	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Rehandle ROM coal at stockpiles/hopper - Whynot	3,072	307,243	t/y	0.01	kg/t												
BLAKEFIELD																	
Topsoil removal & Site preparation - Dozers on Blakefield	5,989	716	h/y	16.7	kg/h	10	silt content in %	2	moisture content in %							50	% control
Topsoil removal - Sh/Ex/FELs loading topsoil - Blakefield	65	69,475	t/y	0.0019	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %							50	% control
Topsoil removal - Hauling topsoil to emplacement area - Blakefield	1,062	69,475	t/y	0.06113	kg/t	222	t/truck load	275.0	Vehicle gross mass (t)	3.2	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
Topsoil removal - Emplacing topsoil at emplacement area - Blakefield	131	69,475	t/y	0.0019	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %								
OB - Drilling - Blakefield	1,039	5,868	holes/y	0.59	kg/hole											70	% control
OB - Blasting - Blakefield	7,002	29	blasts/y	241	kg/blast	10638	Area of blast in square metres										
OB - Dozers on Dragline OB in-pit - Blakefield	8,349	667	h/y	12.5	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dragline removal of OB - Blakefield	136,395	4,590,029	bcm/y	0.0297	kg/m3 (loose)	7	drop distance in m	2.5	moisture content in %								
OB - Dozers on Excavator OB in-pit - Blakefield	1,185	95	h/y	12.5	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Excavator loading OB to haul truck - Blakefield	1,067	775,190	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling excavator OB to emplacement area - Blakefield	11,847	775,190	t/y	0.06113	kg/t	222	t/load	275.0	Vehicle gross mass (t)	3.2	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Dozers on OB haul roads - Blakefield	1,075	86	h/y	12.5	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Emplacing excavator OB at emplacement area - Blakefield	1,067	775,190	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Dozers on OB emplacement area - Blakefield	9,534	761	h/y	12.5	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers in-pit ancillary tasks -Blakefield	8,525	681	h/y	12.5	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers ripping/pushing/clean-up Partings - Blakefield	461	37	h/y	12.5	kg/h	10	silt content in %	2.5	moisture content in %								
OB - loading partings to trucks - Blakefield	134	96,964	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling partings to emplacement area - Blakefield	1,482	96,964	t/y	0.06113	kg/t	222	t/load	275.0	Vehicle gross mass (t)	3.2	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Emplacing partings to emplacement area - Blakefield	134	96,964	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
CL - Drilling coal - Blakefield	229	1,294	holes/y	0.59	kg/hole											70	% control
CL - Blasting coal - Blakefield	119	6	blasts/y	19.4495	kg/blast	1985	Area of blast in square metres										
CL - Dozers ripping/pushing/clean-up ROM in-pit - Blakefield	5,923	420	h/y	14.1156	kg/h	5	silt content in %	9	moisture content in %								
CL - Sh/Ex/FELs loading open coal to trucks - Blakefield	12,126	291,991	t/y	0.04153	kg/t	9	moisture content in %										
CL - Hauling open coal in-pit roads - Blakefield	5,849	291,991	t/y	0.08012	kg/t	70	t/load	65.0	Vehicle gross mass (t)	2.6	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad - Blakefield	50,177	291,991	t/y	1.14563	kg/t	70	t/load	65.0	Vehicle gross mass (t)	36.7	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Unloading ROM to ROM stockpiles/hopper - Blakefield	876	291,991	t/y	0.010	kg/t											70	% control
CL - Handle coal at CHPP - Blakefield	61	291,991	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Rehandle ROM coal at stockpiles/hopper - Blakefield	292	29,199	t/y	0.01	kg/t												

ACTIVITY	TSP emissions (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
REDBANK																	
Topsoil Removal - Dozers/Excavators stripping topsoil - Redbank	11,928	1,425	h/y	16.7	kg/h	10	silt content in %	2	moisture content in %							50	% control
Topsoil removal - Sh/Ex/FELs loading topsoil - Redbank	89	94,757	t/y	0.0019	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %							50	% control
Topsoil removal - Hauling topsoil to emplacement area (north) - Redbank	1,767	71,068	t/y	0.09946	kg/t	222	t/truck load	275.0	Vehicle gross mass (t)	5.3	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
Topsoil removal - Hauling topsoil to emplacement area (south) - Redbank	700	23,689	t/y	0.11811	kg/t	222	t/truck load	275.0	Vehicle gross mass (t)	6.3	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
Topsoil removal - Emplacing topsoil at emplacement area - Redbank	178	94,757	t/y	0.0019	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %								
OB - Drilling for excavator removal - Redbank	1,814	10,246	holes/y	0.59	kg/hole											70	% control
OB - Blasting for excavator removal - Redbank	12,227	51	blasts/y	241	kg/blast	10638	Area of blast in square metres										
OB - Dozers on Excavator OB in-pit - Redbank	34,145	2,727	h/y	12.5	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Excavator loading OB to haul truck - Redbank	30,759	22,339,534	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling to emplacement area (north) - Redbank	416,599	16,754,651	t/y	0.09946	kg/t	222	t/load	275.0	Vehicle gross mass (t)	5.3	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Hauling to emplacement area (south) - Redbank	164,914	5,584,884	t/y	0.11811	kg/t	222	t/load	275.0	Vehicle gross mass (t)	6.3	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Dozers on OB haul roads (north) - Redbank	15,486	1,237	h/y	12.5	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers on OB haul roads (south) - Redbank	15,486	1,237	h/y	12.5	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Emplacing at emplacement area - Redbank	30,759	22,339,534	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Dozers on OB emplacement area -Redbank	34,145	2,727	h/y	12.5	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers in-pit ancillary tasks - Redbank	46,138	3,685	h/y	12.5	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers ripping/pushing/clean-up Partings - Redbank	12,912	1,031	h/y	12.5	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Loading partings to trucks - Redbank	1,178	855,701	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling partings to emplacement area (north) - Redbank	15,958	641,776	t/y	0.09946	kg/t	222	t/load	275.0	Vehicle gross mass (t)	5.3	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Hauling partings to emplacement area (south) - Redbank	6,317	213,925	t/y	0.11811	kg/t	222	t/load	275.0	Vehicle gross mass (t)	6.3	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Emplacing partings at emplacement area - Redbank	1,178	855,701	t/y	0.0014	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
CL - Highwall transfer point - Redbank (Y8)	206	900,000	kg/t	0.0002	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Highwall conveyor - Redbank	17	0.0048	ha	0.4	kg/ha/h	8760	h/y										
CL - Drilling coal - Redbank	1,240	7,003	holes/y	0.59	kg/hole											70	% control
CL - Blasting coal - Redbank	646	33	blasts/y	19.4495	kg/blast	1985	Area of blast in square metres										
CL - Dozers ripping/pushing/clean-up ROM in-pit - Redbank	50,472	3,576	h/y	14.1156	kg/h	5	silt content in %	9	moisture content in %								
CL - Sh/Ex/FELs loading open coal to trucks - Redbank	103,004	2,480,375	t/y	0.04153	kg/t	9	moisture content in %										
CL - Hauling open coal in-pit roads - Redbank	214,592	2,480,375	t/y	0.34606	kg/t	70	t/load	65.0	Vehicle gross mass (t)	11.1	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad - Redbank	362,812	2,480,375	t/y	0.97515	kg/t	70	t/load	65.0	Vehicle gross mass (t)	31.3	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Unloading ROM to ROM stockpiles/hopper - Redbank	7,441	2,480,375	t/y	0.010	kg/t											70	% control
CL - Handle coal at CHPP - Redbank	520	2,480,375	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Rehandle ROM coal at stockpiles/hopper - Redbank	2,480	248,038	t/y	0.01	kg/t												
ROM/REJECTS HANDLING																	
CL - Dozers ROM Coal Handling & Rejects - ROM stockpile	81,371	5,765	h/y	14.1156	kg/h	5	silt content in %	9	moisture content in %								
CL - Loading rejects	-	1,461,200	t/y	Rejects very wet therefore no dust													
CL - Transporting rejects	71,644	1,461,200	t/y	0.19612	kg/t	91	t/load	117.9	Vehicle gross mass (t)	6.2	km/return trip	2.85	kg/VKT	3	% silt content	75	% control
CL - Unloading rejects	-	1,461,200	t/y	Rejects very wet therefore no dust													
PRODUCT COAL																	
CL - Loading product stockpile	417	3,508,997	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	11	moisture content in %							25	% control
CL - Loading product coal to trains	556	3,508,997	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	11	moisture content in %								
WIND EROSION																	
WE - OB dump & disturbed area - Uncontrolled	1,202,360	343	ha	0.4	kg/ha/h	8760	h/y										
WE - OB dump & disturbed area - Controlled	66,798	38	ha	0.4	kg/ha/h	8760	h/y									50	% control
WE - Open mining area - Whynot	420,545	120	ha	0.4	kg/ha/h	8760	h/y										
WE - Open mining area - Blakefield	157,717	45	ha	0.4	kg/ha/h	8760	h/y										
WE - Open mining area - Redbank	215,110	61	ha	0.4	kg/ha/h	8760	h/y										
WE - Open mining area - Houston	86,880	25	ha	0.4	kg/ha/h	8760	h/y										
WE - ROM stockpiles	7,358	6	ha	0.4	kg/ha/h	8760	h/y									65	% control
WE - Product stockpiles	52,560	15	ha	0.4	kg/ha/h	8760	h/y										

Table A.5: Year 15 – Drayton South Emissions Calculations

ACTIVITY	TSP emissions (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
WHYNOT	NEW (All)																
Topsoil removal & Site preparation - Dozers on Whynot	26,181	3,129	h/y	16.7	kg/h	10	silt content in %	2	moisture content in %							50	% control
Topsoil removal - Sh/Ex/FELs loading topsoil - Whynot	119	126,612	t/y	0.00188	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %							50	% control
Topsoil removal - Hauling topsoil to emplacement area (east) - Whynot	1,586	63,306	t/y	0.10021	kg/t	222	t/load	275.0	Vehicle gross mass (t)	5.3	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
Topsoil removal - Hauling topsoil to emplacement area (west) - Whynot	1,052	63,306	t/y	0.06644	kg/t	222	t/load	275.0	Vehicle gross mass (t)	3.5	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
Topsoil removal - Emplacing topsoil at emplacement area - Whynot	238	126,612	t/y	0.00188	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %								
OB - Drilling - Whynot	3,571	20,175	holes/y	0.59	kg/hole											70	% control
OB - Blasting - Whynot	18,590	112	blasts/y	166.0857	kg/blast	8291	Area of blast in square metres										
OB - Dozers on Dragline OB in-pit - Whynot	31,819	2,541	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dragline removal of OB - Whynot	305,709	10,287,862	bcm/y	0.0297	kg/m3 (loose)	7	drop distance in m	2.5	moisture content in %								
OB - Dozers on Excavator OB in-pit - Whynot	60,308	4,816	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Excavator loading OB to haul truck - Whynot	28,513	20,694,435	t/y	0.00138	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling excavator OB to emplacement area (east) - Whynot	259,230	10,347,218	t/y	0.10021	kg/t	222	t/load	275.0	Vehicle gross mass (t)	5.3	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Hauling excavator OB to emplacement area (west) - Whynot	171,878	10,347,218	t/y	0.06644	kg/t	222	t/load	275.0	Vehicle gross mass (t)	3.5	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Dozers on OB haul roads (east) - Whynot	13,676	1,092	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers on OB haul roads (west) - Whynot	13,676	1,092	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB- Emplacing excavator OB at emplacement area - Whynot	28,513	20,694,435	t/y	0.00138	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Dozers on OB emplacement area - Whynot	92,128	7,358	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers in-pit ancillary tasks - Whynot	74,194	5,925	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers ripping/pushing/clean-up Partings - Whynot	24,386	1,948	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Loading partings to haul trucks - Whynot	1,787	1,296,741	t/y	0.00138	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling partings to emplacement area (east) - Whynot	16,244	648,370	t/y	0.10021	kg/t	222	t/load	275.0	Vehicle gross mass (t)	5.3	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Hauling partings to emplacement area (west) - Whynot	10,770	648,370	t/y	0.06644	kg/t	222	t/load	275.0	Vehicle gross mass (t)	3.5	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Emplacing Partings at emplacement area - Whynot	1,787	1,296,741	t/y	0.00138	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
CL - Drilling coal and partings - Whynot	2,517	14,220	holes/y	0.5900	kg/hole											70	% control
CL - Blasting coal and partings - Whynot	2,038	64	blasts/y	31.8922	kg/blast	2760	Area of blast in square metres										
CL - Dozers ripping/pushing/clean-up ROM in-pit - Whynot	88,164	6,246	h/y	14.1156	kg/h	5	silt content in %	9	moisture content in %								
CL - Sh/Ex/FELs loading open coal to trucks - Whynot	98,394	2,369,365	t/y	0.04153	kg/t	9	moisture content in %										
CL - Hauling open coal in-pit roads (east) - Whynot	43,269	1,184,683	t/y	0.14610	kg/t	70	t/load	65.0	Vehicle gross mass (t)	5	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad (east) - Whynot	126,527	1,184,683	t/y	0.71202	kg/t	70	t/load	65.0	Vehicle gross mass (t)	23	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Hauling open coal in-pit roads (middle) - Whynot	25,559	1,184,683	t/y	0.08630	kg/t	70	t/load	65.0	Vehicle gross mass (t)	3	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad (middle) - Whynot	168,644	1,184,683	t/y	0.94903	kg/t	70	t/load	65.0	Vehicle gross mass (t)	30	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Unloading ROM to ROM stockpiles/hopper - Whynot	23,694	2,369,365	t/y	0.010	kg/t	70	% control										
CL- Handle coal at CHPP - Whynot	497	2,369,365	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Rehandle ROM coal at stockpiles/hopper - Whynot	2,369	236,937	t/y	0.01	kg/t												
BLAKEFIELD																	
Site preparation - Dozers on Blakefield	2,654	317	h/y	16.7	kg/h	10	silt content in %	2	moisture content in %							50	% control
Topsoil removal - Sh/Ex/FELs loading topsoil - Blakefield	10	10,946	t/y	0.00188	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %							50	% control
Topsoil removal - Hauling topsoil to emplacement area - Blakefield	117	10,946	t/y	0.04293	kg/t	222	t/load	275.0	Vehicle gross mass (t)	2.3	km/return trip	4.177	kg/VKT	3	% silt content	75	% control
Topsoil removal - Emplacing topsoil at emplacement area - Blakefield	21	10,946	t/y	0.00188	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %								
OB - Drilling - Blakefield	415	2,345	holes/y	0.59	kg/hole											70	% control
OB - Blasting - Blakefield	2,160	13	blasts/y	166.0857	kg/blast	8291	Area of blast in square metres										
OB - Dozers on Dragline OB in-pit - Blakefield	4,153	332	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dragline removal of OB - Blakefield	64,652	2,175,707	bcm/y	0.0297	kg/m3 (loose)	7	drop distance in m	2.5	moisture content in %								
OB - Dozers on OB emplacement area - Blakefield	4,153	332	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers in-pit ancillary tasks - Blakefield	3,074	245	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers ripping/pushing/clean-up Partings - Blakefield	546	44	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - loading partings to trucks - Blakefield	94	68,579	t/y	0.00138	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling partings to emplacement area - Blakefield	736	68,579	t/y	0.04293	kg/t	222	t/load	275.0	Vehicle gross mass (t)	2.3	km/return trip	4.177	kg/VKT	3	% silt content	75	% control
OB - Emplacing partings to emplacement area - Blakefield	94	68,579	t/y	0.00138	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
CL - Drilling coal - Blakefield	104	589	holes/y	0.5900	kg/hole											70	% control
CL - Blasting coal - Blakefield	84	3	blasts/y	31.8922	kg/blast	2760	Area of blast in square metres										
CL - Dozers ripping/pushing/clean-up ROM in-pit - Blakefield	2,452	174	h/y	14.1156	kg/h	5	silt content in %	9	moisture content in %								
CL - Sh/Ex/FELs loading open coal to trucks - Blakefield	4,076	98,156	t/y	0.04153	kg/t	9	moisture content in %										
CL - Hauling open coal in-pit roads - Blakefield	1,320	98,156	t/y	0.05381	kg/t	70	t/load	65.0	Vehicle gross mass (t)	1.7	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad - Blakefield	16,700	98,156	t/y	1.13422	kg/t	70	t/load	65.0	Vehicle gross mass (t)	36.4	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Unloading ROM to ROM stockpiles/hopper - Blakefield	982	98,156	t/y	0.010	kg/t	70	% control										
CL - Handle coal at CHPP - Blakefield	21	98,156	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Rehandle ROM coal at stockpiles/hopper - Blakefield	98	9,816	t/y	0.01	kg/t												

ACTIVITY	TSP emissions (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
REDBANK																	
Site preparation - Dozers on Redbank	13,220	1,580	h/y	16.7	kg/h	10	silt content in %	2	moisture content in %							50	% control
Topsoil removal - Sh/Ex/FELs loading topsoil - Redbank	76	81,047	t/y	0.00188	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %							50	% control
Topsoil removal - Hauling topsoil to emplacement area (north) - Redbank	1,464	60,785	t/y	0.09635	kg/t	222	t/load	275.0	Vehicle gross mass (t)	5.1	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
Topsoil removal - Hauling topsoil to emplacement area (south)- Redbank	601	20,262	t/y	0.11872	kg/t	222	t/load	275.0	Vehicle gross mass (t)	6.3	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
Topsoil removal - Emplacing topsoil at emplacement area -Redbank	153	81,047	t/y	0.00188	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %								
OB - Drilling - Redbank	1,814	10,247	holes/y	0.59	kg/hole											70	% control
OB - Blasting - Redbank	9,442	57	blasts/y	166.0857	kg/blast	8291	Area of blast in square metres										
OB - Dozers on Excavator OB in-pit -Redbank	72,556	5,795	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Excavator loading OB to haul truck - Redbank	34,303	24,896,975	t/y	0.00138	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling to emplacement area (north) - Redbank	449,777	18,672,731	t/y	0.09635	kg/t	222	t/load	275.0	Vehicle gross mass (t)	5.1	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Hauling to emplacement area (south) - Redbank	184,735	6,224,244	t/y	0.11872	kg/t	222	t/load	275.0	Vehicle gross mass (t)	6.3	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Dozers on OB haul roads (north) - Redbank	15,517	1,239	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers on OB haul roads (south) - Redbank	15,517	1,239	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB- Emplacing excavator OB at emplacement area - Redbank	34,303	24,896,975	t/y	0.00138	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Dozers on OB emplacement area - Redbank	72,556	5,795	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers in-pit ancillary tasks - Redbank	43,486	3,473	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers ripping/pushing/clean-up Partings -Redbank	9,217	736	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - loading partings to trucks - Redbank	1,115	808,942	t/y	0.00138	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling partings to emplacement area (north) - Redbank	14,614	606,707	t/y	0.09635	kg/t	222	t/load	275.0	Vehicle gross mass (t)	5.1	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Hauling partings to emplacement area (south)- Redbank	6,002	202,236	t/y	0.11872	kg/t	222	t/load	275.0	Vehicle gross mass (t)	6.3	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Emplacing partings to emplacement area - Redbank	1,115	808,942	t/y	0.00138	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
CL - Drilling coal - Redbank	1,475	8,335	holes/y	0.5900	kg/hole											70	% control
CL - Blasting coal - Redbank	1,194	37	blasts/y	31.8922	kg/blast	2760	Area of blast in square metres										
CL - Dozers ripping/pushing/clean-up ROM in-pit - Redbank	41,423	2,935	h/y	14.1156	kg/h	5	silt content in %	9	moisture content in %								
CL - Sh/Ex/FELs loading open coal to trucks - Redbank	57,670	1,388,715	t/y	0.04153	kg/t	9	moisture content in %										
CL - Hauling open coal in-pit roads - Redbank	111,553	1,388,715	t/y	0.32131	kg/t	70	t/load	65.0	Vehicle gross mass (t)	10.3	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad - Redbank	207,755	1,388,715	t/y	0.99735	kg/t	70	t/load	65.0	Vehicle gross mass (t)	32.0	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Unloading ROM to ROM stockpiles/hopper -Redbank	4,166	1,388,715	t/y	0.010	kg/t											70	% control
CL - Handle coal at CHPP - Redbank	291	1,388,715	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Rehandle ROM coal at stockpiles/hopper - Redbank	1,389	138,872	t/y	0.01	kg/t												
HOUSTON																	
Topsoil removal - Dozers/Excavators stripping topsoil - Houston	6,181	739	h/y	16.7	kg/h	10	silt content in %	2	moisture content in %							50	% control
Topsoil removal - Sh/Ex/FELs loading topsoil - Houston	29	31,129	t/y	0.00188	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %							50	% control
Topsoil removal - Hauling topsoil to emplacement area (east) - Houston	128	15,565	t/y	0.03283	kg/t	222	t/truck load	275.0	Vehicle gross mass (t)	1.7	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
Topsoil removal - Hauling topsoil to emplacement area (west) - Houston	154	15,565	t/y	0.03969	kg/t	222	t/truck load	275.0	Vehicle gross mass (t)	2.1	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
Topsoil removal - Emplacing topsoil at emplacement area - Houston	59	31,129	t/y	0.00188	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %								
OB - Drilling - Houston	836	4,724	holes/y	0.59	kg/hole											70	% control
OB - Blasting - Houston	4,353	26	blasts/y	166.0857	kg/blast	8291	Area of blast in square metres										
OB - Dozers on Dragline OB in-pit - Houston	8,293	662	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dragline removal of OB - Houston	82,210	2,766,556	bcm/y	0.0297	kg/m3 (loose)	7	drop distance in m	2.5	moisture content in %								
OB - Dozers on Excavator OB in-pit - Houston	11,497	918	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Excavator loading OB to haul truck - Houston	5,436	3,945,131	t/y	0.00138	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling to emplacement area (east) - Houston	16,188	1,972,565	t/y	0.03283	kg/t	222	t/load	275.0	Vehicle gross mass (t)	1.7	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Hauling to emplacement area (west) - Houston	19,571	1,972,565	t/y	0.03969	kg/t	222	t/load	275.0	Vehicle gross mass (t)	2.1	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Dozers on OB haul roads (east) - Houston	2,607	208	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers on OB haul roads (west) - Houston	2,607	208	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB- Emplacing at emplacement area - Houston	5,436	3,945,131	t/y	0.00138	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Dozers on OB emplacement area - Houston	19,790	1,581	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers in-pit ancillary tasks - Houston	23,607	1,885	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers ripping/pushing/clean-up Partings - Houston	4,146	331	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Loading partings to trucks - Houston	242	175,692	t/y	0.00138	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling partings to emplacement area (east) - Houston	721	87,846	t/y	0.03283	kg/t	222	t/load	275.0	Vehicle gross mass (t)	1.7	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Hauling partings to emplacement area (west) - Houston	872	87,846	t/y	0.03969	kg/t	222	t/load	275.0	Vehicle gross mass (t)	2.1	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
CL - Emplacing partings at emplacement area - Houston	242	175,692	t/y	0.00138	kg/t	1.59	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
CL - Dozers ripping/pushing/clean-up ROM (in-pit) - Houston	32,124	2,276	h/y	14.1156	kg/h	5	silt content in %	9	moisture content in %								
CL - Sh/Ex/FELs loading open coal to trucks - Houston	31,307	753,885	t/y	0.04153	kg/t	9	moisture content in %										
CL - Hauling open coal in-pit roads (east) - Houston	7,668	376,942	t/y	0.08137	kg/t	70	t/load	65.0	Vehicle gross mass (t)	2.6	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal in-pit roads (west) - Houston	4,454	376,942	t/y	0.04726	kg/t	70	t/load	65.0	Vehicle gross mass (t)	1.5	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad (east) - Houston	45,818	376,942	t/y	0.81035	kg/t	70	t/load	65.0	Vehicle gross mass (t)	26.0	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Hauling open coal to ROM pad (west) - Houston	50,000	376,942	t/y	0.88430	kg/t	70	t/load	65.0	Vehicle gross mass (t)	28.4	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Unloading ROM to ROM stockpiles/hopper - Houston	2,262	753,885	t/y	0.010	kg/t											70	% control
CL - Handle coal at CHPP - Houston	158	753,885	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Rehandle ROM coal at stockpiles/hopper - Houston	754	75,388	t/y	0.01	kg/t												

ACTIVITY	TSP emissions (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
ROM/REJECTS HANDLING																	
CL - Dozers ROM Coal Handling & Rejects - ROM stockpile	81,371	5,765	h/y	14.1156	kg/h	5	silt content in %	9	moisture content in %								
CL - Loading rejects	-	1,152,530	t/y	Rejects very wet therefore no dust													
CL - Transporting rejects	56,510	1,152,530	t/y	0.1961	kg/t	91	t/load	117.9	Vehicle gross mass (t)	6.2	km/return trip	2.85	kg/VKT	3	% silt content	75	% control
CL - Unloading rejects	-	1,152,530	t/y	Rejects very wet therefore no dust													
PRODUCT COAL																	
CL - Loading product stockpile	408	3,437,913	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	11	moisture content in %							25	% control
CL - Loading product coal to trains	545	3,437,913	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	11	moisture content in %								
WIND EROSION																	
WE - OB dump & disturbed area - Uncontrolled	1,306,674	373	ha	0.4	kg/ha/h	8760	h/y										
WE - OB dump & disturbed area - Controlled	72,593	41	ha	0.4	kg/ha/h	8760	h/y									50	% control
WE - Open mining area - Whynot	397,444	113	ha	0.4	kg/ha/h	8760	h/y										
WE - Open mining area - Blakefield	34,361	10	ha	0.4	kg/ha/h	8760	h/y										
WE - Open mining area - Redbank	254,412	73	ha	0.4	kg/ha/h	8760	h/y										
WE - Open mining area - Houston	97,717	28	ha	0.4	kg/ha/h	8760	h/y										
WE - ROM stockpiles	7,358	6	ha	0.4	kg/ha/h	8760	h/y									65	% control
WE - Product stockpiles	52,560	15	ha	0.4	kg/ha/h	8760	h/y										

Table A.6: Year 20 – Drayton South Emissions Calculations

ACTIVITY	TSP emissions (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
WHYNOT	**NEW**																
Topsoil removal & Site preparation - Dozers on Whynot	39,407	4,709	h/y	16.7	kg/h	10	silt content in %	2	moisture content in %							50	% control
Topsoil removal - Sh/Ex/FELs loading topsoil - Whynot	186	194,306	t/y	0.00191	kg/t	1.61	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %							50	% control
Topsoil removal - Hauling topsoil to emplacement area (east) - Whynot	2,930	97,153	t/y	0.121	kg/t	222	t/load	275.0	Vehicle gross mass (t)	6.4	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
Topsoil removal - Hauling topsoil to emplacement area (west) - Whynot	1,670	97,153	t/y	0.069	kg/t	222	t/load	275.0	Vehicle gross mass (t)	3.6	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
Topsoil removal - Emplacing topsoil at emplacement area - Whynot	371	194,306	t/y	0.00191	kg/t	1.61	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %								
OB - Drilling - Whynot	6,156	34,782	holes/y	0.59	kg/hole											70	% control
OB - Blasting - Whynot	32,537	170	blasts/y	191.34	kg/blast	9,112	Area of blast in square metres										
OB - Dozers on Dragline OB in-pit - Whynot	29,219	2,334	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dragline removal of OB - Whynot	341,927	11,506,666	bcm/y	0.030	kg/m3 (loose)	7	drop distance in m	2.5	moisture content in %								
OB - Dozers on Excavotor OB in-pit - Whynot	124,659	9,956	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Excavator loading OB to haul truck - Whynot	59,702	42,691,411	t/y	0.00140	kg/t	1.61	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling excavator OB to emplacement area (east) - Whynot	643,783	21,345,705	t/y	0.12	kg/t	222	t/load	275.0	Vehicle gross mass (t)	6.4	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Hauling excavator OB to emplacement area (west) - Whynot	366,842	21,345,705	t/y	0.07	kg/t	222	t/load	275.0	Vehicle gross mass (t)	3.6	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Dozers on OB haul roads (east) - Whynot	28,268	2,258	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers on OB haul roads (west) - Whynot	28,268	2,258	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Emplacing excavator OB at emplacement area - Whynot	59,702	42,691,411	t/y	0.0014	kg/t	1.61	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Dozers on OB emplacement area - Whynot	153,878	12,289	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers in-pit ancillary tasks - Whynot	97,568	7,792	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers ripping/pushing/clean-up Partings - Whynot	36,735	2,934	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Loading partings to haul trucks - Whynot	2,882	2,061,111	t/y	0.0014	kg/t	1.61	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling partings to emplacement area (east) - Whynot	31,081	1,030,556	t/y	0.121	kg/t	222	t/load	275.0	Vehicle gross mass (t)	6.4	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Hauling partings to emplacement area (west) - Whynot	17,711	1,030,556	t/y	0.069	kg/t	222	t/load	275.0	Vehicle gross mass (t)	3.6	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Emplacing Partings at emplacement area - Whynot	2,882	2,061,111	t/y	0.00140	kg/t	1.61	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
CL - Drilling coal and partings - Whynot	2,698	15,241	holes/y	0.5900	kg/hole											70	% control
CL - Blasting coal and partings - Whynot	6,048	104	blasts/y	58.15	kg/blast	4119	Area of blast in square metres										
CL - Dozers ripping/pushing/clean-up ROM in-pit - Whynot	129,003	9,139	h/y	14.12	kg/h	5	silt content in %	9	moisture content in %								
CL - Sh/Ex/FELs loading open coal to trucks - Whynot	163,526	3,937,754	t/y	0.04	kg/t	9	moisture content in %										
CL - Hauling open coal in-pit roads (east) - Whynot	92,505	1,968,877	t/y	0.19	kg/t	70	t/load	65.0	Vehicle gross mass (t)	6	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad (east) - Whynot	211,073	1,968,877	t/y	0.71	kg/t	70	t/load	65.0	Vehicle gross mass (t)	23	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Hauling open coal in-pit roads (middle) - Whynot	54,171	1,968,877	t/y	0.11	kg/t	70	t/load	65.0	Vehicle gross mass (t)	4	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad (middle) - Whynot	285,526	1,968,877	t/y	0.97	kg/t	70	t/load	65.0	Vehicle gross mass (t)	31	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Unloading ROM to ROM stockpiles/hopper - Whynot	11,813	3,937,754	t/y	0.010	kg/t											70	% control
CL- Handle coal at CHPP - Whynot	826	3,937,754	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Rehandle ROM coal at stockpiles/hopper - Whynot	3,938	393,775	t/y	0.01	kg/t												
BLAKEFIELD																	
CL - Highwall transfer point - Blakefield (Y18)	118	564,492	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Highwall conveyor - Blakefield	16.82	0.0048	ha	0.4	kg/ha/h	8760	h/y										
CL - Sh/Ex/FELs loading open coal to trucks - Blakefield	23,442	564,492	t/y	0.04	kg/t	9	moisture content in %										
CL - Hauling open coal in-pit roads - Blakefield	13,591	564,492	t/y	0.10	kg/t	70	t/load	65.0	Vehicle gross mass (t)	3	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad - Blakefield	93,117	564,492	t/y	1.10	kg/t	70	t/load	65.0	Vehicle gross mass (t)	35	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Unloading ROM to ROM stockpiles/hopper - Blakefield	1,693	564,492	t/y	0.010	kg/t											70	% control
CL- Handle coal at CHPP - Blakefield	118	564,492	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Rehandle ROM coal at stockpiles/hopper - Blakefield	564	56,449	t/y	0.01	kg/t												
REDBANK																	
CL - Highwall transfer point - Redbank (Y20)	189	900,000	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Highwall conveyor - Redbank	17	0.0048	ha	0.4	kg/ha/h	8760	h/y										
CL - Sh/Ex/FELs loading open coal to trucks - Redbank	37,375	900,000	t/y	0.04	kg/t	9	moisture content in %										
CL - Hauling open coal in-pit roads - Redbank	30,570	900,000	t/y	0.14	kg/t	70	t/load	65.0	Vehicle gross mass (t)	4	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad - Redbank	134,642	900,000	t/y	1.00	kg/t	70	t/load	65.0	Vehicle gross mass (t)	32	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Unloading ROM to ROM stockpiles/hopper - Redbank	2,700	900,000	t/y	0.010	kg/t											70	% control
CL- Handle coal at CHPP - Redbank	189	900,000	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Rehandle ROM coal at stockpiles/hopper - Redbank	900	90,000	t/y	0.01	kg/t												

ACTIVITY	TSP emissions (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
HOUSTON																	
Topsoil removal & Site preparation - Dozers on Houston	8,829	1,055	h/y	16.7	kg/h	10	silt content in %	2	moisture content in %							50	% control
Topsoil removal - Sh/Ex/FELs loading topsoil - Houston	18	19,100	t/y	0.0019	kg/t	1.61	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %							50	% control
Topsoil removal - Hauling topsoil to emplacement area (east) - Houston	38	9,550	t/y	0.016	kg/t	222	t/truck load	275.0	Vehicle gross mass (t)	0.8	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
Topsoil removal - Hauling topsoil to emplacement area (west) - Houston	82	9,550	t/y	0.034	kg/t	222	t/truck load	275.0	Vehicle gross mass (t)	1.8	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
Topsoil removal - Emplacing topsoil at emplacement area - Houston	37	19,100	t/y	0.0019	kg/t	1.61	average of (wind speed/2.2)^1.3 in m/s	2	moisture content in %								
OB - Drilling - Houston	1,374	7,763	holes/y	0.59	kg/hole											70	% control
OB - Blasting - Houston	7,262	38	blasts/y	191.34	kg/blast	9,112	Area of blast in square metres										
OB - Dozers on Dragline OB in-pit - Houston	11,572	924	t/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dragline removal of OB - Houston	94,616	3,184,041	bcm/y	0.030	kg/m3 (loose)	7	drop distance in m	2.5	moisture content in %								
OB - Dozers on Excavator OB in-pit - Houston	19,702	1,574	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Excavator loading OB to haul truck - Houston	9,436	6,747,413	t/y	0.0014	kg/t	1.61	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling to emplacement area (east) - Houston	13,414	3,373,706	t/y	0.016	kg/t	222	t/load	275.0	Vehicle gross mass (t)	0.8	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Hauling to emplacement area (west) - Houston	28,863	3,373,706	t/y	0.034	kg/t	222	t/load	275.0	Vehicle gross mass (t)	1.8	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Dozers on OB haul roads - Houston	8,936	714	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Emplacing at emplacement area - Houston	9,436	6,747,413	t/y	0.0014	kg/t	1.61	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Dozers on OB emplacement area - Houston	31,274	2,498	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers in-pit ancillary tasks - Houston	24,493	1,956	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers ripping/pushing/clean-up Partings - Houston	6,883	550	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Loading partings to trucks - Houston	172	123,178	t/y	0.0014	kg/t	1.61	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling partings to emplacement area (east) - Houston	245	61,589	t/y	0.016	kg/t	222	t/load	275.0	Vehicle gross mass (t)	0.8	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Hauling partings to emplacement area (west) - Houston	527	61,589	t/y	0.034	kg/t	222	t/load	275.0	Vehicle gross mass (t)	1.8	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
CL - Emplacing partings at emplacement area - Houston	172	123,178	t/y	0.0014	kg/t	1.61	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
CL - Dozers ripping/pushing/clean-up ROM (in-pit) - Houston	38,467	2,725	t/y	14.12	kg/h	5	silt content in %	9	moisture content in %								
CL - Sh/Ex/FELs loading open coal to trucks - Houston	41,051	988,521	t/y	0.042	kg/t	9	moisture content in %										
CL - Hauling open coal in-pit roads - Houston	20,402	988,521	t/y	0.083	kg/t	70	t/load	65.0	Vehicle gross mass (t)	2.6	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad - Houston	120,481	988,521	t/y	0.81	kg/t	70	t/load	65.0	Vehicle gross mass (t)	26.1	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Unloading ROM to ROM stockpiles/hopper - Houston	2,966	988,521	t/y	0.010	kg/t											70	% control
CL- Handle coal at CHPP - Houston	207	988,521	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Rehandle ROM coal at stockpiles/hopper - Houston	989	98,852	t/y	0.01	kg/t												
ROM/REJECTS HANDLING																	
CL - Dozers ROM Coal Handling & Rejects - ROM stockpile	81,371	5,765	t/y	14.12	kg/h	5	silt content in %	9	moisture content in %								
CL - Loading rejects	-	1,597,692	t/y														
CL - Transporting rejects	78,337	1,597,692	t/y	0.1961	kg/t	91	t/load	117.9	Vehicle gross mass (t)	6.2	km/return trip	2.85	kg/VKT	3	% silt content	75	% control
CL - Unloading rejects	-	1,597,692	t/y														
PRODUCT COAL																	
CL - Loading product stockpile	533	4,487,110	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	11	moisture content in %							25	% control
CL - Loading product coal to trains	711	4,487,110	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	11	moisture content in %								
WIND EROSION																	
WE - OB dump & disturbed area - Uncontrolled	1,065,361	304	ha	0.4	kg/ha/h	8760	h/y										
WE - OB dump & disturbed area - Controlled	59,187	34	ha	0.4	kg/ha/h	8760	h/y									50	% control
WE - Open mining area - Whynot & Redbank	759,293	217	ha	0.4	kg/ha/h	8760	h/y										
WE - Open mining area - Blakefield (Y18)	24,610	7	ha	0.4	kg/ha/h	8760	h/y										
WE - Open mining area - Houston	74,636	21	ha	0.4	kg/ha/h	8760	h/y										
WE - ROM stockpiles	7,358	6	ha	0.4	kg/ha/h	8760	h/y									65	% control
WE - Product stockpiles	52,560	15	ha	0.4	kg/ha/h	8760	h/y										

Table A.7: Year 27 – Drayton South Emissions Calculations

ACTIVITY	TSP emissions (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
WHYNOT	**NEW**																
OB - Drilling - Whynot	3,938	22,247	holes/y	0.59	kg/hole	70	% control										
OB - Blasting - Whynot	7,356	208	blasts/y	35	kg/blast	2956	Area of blast in square metres										
OB - Dozers on Dragline OB in-pit - Whynot	24,434	1,951	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dragline removal of OB - Whynot	209,200	7,040,073	bcm/y	0.0297	kg/m3 (loose	7	drop distance in m	2.5	moisture content in %								
OB - Dozers on OB emplacement area - Whynot	24,434	1,951	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers in-pit ancillary tasks - Whynot	144,449	11,536	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Dozers ripping/pushing/clean-up Partings - Whynot	4,056	324	h/y	12.52	kg/h	10	silt content in %	2.5	moisture content in %								
OB - Loading partings to haul trucks - Whynot	241	172,459	t/y	0.00140	kg/t	1.61	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
OB - Hauling partings to emplacement area (east) - Whynot	2,435	86,229	t/y	0.11295	kg/t	222	t/load	275.0	Vehicle gross mass (t)	6.0	km/return trip	4.18	kg/VKT	3	% silt content	75	% control
OB - Hauling partings to emplacement area (west) - Whynot	717	86,229	t/y	0.03326	kg/t	222	t/load	275.0	Vehicle gross mass (t)	3.4	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
OB - Emplacing Partings at emplacement area - Whynot	241	172,459	t/y	0.00140	kg/t	1.61	average of (wind speed/2.2)^1.3 in m/s	2.5	moisture content in %								
CL - Highwall transfer point - Whynot	128	550,912	t/y	0.0002	kg/t	1.61	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Highwall conveyor - Whynot	17	0.0048	ha	0.4	kg/ha/h	8760	h/y										
CL - Dozers ripping/pushing/clean-up ROM in-pit - Whynot	51,483	3,647	h/y	14.1156	kg/h	5	silt content in %	9	moisture content in %								
CL - Sh/Ex/FELs loading open coal to trucks - Whynot	44,625	1,074,582	t/y	0.04153	kg/t	9	moisture content in %										
CL - Hauling open coal in-pit roads (east) - Whynot	18,585	537,291	t/y	0.13836	kg/t	70	t/load	65.0	Vehicle gross mass (t)	4	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad (east) - Whynot	63,736	537,291	t/y	0.79083	kg/t	70	t/load	65.0	Vehicle gross mass (t)	25	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Hauling open coal in-pit roads (middle) - Whynot	10,897	537,291	t/y	0.08112	kg/t	70	t/load	65.0	Vehicle gross mass (t)	3	km/return trip	2.18	kg/VKT	3	% silt content	75	% control
CL - Hauling open coal to ROM pad (middle) - Whynot	81,802	537,291	t/y	1.01500	kg/t	70	t/load	65.0	Vehicle gross mass (t)	33	km/return trip	2.18	kg/VKT	3	% silt content	85	% control
CL - Unloading ROM to ROM stockpiles/hopper - Whynot	3,224	1,074,582	t/y	0.010	kg/t	70	% control										
CL- Handle coal at CHPP - Whynot	225	1,074,582	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	9	moisture content in %								
CL - Rehandle ROM coal at stockpiles/hopper - Whynot	1,075	107,458	t/y	0.01	kg/t												
ROM/REJECTS HANDLING																	
CL - Dozers ROM Coal Handling & Rejects - ROM stockpile	81,371	5,765	h/y	14.1156	kg/h	5	silt content in %	9	moisture content in %								
CL - Loading rejects	-	268,645	t/y	Rejects very wet therefore no dust													
CL - Transporting rejects	13,172	268,645	t/y	0.1961	kg/t	91	t/load	117.9	Vehicle gross mass (t)	6.2	km/return trip	2.85	kg/VKT	3	% silt content	75	% control
CL - Unloading rejects	-	268,645	t/y	Rejects very wet therefore no dust													
PRODUCT COAL																	
CL - Loading product stockpile	-	-	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	11	moisture content in %	25	% control						
CL - Loading product coal to trains	-	-	t/y	0.0002	kg/t	1.46	average of (wind speed/2.2)^1.3 in m/s	11	moisture content in %								
WIND EROSION																	
WE - OB dump & disturbed area - Uncontrolled	1,159,429	331	ha	0.4	kg/ha/h	8760	h/y										
WE - OB dump & disturbed area - Controlled	64,413	37	ha	0.4	kg/ha/h	8760	h/y	50	% control								
WE - Open mining area - Whynot	192,750	55	ha	0.4	kg/ha/h	8760	h/y										
WE - ROM stockpiles	7,358	6	ha	0.4	kg/ha/h	8760	h/y	65	% control								
WE - Product stockpiles	52,560	15	ha	0.4	kg/ha/h	8760	h/y										

Appendix B. EVIDENCE OF APPENDIX C FILES

Below is an example of the text file (Y5_DS_Emiss_WH.txt) generated from the program that created the variable emission file from the emission inventory for year 5. We can provide the time stamped files as an example for comparison if required.

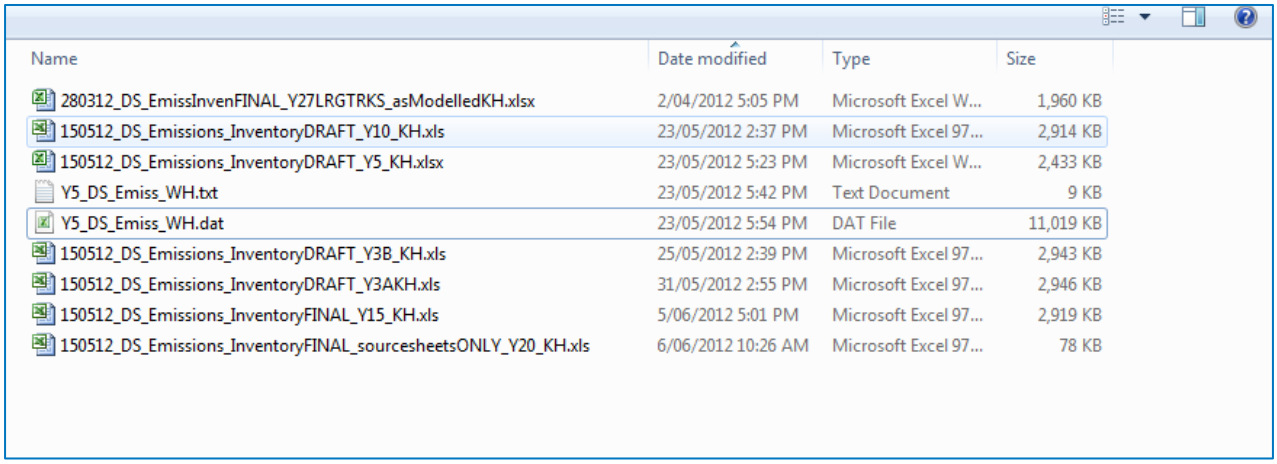
```
-------------------------------      23-May-2012 17:41
  DUST EMISSION CALCULATIONS V2
 -------------------------------

 Output emissions file  : L:\Ajobs 3600-3699\3617b Drayton South
EA\Modelling\CALPUFF\FINAL\YEAR5\VarEmissFiles\Y5_DS_Emiss_WH.dat
 Meteorological file    : L:\Ajobs 3600-3699\3617b Drayton South
EA\Modelling\CALMET\Y5\PRTMET\y5_prtmet_ds_ForEmissFiles.aus
 Number of dust sources : 12
 Number of activities   : 32
 No-blast conditions    : None
 Wind sensitive factor  : 1.576 (1.576 adjusted for activity hours)
 Wind erosion factor    : 62.913

  -----ACTIVITY SUMMARY-----
 ACTIVITY NAME : Topsoil removal & Site preparation - Dozers on Whynot
 ACTIVITY TYPE : Wind insensitive
 DUST EMISSION : 22829 kg/y
 FROM SOURCES  : 5
1 2 3 4 5
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : Topsoil removal - Sh/Ex/FELs loading topsoil - Whynot
 ACTIVITY TYPE : Wind sensitive
 DUST EMISSION : 234 kg/y
 FROM SOURCES  : 5
1 2 3 4 5
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : Topsoil removal - Hauling topsoil to emplacement area (east)  - Whynot
 ACTIVITY TYPE : Wind insensitive
 DUST EMISSION : 2875 kg/y
 FROM SOURCES  : 4
3 4 5 6
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : Topsoil removal - Hauling topsoil to emplacement area (west) - Whynot
 ACTIVITY TYPE : Wind insensitive
 DUST EMISSION : 2567 kg/y
 FROM SOURCES  : 3
1 2 10
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : Topsoil removal - Emplacing topsoil at emplacement area - Whynot
 ACTIVITY TYPE : Wind sensitive
 DUST EMISSION : 469 kg/y
 FROM SOURCES  : 6
7 8 9 10 11 12
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : OB - Drilling - Whynot
 ACTIVITY TYPE : Wind insensitive
 DUST EMISSION : 3283 kg/y
 FROM SOURCES  : 5
1 2 3 4 5
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : OB - Blasting - Whynot
 ACTIVITY TYPE : Wind insensitive
 DUST EMISSION : 22795 kg/y
 FROM SOURCES  : 5
1 2 3 4 5
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : OB - Dozers on Dragline OB in-pit - Whynot
 ACTIVITY TYPE : Wind insensitive
 DUST EMISSION : 26037 kg/y
```

```
 FROM SOURCES  : 3
3 4 5
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : OB - Dragline removal of OB   - Whynot
 ACTIVITY TYPE : Wind insensitive
 DUST EMISSION : 212061 kg/y
 FROM SOURCES  : 6
3 4 5 6 7 8
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : OB - Dozers on Excavotor OB in-pit - Whynot
 ACTIVITY TYPE : Wind insensitive
 DUST EMISSION : 68533 kg/y
 FROM SOURCES  : 2
1 2
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : OB - Excavator loading OB to haul truck  - Whynot
 ACTIVITY TYPE : Wind sensitive
 DUST EMISSION : 32089 kg/y
 FROM SOURCES  : 2
1 2
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : OB - Hauling excavator OB to emplacement area (east) - Whynot
 ACTIVITY TYPE : Wind insensitive
 DUST EMISSION : 269007 kg/y
 FROM SOURCES  : 4
3 4 5 6
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : OB - Hauling excavator OB to emplacement area (west) - Whynot
 ACTIVITY TYPE : Wind insensitive
 DUST EMISSION : 240226 kg/y
 FROM SOURCES  : 3
1 2 10
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : OB - Dozers on OB haul roads (east) - Whynot
 ACTIVITY TYPE : Wind insensitive
 DUST EMISSION : 15541 kg/y
 FROM SOURCES  : 4
3 4 5 6
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : OB - Dozers on OB haul roads (west) - Whynot
 ACTIVITY TYPE : Wind insensitive
 DUST EMISSION : 15541 kg/y
 FROM SOURCES  : 3
1 2 10
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : OB-  Emplacing excavator OB at emplacement area  - Whynot
 ACTIVITY TYPE : Wind sensitive
 DUST EMISSION : 32089 kg/y
 FROM SOURCES  : 7
6 7 8 9 10 11 12
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : OB - Dozers on OB emplacement area - Whynot
 ACTIVITY TYPE : Wind insensitive
 DUST EMISSION : 94570 kg/y
 FROM SOURCES  : 7
6 7 8 9 10 11 12
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : OB - Dozers in-pit ancillary tasks  - Whynot
 ACTIVITY TYPE : Wind insensitive
```

```
 DUST EMISSION : 55308 kg/y
 FROM SOURCES  : 5
1 2 3 4 5
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : OB - Dozers ripping/pushing/clean-up Partings - Whynot
 ACTIVITY TYPE : Wind insensitive
 DUST EMISSION : 23575 kg/y
 FROM SOURCES  : 5
1 2 3 4 5
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : OB - Loading partings to haul trucks  - Whynot
 ACTIVITY TYPE : Wind sensitive
 DUST EMISSION : 1516 kg/y
 FROM SOURCES  : 5
1 2 3 4 5
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : OB - Hauling partings to emplacement area (east) - Whynot
 ACTIVITY TYPE : Wind insensitive
 DUST EMISSION : 12711 kg/y
 FROM SOURCES  : 4
3 4 5 6
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : OB - Hauling partings to emplacement area (west) - Whynot
 ACTIVITY TYPE : Wind insensitive
 DUST EMISSION : 11351 kg/y
 FROM SOURCES  : 3
1 2 10
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : OB - Emplacing Partings at emplacement area  - Whynot
 ACTIVITY TYPE : Wind sensitive
 DUST EMISSION : 1516 kg/y
 FROM SOURCES  : 7
6 7 8 9 10 11 12
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : CL - Drilling coal and partings - Whynot
 ACTIVITY TYPE : Wind insensitive
 DUST EMISSION : 1688 kg/y
 FROM SOURCES  : 5
1 2 3 4 5
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : CL - Blasting coal and partings - Whynot
 ACTIVITY TYPE : Wind insensitive
 DUST EMISSION : 4982 kg/y
 FROM SOURCES  : 5
1 2 3 4 5
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : CL - Dozers ripping/pushing/clean-up ROM in-pit - Whynot
 ACTIVITY TYPE : Wind insensitive
 DUST EMISSION : 76106 kg/y
 FROM SOURCES  : 5
1 2 3 4 5
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : CL - Sh/Ex/FELs loading open coal to trucks - Whynot
 ACTIVITY TYPE : Wind insensitive
 DUST EMISSION : 83142 kg/y
 FROM SOURCES  : 5
1 2 3 4 5
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : CL - Hauling open  coal in-pit roads (east) - Whynot
```

```
 ACTIVITY TYPE : Wind insensitive
 DUST EMISSION : 23329 kg/y
 FROM SOURCES  : 3
3 4 5
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : CL - Hauling open  coal in-pit roads (middle) - Whynot
 ACTIVITY TYPE : Wind insensitive
 DUST EMISSION : 20630 kg/y
 FROM SOURCES  : 2
1 2
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : WE - OB dump & disturbed area - Whynot - Uncontrolled
 ACTIVITY TYPE : Wind erosion
 DUST EMISSION : 284833 kg/y
 FROM SOURCES  : 7
6 7 8 9 10 11 12
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : WE - OB dump & disturbed area - Whynot  - Controlled
 ACTIVITY TYPE : Wind erosion
 DUST EMISSION : 15824 kg/y
 FROM SOURCES  : 7
6 7 8 9 10 11 12
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 ACTIVITY NAME : WE - Open mining area- Whynot
 ACTIVITY TYPE : Wind erosion
 DUST EMISSION : 281582 kg/y
 FROM SOURCES  : 5
1 2 3 4 5
 HOURS OF DAY  :
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

 EXCEL source file      : L:\Ajobs 3600-3699\3617b Drayton South
EA\Emissions\FINALY3_Y10\150512_DS_Emissions_InventoryFINAL_Y5_KH.xls
 Source location file   : L:\Ajobs 3600-3699\3617b Drayton South
EA\Modelling\CALPUFF\FINAL\YEAR5\Sources\DS_Y5_Sources_WH.csv
```

Below is a snap shot of the timestamps of the files created for the final modelling. Note that the Y5_DS_Emiss_WH.txt file was created and same time as the Y5_DS_Emiss_WH.dat, however the .dat files headers are edited after it is created so it has a slightly later time stamp.



Name	Date modified	Type	Size
280312_DS_EmissInvenFINAL_Y27LRGTRKS_asModelledKH.xlsx	2/04/2012 5:05 PM	Microsoft Excel W...	1,960 KB
150512_DS_Emissions_InventoryDRAFT_Y10_KH.xls	23/05/2012 2:37 PM	Microsoft Excel 97...	2,914 KB
150512_DS_Emissions_InventoryDRAFT_Y5_KH.xlsx	23/05/2012 5:23 PM	Microsoft Excel W...	2,433 KB
Y5_DS_Emiss_WH.txt	23/05/2012 5:42 PM	Text Document	9 KB
Y5_DS_Emiss_WH.dat	23/05/2012 5:54 PM	DAT File	11,019 KB
150512_DS_Emissions_InventoryDRAFT_Y3B_KH.xls	25/05/2012 2:39 PM	Microsoft Excel 97...	2,943 KB
150512_DS_Emissions_InventoryDRAFT_Y3AKH.xls	31/05/2012 2:55 PM	Microsoft Excel 97...	2,946 KB
150512_DS_Emissions_InventoryFINAL_Y15_KH.xls	5/06/2012 5:01 PM	Microsoft Excel 97...	2,919 KB
150512_DS_Emissions_InventoryFINAL_sourcesheetsONLY_Y20_KH.xls	6/06/2012 10:26 AM	Microsoft Excel 97...	78 KB

Appendix C. SOURCE ALLOCATION

Table C.1: Year 3A – Drayton South Source Allocation

Activity	Source				
Topsoil Removal & Site preparation - Dozers on Whynot	1 - 5				
Topsoil removal - Sh/Cx/FELs loading topsoil - Whynot	1 - 5				
Topsoil removal - Hauling topsoil to emplacement area (east) - Whynot	3 - 5	8			
Topsoil removal - Hauling topsoil to emplacement area (west) - Whynot	1	2	6		
Topsoil removal - Emplacing topsoil at emplacement area - Whynot	6 - 8	23			
OB - Drilling - Whynot	1 - 5				
OB - Blasting - Whynot	1 - 5				
OB - Dozers on Dragline OB in-pit - Whynot	3 - 5				
OB - Dragline removal of OB - Whynot	3 - 5	7	8		
OB - Dozers on Excavator OB in-pit - Whynot	1	2			
OB - Excavator loading OB to haul truck - Whynot	1	2			
OB - Hauling excavator OB to emplacement area (east) - Whynot	3 - 5	8			
OB - Hauling excavator OB to emplacement area (west) - Whynot	1	2	6		
OB - Dozers on OB haul roads (east) - Whynot	3 - 5	8			
OB - Dozers on OB haul roads (west) - Whynot	1	2	6		
OB - Emplacing excavator OB at emplacement area - Whynot	6 - 8	23			
OB - Dozers on OB emplacement area - Whynot	6 - 8	23			
OB - Dozers in-pit ancillary tasks - Whynot	1 - 5				
OB - Dozers ripping/pushing/clean-up Partings - Whynot	1 - 5				
OB - Loading partings to haul trucks - Whynot	1 - 5				
OB - Hauling partings to emplacement area (east) - Whynot	3 - 5	8			
OB - Hauling partings to emplacement area (west) - Whynot	1	2	6		
OB - Emplacing Partings at emplacement area - Whynot	6 - 8	23			
CL - Drilling coal - Whynot	1 - 5				
CL - Blasting coal - Whynot	1 - 5				
CL - Dozers ripping/pushing/clean-up ROM in-pit - Whynot	1 - 5				
CL - Sh/Cx/FCLs loading open coal to trucks - Whynot	1 - 5				
CL - Hauling open coal in-pit roads (east) - Whynot	3 - 5				
CL - Hauling open coal to ROM pad (east) - Whynot	25 - 28	43 - 53			
CL - Hauling open coal in-pit roads (middle) - Whynot	1	2			
CL - Hauling open coal to ROM pad (middle) - Whynot	23 - 28	43 - 53			
CL - Unloading ROM to ROM stockpiles/hopper - Whynot	54				
CL - Handle coal at CHPP - Whynot	55				
CL - Rehandle ROM coal at stockpiles/hopper - Whynot	54				
Topsoil removal & site preparation - Dozers on Blakefield	9	10			
Topsoil removal - Sh/Ex/FELs loading topsoil - Blakefield	9	10			
Topsoil removal - Hauling topsoil to emplacement area - Blakefield	9 - 11				
Topsoil removal - Emplacing topsoil at emplacement area - Blakefield	11 - 13				
OB - Drilling - Blakefield	9	10			
OB - Blasting for excavator removal - Blakefield	9	10			
OB - Dozers on Dragline OB in-pit - Blakefield	10				
OB - Dragline removal of OB - Blakefield	10 - 12				
OB - Dozers on Excavator OB in-pit - Blakefield	9				
OB - Excavator loading OB to haul truck - Blakefield	9				
OB - Hauling to emplacement area - Blakefield	9	11			
OB - Dozers on OB haul roads - Blakefield	9 - 11				
OB - Emplacing at emplacement area - Blakefield	11 - 13				
OB - Dozers on OB emplacement area - Blakefield	11 - 13				
OB - Dozers in-pit ancillary tasks - Blakefield	9	10			
OB - Dozers ripping/pushing/clean-up Partings - Blakefield	9	10			
OB - Loading partings to trucks - Blakefield	9	10			
OB - Hauling partings to emplacement area - Blakefield	9 - 11				
OB - Emplacing partings at emplacement area - Blakefield	11 - 13				
CL - Drilling coal - Blakefield	9	10			
CL - Blasting coal - Blakefield	9	10			
CL - Dozers ripping/pushing/clean-up ROM in-pit - Blakefield	9	10			
CL - Sh/Cx/FCLs loading open coal to trucks - Blakefield	9	10			
CL - Hauling open coal in-pits roads - Blakefield	9	10			
CL - Hauling open coal to ROM pad - Blakefield	13	22	24 - 28	43 - 53	
CL - Unloading ROM to ROM stockpiles/hopper - Blakefield	54				
CL - Handle coal at CHPP - Blakefield	55				
CL - Rehandle ROM coal at stockpiles/hopper - Blakefield	54				

Activity	Source				
Topsoil removal - Dozers/Excavators stripping topsoil - Redbank	14 - 17				
Topsoil removal - Sh/Ex/FELs loading topsoil - Redbank	14 - 17				
Topsoil removal - Hauling topsoil to emplacement area (north) - Redbank	15 - 18				
Topsoil removal - Hauling topsoil to emplacement area (south) - Redbank	14	15	21		
Topsoil removal - Emplacing topsoil at emplacement area - Redbank	18	20	21		
OB - Drilling for excavator removal - Redbank	14 - 17				
OB - Blasting for excavator removal - Redbank	14 - 17				
OB - Dozers on Excavator OB in-pit - Redbank	14 - 17				
OB - Excavator loading OB to haul truck - Redbank	14 - 17				
OB - Hauling to emplacement area (north) - Redbank	15 - 18				
OB - Hauling to emplacement area (south) - Redbank	14	15	21		
OB - Dozers on OB haul roads (north) - Redbank	15 - 18				
OB - Dozers on OB haul roads (south) - Redbank	14	15	21		
OB - Emplacing at emplacement area - Redbank	18	20	21		
OB - Dozers on OB emplacement area -Redbank	18	20	21		
OB - Dozers in-pit ancillary tasks - Redbank	14 - 17				
OB - Dozers ripping/pushing/clean-up Partings - Redbank	14 - 17				
OB - Loading partings to trucks - Redbank	14 - 17				
OB - Hauling partings to emplacement area (north) - Redbank	15 - 18				
OB - Hauling partings to emplacement area (south) - Redbank	14	15	21		
OB - Emplacing partings at emplacement area - Redbank	18	20	21		
CL - Drilling coal - Redbank	14 - 17				
CL - Blasting coal - Redbank	14 - 17				
CL - Dozers ripping/pushing/clean-up ROM in-pit - Redbank	14 - 17				
CL - Sh/Cx/FCLs loading open coal to trucks - Redbank	14 - 17				
CL - Hauling open coal in-pits roads - Redbank	14 - 17				
CL - Hauling open coal to ROM pad - Redbank	19	22	24 - 28	43 - 53	
CL - Unloading ROM to ROM stockpiles/hopper - Redbank	54				
CL - Handle coal at CHPP - Redbank	55				
CL - Rehandle ROM coal at stockpiles/hopper - Redbank	54				
Topsoil Removal - Dozers/Excavators stripping topsoil - Houston	31	32			
Topsoil removal - Sh/Ex/FELs loading topsoil - Houston	31	32			
Topsoil removal - Hauling topsoil to emplacement area - Houston	31	32	39		
Topsoil removal - Emplacing topsoil at emplacement area - Houston	29	30	33	34	36 - 39
OB - Drilling for excavator removal - Houston	31	32			
OB - Blasting for excavator removal - Houston	31	32			
OB - Dozers on Excavator OB in-pit - Houston	31	32			
OB - Excavator loading OB to haul truck - Houston	31	32			
OB - Hauling to emplacement area - Houston	31	32	39		
OB - Dozers on OB haul roads - Houston	31	32	39		
OB - Emplacing at emplacement area - Houston	29	30	33	34	36 - 39
OB - Dozers on OB emplacement area - Houston	29	30	33	34	36 - 39
OB - Dozers in-pit ancillary tasks - Houston	31	32			
OB - Dozers ripping/pushing/clean-up Partings - Houston	31	32			
OB - Loading partings to trucks - Houston	31	32			
OB - Hauling partings to emplacement area - Houston	31	32	39		
OB - Emplacing partings at emplacement area - Houston	29	30	33	34	36 - 39
CL - Dozers ripping/pushing/clean-up ROM in-pit - Houston	31	32			
CL - Sh/Cx/FCLs loading open coal to trucks - Houston	31	32			
CL - Hauling open coal in-pits roads (east) - Houston	29	30	32		
CL - Hauling open coal in-pits roads (west) - Houston	31				
CL - Hauling open coal to ROM pad (east) - Houston	28	40 - 53			
CL - Hauling open coal to ROM pad (west) - Houston	28	33	34	35	41 - 53
CL - Unloading ROM to ROM stockpiles/hopper - Houston	54				
CL - Handle coal at CHPP - Houston	55				
CL - Rehandle ROM coal at stockpiles/hopper - Houston	54				
CL - Dozers ROM Coal Handling & Rejects - ROM stockpile	54	55			
CL - Loading rejects	55				
CL - Transporting rejects	51	58	59		
CL - Unloading rejects	60				
CL - Loading product stockpile	56				
CL - Loading product coal to trains	57				

Activity	Source				
WE - OB dump & disturbed area - Whynot - Uncontrolled	6 - 8	23			
WE - OB dump & disturbed area - Whynot - Controlled	6 - 8	23			
WE - OB dump& disturbed area - Blakefield - Uncontrolled	11 - 13				
WE - OB dump& disturbed area - Blakefield - Controlled	11 - 13				
WE - OB dump& disturbed area - Redbank - Uncontrolled	18	20	21		
WE - OB dump& disturbed area - Redbank - Controlled	18	20	21		
WE - OB dump& disturbed area - Houston - Uncontrolled	29	30	33	34	36 - 39
WE - OB dump& disturbed area - Houston- Controlled	29	30	33	34	36 - 39
WE - Open mining area - Whynot	1 - 5	5			
WE - Open mining area - Blakefield	9	10			
WE - Open mining area - Redbank	14 - 17				
WE - Open mining area - Houston	31	32			
WE - ROM stockpiles	54				
WE - Product stockpiles	56				

Table C.2: Year 3B – Drayton South Source Allocation

Activity	Source																		
Topsoil Removal & Site preparation - Dozers on Whynot	1	2	3	4	5														
Topsoil removal - Sh/Cx/FELs loading topsoil - Whynot	1	2	3	4	5														
Topsoil removal - Hauling topsoil to emplacement area (east) - Whynot	3	4	5	8															
Topsoil removal - Hauling topsoil to emplacement area (west) - Whynot	1	2	6																
Topsoil removal - Emplacing topsoil at emplacement area - Whynot	6	7	8	23															
OB - Drilling - Whynot	1	2	3	4	5														
OB - Blasting - Whynot	1	2	3	4	5														
OB - Dozers on Dragline OB in-pit - Whynot	3	4	5																
OB - Dragline removal of OB - Whynot	3	4	5	7	8														
OB - Dozers on Excavator OB in-pit - Whynot	1	2																	
OB - Excavator loading OB to haul truck - Whynot	1	2																	
OB - Hauling excavator OB to emplacement area (east) - Whynot	3	4	5	8															
OB - Hauling excavator OB to emplacement area (west) - Whynot	1	2	6																
OB - Dozers on OB haul roads (east) - Whynot	3	4	5	8															
OB - Dozers on OB haul roads (west) - Whynot	1	2	6																
OB - Emplacing excavator OB at emplacement area - Whynot	6	7	8	23															
OB - Dozers on OB emplacement area - Whynot	6	7	8	23															
OB - Dozers in-pit ancillary tasks - Whynot	1	2	3	4	5														
OB - Dozers ripping/pushing/clean-up Partings - Whynot	1	2	3	4	5														
OB - Loading partings to haul trucks - Whynot	1	2	3	4	5														
OB - Hauling partings to emplacement area (east) - Whynot	3	4	5	8															
OB - Hauling partings to emplacement area (west) - Whynot	1	2	6																
OB - Emplacing Partings at emplacement area - Whynot	6	7	8	23															
CL - Drilling coal - Whynot	1	2	3	4	5														
CL - Blasting coal - Whynot	1	2	3	4	5														
CL - Dozers ripping/pushing/clean-up ROM in-pit - Whynot	1	2	3	4	5														
CL - Sh/Cx/FCLs loading open coal to trucks - Whynot	1	2	3	4	5														
CL - Hauling open coal in-pit roads (east) - Whynot	3	4	5																
CL - Hauling open coal to ROM pad (east) - Whynot	25	26	27	28	42	43	44	45	46	47	48	49	50	51	52				
CL - Hauling open coal in-pit roads (middle) - Whynot	1	2																	
CL - Hauling open coal to ROM pad (middle) - Whynot	23	24	25	26	27	28	42	43	44	45	46	47	48	49	50	51	52		
CL - Unloading ROM to ROM stockpiles/hopper - Whynot	53																		
CL - Handle coal at CHPP - Whynot	54																		
CL - Rehandle ROM coal at stockpiles/hopper - Whynot	53																		
Site preparation - Dozers on Blakefield	9	10																	
Topsoil removal - Sh/Ex/FELs loading topsoil - Blakefield	9	10																	
Topsoil removal - Hauling topsoil to emplacement area - Blakefield	9	10	11																
Topsoil removal - Emplacing topsoil at emplacement area - Blakefield	11	12	13																
OB - Drilling - Blakefield	9	10																	
OB - Blasting for excavator removal - Blakefield	9	10																	
OB - Dozers on Dragline OB in-pit - Blakefield	10																		
OB - Dragline removal of OB - Blakefield	10	11	12																
OB - Dozers on Excavator OB in-pit - Blakefield	9																		
OB - Excavator loading OB to haul truck - Blakefield	9																		
OB - Hauling to emplacement area - Blakefield	9	11																	
OB - Dozers on OB haul roads - Blakefield	9	10	11																
OB - Emplacing at emplacement area - Blakefield	11	12	13																
OB - Dozers on OB emplacement area -Blakefield	11	12	13																
OB - Dozers in-pit ancillary tasks - Blakefield	9	10																	
OB - Dozers ripping/pushing/clean-up Partings - Blakefield	9	10																	
OB - Loading partings to trucks - Blakefield	9	10																	
OB - Hauling partings to emplacement area - Blakefield	9	10	11																
OB - Emplacing partings at emplacement area - Blakefield	11	12	13																
CL - Drilling coal - Blakefield	9	10																	
CL - Blasting coal - Blakefield	9	10																	
CL - Dozers ripping/pushing/clean-up ROM in-pit - Blakefield	9	10																	
CL - Sh/Cx/FCLs loading open coal to trucks - Blakefield	9	10																	
CL - Hauling open coal in-pits roads - Blakefield	9	10																	
CL - Hauling open coal to ROM pad - Blakefield	13	22	24	25	26	27	28	42	43	44	45	46	47	48	49	50	51	52	
CL - Unloading ROM to ROM stockpiles/hopper - Blakefield	53																		
CL - Handle coal at CHPP - Blakefield	54																		
CL - Rehandle ROM coal at stockpiles/hopper - Blakefield	53																		

Activity	Source																	
Topsoil removal - Dozers/Excavators stripping topsoil - Redbank	14	15	16	17														
Topsoil removal - Sh/Ex/FELs loading topsoil - Redbank	14	15	16	17														
Topsoil removal - Hauling topsoil to emplacement area (north) - Redbank	15	16	17	18														
Topsoil removal - Hauling topsoil to emplacement area (south) - Redbank	14	15	21															
Topsoil removal - Emplacing topsoil at emplacement area - Redbank	18	20	21															
OB - Drilling for excavator removal - Redbank	14	15	16	17														
OB - Blasting for excavator removal - Redbank	14	15	16	17														
OB - Dozers on Excavator OB in-pit - Redbank	14	15	16	17														
OB - Excavator loading OB to haul truck - Redbank	14	15	16	17														
OB - Hauling to emplacement area (north) - Redbank	15	16	17	18														
OB - Hauling to emplacement area (south) - Redbank	14	15	21															
OB - Dozers on OB haul roads (north) - Redbank	15	16	17	18														
OB - Dozers on OB haul roads (south) - Redbank	14	15	21															
OB - Emplacing at emplacement area - Redbank	18	20	21															
OB - Dozers on OB emplacement area -Redbank	18	20	21															
OB - Dozers in-pit ancillary tasks - Redbank	14	15	16	17														
OB - Dozers ripping/pushing/clean-up Partings - Redbank	14	15	16	17														
OB - Loading partings to trucks - Redbank	14	15	16	17														
OB - Hauling partings to emplacement area (north) - Redbank	15	16	17	18														
OB - Hauling partings to emplacement area (south) - Redbank	14	15	21															
OB - Emplacing partings at emplacement area - Redbank	18	20	21															
CL - Drilling coal - Redbank	14	15	16	17														
CL - Blasting coal - Redbank	14	15	16	17														
CL - Dozers ripping/pushing/clean-up ROM in-pit - Redbank	14	15	16	17														
CL - Sh/Cx/FCLs loading open coal to trucks - Redbank	14	15	16	17														
CL - Hauling open coal in-pits roads - Redbank	14	15	16	17														
CL - Hauling open coal to ROM pad - Redbank	19	22	24	25	26	27	28	42	43	44	45	46	47	48	49	50	51	52
CL - Unloading ROM to ROM stockpiles/hopper - Redbank	53																	
CL - Handle coal at CHPP - Redbank	54																	
CL - Rehandle ROM coal at stockpiles/hopper - Redbank	53																	
Topsoil Removal - Dozers/Excavators stripping topsoil - Houston	31	32																
Topsoil removal - Sh/Ex/FELs loading topsoil - Houston	31	32																
Topsoil removal - Hauling topsoil to emplacement area - Houston	31	32	38															
Topsoil removal - Emplacing topsoil at emplacement area - Houston	29	30	33	34	36	37	38											
OB - Drilling for excavator removal - Houston	31	32																
OB - Blasting for excavator removal - Houston	31	32																
OB - Dozers on Excavator OB in-pit - Houston	31	32																
OB - Excavator loading OB to haul truck - Houston	31	32																
OB - Hauling to emplacement area - Houston	31	32	38															
OB - Dozers on OB haul roads - Houston	31	32	38															
OB - Emplacing at emplacement area - Houston	29	30	33	34	36	37	38											
OB - Dozers on OB emplacement area - Houston	29	30	33	34	36	37	38											
OB - Dozers in-pit ancillary tasks - Houston	31	32																
OB - Dozers ripping/pushing/clean-up Partings - Houston	31	32																
OB - Loading partings to trucks - Houston	31	32																
OB - Hauling partings to emplacement area - Houston	31	32	38															
OB - Emplacing partings at emplacement area - Houston	29	30	33	34	36	37	38											
CL - Dozers ripping/pushing/clean-up ROM in-pit - Houston	31	32																
CL - Sh/Cx/FCLs loading open coal to trucks - Houston	31	32																
CL - Hauling open coal in-pits roads (east) - Houston	31																	
CL - Hauling open coal in-pits roads (west) - Houston	29	30	32															
CL - Hauling open coal to ROM pad (east) - Houston	28	39	40	41	42	43	44	45	46	47	48	49	50	51	52			
CL - Hauling open coal to ROM pad (west) - Houston	28	33	34	35	40	41	42	43	44	45	46	47	48	49	50	51	52	
CL - Unloading ROM to ROM stockpiles/hopper - Houston	53																	
CL - Handle coal at CHPP - Houston	54																	
CL - Rehandle ROM coal at stockpiles/hopper - Houston	53																	
CL - Dozers ROM Coal Handling & Rejects - ROM stockpile	53	54																
CL - Loading rejects	54																	
CL - Transporting rejects	50	57	58															
CL - Unloading rejects	59																	
CL - Loading product stockpile	55																	
CL - Loading product coal to trains	56																	

Activity	Source																							
WE - OB dump & disturbed area - Whynot - Uncontrolled	6	7	8	23																				
WE - OB dump & disturbed area - Whynot - Controlled	6	7	8	23																				
WE - OB dump & disturbed area - Blakefield - Uncontrolled	11	12	13																					
WE - OB dump & disturbed area - Blakefield - Controlled	11	12	13																					
WE - OB dump& disturbed area - Redbank - Uncontrolled	18	20	21																					
WE - OB dump& disturbed area - Redbank - Controlled	18	20	21																					
WE - OB dump& disturbed area - Houston - Uncontrolled	29	30	33	34	36	37	38																	
WE - OB dump& disturbed area - Houston- Controlled	29	30	33	34	36	37	38																	
WE - Open mining area- Whynot	1	2	3	4	5																			
WE - Open mining area - Blakefield	9	10																						
WE - Open mining area - Redbank	14	15	16	17																				
WE - Open mining area - Houston	31	32																						
WE - ROM stockpiles	53																							
WE - Product stockpiles	55																							

Table C.3: Year 5 – Drayton South Source Allocation

Activity	Source
Topsoil removal & Site preparation - Dozers on Whynot	1 2 3 4 5
Topsoil removal - Sh/Ex/FELs loading topsoil - Whynot	1 2 3 4 5
Topsoil removal - Hauling topsoil to emplacement area (east) - Whynot	3 4 5 6
Topsoil removal - Hauling topsoil to emplacement area (west) - Whynot	1 2 10
Topsoil removal - Emplacing topsoil at emplacement area - Whynot	7 8 9 10 11 47
OB - Drilling - Whynot	1 2 3 4 5
OB - Blasting - Whynot	1 2 3 4 5
OB - Dozers on Dragline OB in-pit - Whynot	3 4 5
OB - Dragline removal of OB - Whynot	3 4 5 6 7 8
OB - Dozers on Excavator OB in-pit - Whynot	1 2
OB - Excavator loading OB to haul truck - Whynot	1 2
OB - Hauling excavator OB to emplacement area (east) - Whynot	3 4 5 6
OB - Hauling excavator OB to emplacement area (west) - Whynot	1 2 10
OB - Dozers on OB haul roads (east) - Whynot	3 4 5 6
OB - Dozers on OB haul roads (west) - Whynot	1 2 10
OB- Emplacing excavator OB at emplacement area - Whynot	6 7 8 9 10 11 47
OB - Dozers on OB emplacement area - Whynot	6 7 8 9 10 11 47
OB - Dozers in-pit ancillary tasks - Whynot	1 2 3 4 5
OB - Dozers ripping/pushing/clean-up Partings - Whynot	1 2 3 4 5
OB - Loading partings to haul trucks - Whynot	1 2 3 4 5
OB - Hauling partings to emplacement area (east) - Whynot	3 4 5 6
OB - Hauling partings to emplacement area (west) - Whynot	1 2 10
OB - Emplacing Partings at emplacement area - Whynot	6 7 8 9 10 11 47
CL - Drilling coal and partings - Whynot	1 2 3 4 5
CL - Blasting coal and partings - Whynot	1 2 3 4 5
CL - Dozers ripping/pushing/clean-up ROM in-pit - Whynot	1 2 3 4 5
CL - Sh/Ex/FELs loading open coal to trucks - Whynot	1 2 3 4 5
CL - Hauling open coal in-pit roads (east) - Whynot	3 4 5
CL - Hauling open coal to ROM pad (east) - Whynot	6 49 50 51 55 56 57 58 59 60 61 62 63 64 65
CL - Hauling open coal in-pit roads (middle) - Whynot	1 2
CL - Hauling open coal to ROM pad (middle) - Whynot	47 48 49 50 51 55 56 57 58 59 60 61 62 63 64 65
CL - Unloading ROM to ROM stockpiles/hopper - Whynot	66
CL- Handle coal at CHPP - Whynot	67
CL - Rehandle ROM coal at stockpiles/hopper - Whynot	66
Topsoil removal & Site preparation - Dozers on Blakefield	12 13 14 15 16
Topsoil removal - Sh/Ex/FELs loading topsoil - Blakefield	12 13 14 15 16
Topsoil removal - Hauling (25%) topsoil to emplacement area - Blakefield (east)	15 16 17
Topsoil removal - Hauling (75%) topsoil to emplacement area - Blakefield (west)	12 13 14 19 41
Topsoil removal - Emplacing topsoil at emplacement area - Blakefield	17 18 19 41
OB - Drilling - Blakefield	12 13 14 15 16
OB - Blasting - Blakefield	12 13 14 15 16
OB - Dozers on Dragline OB in-pit - Blakefield	12 13 14
OB - Dragline removal of OB - Blakefield	12 13 14 18 19
OB - Dozers on Excavator OB in-pit - Blakefield	15 16
OB - Excavator loading OB to haul truck - Blakefield	15 16
OB - Hauling excavator (25%) OB to emplacement area - Blakefield (east)	15 16 17
OB - Hauling excavator (75%) OB to emplacement area - Blakefield (west)	12 13 14 19 41
OB - Dozers on OB haul roads (east) - Blakefield	15 16 17
OB - Dozers on OB haul roads (west) - Blakefield	12 13 14 19 41
OB - Emplacing excavator OB at emplacement area - Blakefield	17 18 19 41
OB - Dozers on OB emplacement area - Blakefield	17 18 19 41
OB - Dozers in-pit ancillary tasks - Blakefield	12 13 14 15 16
OB - Dozers ripping/pushing/clean-up Partings - Blakefield	12 13 14 15 16
OB - loading partings to trucks - Blakefield	12 13 14 15 16
OB - Hauling (25%) partings to emplacement area - Blakefield (east)	15 16 17
OB - Hauling (75%) partings to emplacement area - Blakefield (west)	12 13 14 19 41
OB - Emplacing partings to emplacement area - Blakefield	17 18 19 41
CL - Drilling coal - Blakefield	12 13 14 15 16
CL - Blasting coal - Blakefield	12 13 14 15 16
CL - Dozers ripping/pushing/clean-up ROM in-pit - Blakefield	12 13 14 15 16
CL - Sh/Ex/FELs loading open coal to trucks - Blakefield	12 13 14 15 16
CL - Hauling open (25%) coal in-pit roads - Blakefield (east)	15 16
CL - Hauling open (25%) coal to ROM pad - Blakefield (east)	17 44 46 48 49 50 51 55 56 57 58 59 60 61 62 63 64 65
CL - Hauling open (75%) coal in-pit roads - Blakefield (west)	12 13 14
CL - Hauling open (75%) coal to ROM pad - Blakefield (west)	41 42 43 44 46 48 49 50 51 55 56 57 58 59 60 61 62 63 64 65
CL - Unloading ROM to ROM stockpiles/hopper - Blakefield	66
CL - Handle coal at CHPP - Blakefield	67
CL - Rehandle ROM coal at stockpiles/hopper - Blakefield	66

Activity	Source																		
Topsoil removal & Site preparation - Dozers on Redbank	20	21	22	23	24														
Topsoil removal - Sh/Ex/FELs loading topsoil - Redbank	20	21	22	23	24														
Topsoil removal - Hauling topsoil to emplacement area (north) - Redbank	20	21	22	28															
Topsoil removal - Hauling topsoil to emplacement area (south) - Redbank	22	23	24	25															
Topsoil removal - Emplacing topsoil at emplacement area - Redbank	25	26	27	28	29	30													
OB - Drilling for excavator removal - Redbank	20	21	22	23	24														
OB - Blasting for excavator removal - Redbank	20	21	22	23	24														
OB - Dozers on Excavator OB in-pit - Redbank	20	21	22	23	24														
OB - Excavator loading OB to haul truck - Redbank	20	21	22	23	24														
OB - Hauling to emplacement area (north) - Redbank	20	21	22	28															
OB - Hauling to emplacement area (south) - Redbank	22	23	24	25															
OB - Dozers on OB haul roads (north) - Redbank	20	21	22	28															
OB - Dozers on OB haul roads (south) - Redbank	22	23	24	25															
OB - Emplacing at emplacement area - Redbank	25	26	27	28	29	30													
OB - Dozers on OB emplacement area -Redbank	25	26	27	28	29	30													
OB - Dozers in-pit ancillary tasks - Redbank	20	21	22	23	24														
OB - Dozers ripping/pushing/clean-up Partings - Redbank	20	21	22	23	24														
OB - Loading partings to trucks - Redbank	20	21	22	23	24														
OB - Hauling partings to emplacement area (north) - Redbank	20	21	22	28															
OB - Hauling partings to emplacement area (south) - Redbank	22	23	24	25															
OB - Emplacing partings at emplacement area - Redbank	25	26	27	28	29	30													
CL - Drilling coal - Redbank	20	21	22	23	24														
CL - Blasting coal - Redbank	20	21	22	23	24														
CL - Dozers ripping/pushing/clean-up ROM in-pit - Redbank	20	21	22	23	24														
CL - Sh/Ex/FELs loading open coal to trucks - Redbank	20	21	22	23	24														
CL - Hauling open coal in-pit roads - Redbank	20	21	22	23	24														
CL - Hauling open coal to ROM pad - Redbank	45	46	48	49	50	51	55	56	57	58	59	60	61	62	63	64	65		
CL - Unloading ROM to ROM stockpiles/hopper - Redbank	66																		
CL - Handle coal at CHPP - Redbank	67																		
CL - Rehandle ROM coal at stockpiles/hopper - Redbank	66																		
Topsoil removal & Site preparation - Dozers on Houston	34	35	36																
Topsoil removal - Sh/Ex/FELs loading topsoil - Houston	34	35	36																
Topsoil removal - Hauling topsoil to emplacement area - Houston	34	35	36	37															
Topsoil removal - Emplacing topsoil at emplacement area - Houston	31	32	37	38	39	40													
OB - Drilling for excavator removal - Houston	34	35	36																
OB - Blasting for excavator removal - Houston	34	35	36																
OB - Dozers on Excavator OB in-pit - Houston	34	35	36																
OB - Excavator loading OB to haul truck - Houston	34	35	36																
OB - Hauling to emplacement area - Houston	34	35	36	37															
OB - Dozers on OB haul roads - Houston	34	35	36	37															
OB- Emplacing at emplacement area - Houston	31	32	37	38	39	40													
OB - Dozers on OB emplacement area - Houston	31	32	37	38	39	40													
OB - Dozers in-pit ancillary tasks - Houston	34	35	36																
OB - Dozers ripping/pushing/clean-up Partings - Houston	34	35	36																
OB - Loading partings to trucks - Houston	34	35	36																
OB - Hauling partings to emplacement area (east) - Houston	34	35	36	37															
CL - Emplacing partings at emplacement area - Houston	31	32	37	38	39	40													
CL - Highwall transfer point - Houston (Y7)	34	35																	
CL - Highwall conveyor - Redbank	34	35																	
CL - Dozers ripping/pushing/clean-up ROM (in-pit) - Houston	34	35	36																
CL - Sh/Ex/FELs loading open coal to trucks - Houston	34	35	36																
CL - Hauling open coal in-pit roads (east) - Houston	36	37																	
CL - Hauling open coal in-pit roads (west) - Houston	34	35																	
CL - Hauling open coal to ROM pad (east) - Houston	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65				
CL - Hauling open coal to ROM pad (west) - Houston	31	32	33	51	53	54	55	56	57	58	59	60	61	62	63	64	65		
CL - Unloading ROM to ROM stockpiles/hopper - Houston	66																		
CL- Handle coal at CHPP - Houston	67																		
CL - Rehandle ROM coal at stockpiles/hopper - Houston	66																		
CL - Dozers ROM Coal Handling & Rejects - ROM stockpile	66	67																	
CL - Loading rejects	67																		
CL - Transporting rejects	63	70	71																
CL - Unloading rejects	72																		
CL- Loading product stockpile	68																		
CL - Loading product coal to trains	69																		

Activity	Source																								
WE - OB dump & disturbed area - Whynot - Uncontrolled	6	7	8	9	10	11	47																		
WE - OB dump & disturbed area - Whynot - Controlled	6	7	8	9	10	11	47																		
WE - OB dump& disturbed area - Blakefield - Uncontrolled	17	18	19	41																					
WE - OB dump& disturbed area - Blakefield - Controlled	17	18	19	41																					
WE - OB dump& disturbed area - Redbank - Uncontrolled	25	26	27	28	29	30																			
WE - OB dump& disturbed area - Redbank - Controlled	25	26	27	28	29	30																			
WE - OB dump & disturbed area - Houston - Uncontrolled	31	32	37	38	39	40																			
WE - OB dump & disturbed area - Houston - Controlled	31	32	37	38	39	40																			
WE - Open mining area- Whynot	1	2	3	4	5																				
WE - Open mining area - Blakefield	12	13	14	15	16																				
WE - Open mining area - Redbank	20	21	22	23	24																				
WE - Open mining area - Houston	34	35	36																						
WE - ROM stockpiles	66																								
WE - Product stockpiles	68																								

Table C.4: Year 10 – Drayton South Source Allocation

Activity	Source
Topsoil removal & Site preparation - Dozers on Whynot	1 2 3 4 5 6 7 8 9
Topsoil removal - Sh/Ex/FELs loading topsoil - Whynot	1 2 3 4 5 6 7 8 9
Topsoil removal - Hauling topsoil to emplacement area (east) - Whynot	5 7 9 10
Topsoil removal - Hauling topsoil to emplacement area (west) - Whynot	1 3 14
Topsoil removal - Emplacing topsoil at emplacement area - Whynot	10 11 12 13 14 15 16 17 18
OB - Drilling - Whynot	1 2 3 4 5 6 7 8 9
OB - Blasting - Whynot	1 2 3 4 5 6 7 8 9
OB - Dozers on Dragline OB in-pit - Whynot	5 6 7 8 9
OB - Dragline removal of OB - Whynot	5 6 7 8 9 10 11 12
OB - Dozers on Excavator OB in-pit - Whynot	1 2 3 4
OB - Excavator loading OB to haul truck - Whynot	1 2 3 4
OB - Hauling excavator OB to emplacement area (east) - Whynot	5 7 9 10
OB - Hauling excavator OB to emplacement area (west) - Whynot	1 3 14
OB - Dozers on OB haul roads (east) - Whynot	5 7 9 10
OB - Dozers on OB haul roads (west) - Whynot	1 3 14
OB - Emplacing excavator OB at emplacement area - Whynot	10 11 12 13 14 15 16 17 18
OB - Dozers on OB emplacement area - Whynot	10 11 12 13 14 15 16 17 18
OB - Dozers in-pit ancillary tasks - Whynot	1 2 3 4 5 6 7 8 9
OB - Dozers ripping/pushing/clean-up Partings - Whynot	1 2 3 4 5 6 7 8 9
OB - Loading partings to haul trucks - Whynot	1 2 3 4 5 6 7 8 9
OB - Hauling partings to emplacement area (east) - Whynot	5 7 9 10
OB - Hauling partings to emplacement area (west) - Whynot	1 3 14
OB - Emplacing Partings at emplacement area - Whynot	10 11 12 13 14 15 16 17 18
CL - Drilling coal and partings - Whynot	1 2 3 4 5 6 7 8 9
CL - Blasting coal and partings - Whynot	1 2 3 4 5 6 7 8 9
CL - Dozers ripping/pushing/clean-up ROM in-pit - Whynot	1 2 3 4 5 6 7 8 9
CL - Sh/Ex/FELs loading open coal to trucks - Whynot	1 2 3 4 5 6 7 8 9
CL - Hauling open coal in-pit roads (east) - Whynot	5 7 9
CL - Hauling open coal to ROM pad (east) - Whynot	10 16 62 63 64 65 66 67 68 69 70 71 72 73 74 75
CL - Hauling open coal in-pit roads (middle) - Whynot	1 3 4
CL - Hauling open coal to ROM pad (middle) - Whynot	15 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75
CL - Unloading ROM to ROM stockpiles/hopper - Whynot	76
CL- Handle coal at CHPP - Whynot	77
CL - Rehandle ROM coal at stockpiles/hopper - Whynot	76
Topsoil removal & Site preparation - Dozers on Blakefield	19 20 21
Topsoil removal - Sh/Ex/FELs loading topsoil - Blakefield	19 20 21
Topsoil removal - Hauling topsoil to emplacement area - Blakefield	19 20 21 25
Topsoil removal - Emplacing topsoil at emplacement area - Blakefield	22 23 24 25 26 27
OB - Drilling - Blakefield	19 20 21
OB - Blasting - Blakefield	19 20 21
OB - Dozers on Dragline OB in-pit - Blakefield	20
OB - Dragline removal of OB - Blakefield	20 24 25 26
OB - Dozers on Excavator OB in-pit - Blakefield	19 21
OB - Excavator loading OB to haul truck - Blakefield	19 21
OB - Hauling excavator OB to emplacement area - Blakefield	19 20 21 25
OB - Dozers on OB haul roads - Blakefield	19 20 21 25
OB- Emplacing excavator OB at emplacement area - Blakefield	22 23 24 25 26 27
OB - Dozers on OB emplacement area - Blakefield	22 23 24 25 26 27
OB - Dozers in-pit ancillary tasks -Blakefield	19 20 21
OB - Dozers ripping/pushing/clean-up Partings - Blakefield	19 20 21
OB - loading partings to trucks - Blakefield	19 20 21
OB - Hauling partings to emplacement area - Blakefield	19 20 21 25
OB - Emplacing partings to emplacement area - Blakefield	22 23 24 25 26 27
CL - Drilling coal - Blakefield	19 20 21
CL - Blasting coal - Blakefield	19 20 21
CL - Dozers ripping/pushing/clean-up ROM in-pit - Blakefield	19 20 21
CL - Sh/Ex/FELs loading open coal to trucks - Blakefield	19 20 21
CL - Hauling open coal in-pit roads - Blakefield	19 20 21
CL - Hauling open coal to ROM pad - Blakefield	22 56 57 58 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75
CL - Unloading ROM to ROM stockpiles/hopper - Blakefield	76
CL - Handle coal at CHPP - Blakefield	77
CL - Rehandle ROM coal at stockpiles/hopper - Blakefield	76

Activity	Source																																
Topsoil Removal - Dozers/Excavators stripping topsoil - Redbank	28	29	30	31	32	33	34	35	36																								
Topsoil removal - Sh/Ex/FELs loading topsoil - Redbank	28	29	30	31	32	33	34	35	36																								
Topsoil removal - Hauling topsoil to emplacement area (north) - Redbank	28	29	30	31	32	40																											
Topsoil removal - Hauling topsoil to emplacement area (south) - Redbank	28	33	34	35	36	40																											
Topsoil removal - Emplacing topsoil at emplacement area - Redbank	37	38	39	40	41	42	43	44	45																								
OB - Drilling for excavator removal - Redbank	28	29	30	31	32	33	34	35	36																								
OB - Blasting for excavator removal - Redbank	28	29	30	31	32	33	34	35	36																								
OB - Dozers on Excavator OB in-pit - Redbank	28	29	30	31	32	33	34	35	36																								
OB - Excavator loading OB to haul truck - Redbank	28	29	30	31	32	33	34	35	36																								
OB - Hauling to emplacement area (north) - Redbank	28	29	30	31	32	40																											
OB - Hauling to emplacement area (south) - Redbank	28	33	34	35	36	40																											
OB - Dozers on OB haul roads (north) - Redbank	28	29	30	31	32	40																											
OB - Dozers on OB haul roads (south) - Redbank	28	33	34	35	36	40																											
OB - Emplacing at emplacement area - Redbank	37	38	39	40	41	42	43	44	45																								
OB - Dozers on OB emplacement area -Redbank	37	38	39	40	41	42	43	44	45																								
OB - Dozers in-pit ancillary tasks - Redbank	28	29	30	31	32	33	34	35	36																								
OB - Dozers ripping/pushing/clean-up Partings - Redbank	28	29	30	31	32	33	34	35	36																								
OB - Loading partings to trucks - Redbank	28	29	30	31	32	33	34	35	36																								
OB - Hauling partings to emplacement area (north) - Redbank	28	29	30	31	32	40																											
OB - Hauling partings to emplacement area (south) - Redbank	28	33	34	35	36	40																											
OB - Emplacing partings at emplacement area - Redbank	37	38	39	40	41	42	43	44	45																								
CL - Highwall transfer point - Redbank (Y8)	34	35	36																														
CL - Highwall conveyor - Redbank	34	35	36																														
CL - Drilling coal - Redbank	28	29	30	31	32	33	34	35	36																								
CL - Blasting coal - Redbank	28	29	30	31	32	33	34	35	36																								
CL - Dozers ripping/pushing/clean-up ROM in-pit - Redbank	28	29	30	31	32	33	34	35	36																								
CL - Sh/Ex/FELs loading open coal to trucks - Redbank	28	29	30	31	32	33	34	35	36																								
CL - Hauling open coal in-pit roads - Redbank	28	29	30	31	32	33	34	35	36																								
CL - Hauling open coal to ROM pad - Redbank	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75																
CL - Unloading ROM to ROM stockpiles/hopper - Redbank	76																																
CL - Handle coal at CHPP - Redbank	77																																
CL - Rehandle ROM coal at stockpiles/hopper - Redbank	76																																
CL - Dozers ROM Coal Handling & Rejects - ROM stockpile	76	77																															
CL - Loading rejects	77																																
CL - Transporting rejects	73	80	81																														
CL - Unloading rejects	82																																
CL - Loading product stockpile	78																																
CL - Loading product coal to trains	79																																
WE - OB dump & disturbed area - Uncontrolled	10	11	12	13	14	15	16	17	18	22	23	24	25	26	27	37	38	39	40	41	42	43	44	45	49	50	51	52	53	54	55		
WE - OB dump & disturbed area - Controlled	10	11	12	13	14	15	16	17	18	22	23	24	25	26	27	37	38	39	40	41	42	43	44	45	49	50	51	52	53	54	55		
WE - Open mining area - Whynot	1	2	3	4	5	6	7	8	9																								
WE - Open mining area - Blakefield	19	20	21																														
WE - Open mining area - Redbank	28	29	30	31	32	33	34	35	36																								
WE - Open mining area - Houston	46	47	48																														
WE - ROM stockpiles	76																																
WE - Product stockpiles	78																																

Table C.5: Year 15 – Drayton South Source Allocation

Activity	Source
Topsoil removal & Site preparation - Dozers on Whynot	1 2 3 4 5
Topsoil removal - Sh/Ex/FELs loading topsoil - Whynot	1 2 3 4 5
Topsoil removal - Hauling topsoil to emplacement area (east) - Whynot	3 4 5 6
Topsoil removal - Hauling topsoil to emplacement area (west) - Whynot	1 2 10
Topsoil removal - Emplacing topsoil at emplacement area - Whynot	6 7 8 9 10 11 12 13 27
OB - Drilling - Whynot	1 2 3 4 5
OB - Blasting - Whynot	1 2 3 4 5
OB - Dozers on Dragline OB in-pit - Whynot	3 4 5
OB - Dragline removal of OB - Whynot	3 4 5 6 7 8
OB - Dozers on Excavator OB in-pit - Whynot	1 2
OB - Excavator loading OB to haul truck - Whynot	1 2
OB - Hauling excavator OB to emplacement area (east) - Whynot	3 4 5 6
OB - Hauling excavator OB to emplacement area (west) - Whynot	1 2 10
OB - Dozers on OB haul roads (east) - Whynot	3 4 5 6
OB - Dozers on OB haul roads (west) - Whynot	1 2 10
OB- Emplacing excavator OB at emplacement area - Whynot	6 7 8 9 10 11 12 13 27
OB - Dozers on OB emplacement area - Whynot	6 7 8 9 10 11 12 13 27
OB - Dozers in-pit ancillary tasks - Whynot	1 2 3 4 5
OB - Dozers ripping/pushing/clean-up Partings - Whynot	1 2 3 4 5
OB - Loading partings to haul trucks - Whynot	1 2 3 4 5
OB - Hauling partings to emplacement area (east) - Whynot	3 4 5 6
OB - Hauling partings to emplacement area (west) - Whynot	1 2 10
OB - Emplacing Partings at emplacement area - Whynot	6 7 8 9 10 11 12 13 27
CL - Drilling coal and partings - Whynot	1 2 3 4 5
CL - Blasting coal and partings - Whynot	1 2 3 4 5
CL - Dozers ripping/pushing/clean-up ROM in-pit - Whynot	1 2 3 4 5
CL - Sh/Ex/FELs loading open coal to trucks - Whynot	1 2 3 4 5
CL - Hauling open coal in-pit roads (east) - Whynot	3 4 5
CL - Hauling open coal to ROM pad (east) - Whynot	57 62 65 66 67 68 69 70 71 72 73 74 75
CL - Hauling open coal in-pit roads (middle) - Whynot	1 2
CL - Hauling open coal to ROM pad (middle) - Whynot	9 12 13 59 60 61 62 65 66 67 68 69 70 71 72 73 74 75
CL - Unloading ROM to ROM stockpiles/hopper - Whynot	76
CL- Handle coal at CHPP - Whynot	77
CL - Rehandle ROM coal at stockpiles/hopper - Whynot	76
Site preparation - Dozers on Blakefield	14 15 19
Topsoil removal - Sh/Ex/FELs loading topsoil - Blakefield	14 15 19
Topsoil removal - Hauling topsoil to emplacement area - Blakefield	14 15 18 19
Topsoil removal - Emplacing topsoil at emplacement area - Blakefield	16 17 18 20
OB - Drilling - Blakefield	14 15 19
OB - Blasting - Blakefield	14 15 19
OB - Dozers on Dragline OB in-pit - Blakefield	14 15 19
OB - Dragline removal of OB - Blakefield	14 15 16 17 18 19 20
OB - Dozers on OB emplacement area - Blakefield	16 17 18 20
OB - Dozers in-pit ancillary tasks - Blakefield	14 15 19
OB - Dozers ripping/pushing/clean-up Partings - Blakefield	14 15 19
OB - loading partings to trucks - Blakefield	14 15 19
OB - Hauling partings to emplacement area - Blakefield	14 15 18 19
OB - Emplacing partings to emplacement area - Blakefield	16 17 18 20
CL - Drilling coal - Blakefield	14 15 19
CL - Blasting coal - Blakefield	14 15 19
CL - Dozers ripping/pushing/clean-up ROM in-pit - Blakefield	14 15 19
CL - Sh/Ex/FELs loading open coal to trucks - Blakefield	14 15 19
CL - Hauling open coal in-pit roads - Blakefield	14 15 19
CL - Hauling open coal to ROM pad - Blakefield	20 53 54 55 58 59 60 61 62 65 66 67 68 69 70 71 72 73 74 75
CL - Unloading ROM to ROM stockpiles/hopper - Blakefield	76
CL - Handle coal at CHPP - Blakefield	77
CL - Rehandle ROM coal at stockpiles/hopper - Blakefield	76

Activity	Source
Site preparation - Dozers on Redbank	21 22 23 24 25 26 28 29 30 31 32
Topsoil removal - Sh/Ex/FELs loading topsoil - Redbank	21 22 23 24 25 26 28 29 30 31 32
Topsoil removal - Hauling topsoil to emplacement area (north) - Redbank	21 22 23 26 37
Topsoil removal - Hauling topsoil to emplacement area (south)- Redbank	28 29 30 31 32 36
Topsoil removal - Emplacing topsoil at emplacement area -Redbank	27 33 34 35 36 37 38 39 40 41
OB - Drilling - Redbank	21 22 23 24 25 26 28 29 30 31 32
OB - Blasting - Redbank	21 22 23 24 25 26 28 29 30 31 32
OB - Dozers on Excavator OB in-pit -Redbank	21 22 23 24 25 26 28 29 30 31 32
OB - Excavator loading OB to haul truck - Redbank	21 22 23 24 25 26 28 29 30 31 32
OB - Hauling to emplacement area (north) - Redbank	21 22 23 26 37
OB - Hauling to emplacement area (south) - Redbank	28 29 30 31 32 36
OB - Dozers on OB haul roads (north) - Redbank	21 22 23 26 37
OB - Dozers on OB haul roads (south) - Redbank	28 29 30 31 32 36
OB- Emplacing at emplacement area - Houston	27 33 34 35 36 37 38 39 40 41
OB - Dozers on OB emplacement area - Redbank	27 33 34 35 36 37 38 39 40 41
OB - Dozers in-pit ancillary tasks - Redbank	21 22 23 24 25 26 28 29 30 31 32
OB - Dozers ripping/pushing/clean-up Partings -Redbank	21 22 23 24 25 26 28 29 30 31 32
OB - loading partings to trucks - Redbank	21 22 23 24 25 26 28 29 30 31 32
OB - Hauling partings to emplacement area (north) - Redbank	21 22 23 26 37
OB - Hauling partings to emplacement area (south)- Redbank	28 29 30 31 32 36
OB - Emplacing partings to emplacement area - Redbank	27 33 34 35 36 37 38 39 40 41
CL - Drilling coal - Redbank	21 22 23 24 25 26 28 29 30 31 32
CL - Blasting coal - Redbank	21 22 23 24 25 26 28 29 30 31 32
CL - Dozers ripping/pushing/clean-up ROM in-pit - Redbank	21 22 23 24 25 26 28 29 30 31 32
CL - Sh/Ex/FELs loading open coal to trucks - Redbank	21 22 23 24 25 26 28 29 30 31 32
CL - Hauling open coal in-pit roads - Redbank	21 22 23 24 25 26 28 29 30 31 32
CL - Hauling open coal to ROM pad - Redbank	27 56 58 59 60 61 62 65 66 67 68 69 70 71 72 73 74 75
CL - Unloading ROM to ROM stockpiles/hopper -Redbank	76
CL - Handle coal at CHPP - Redbank	77
CL - Rehandle ROM coal at stockpiles/hopper - Redbank	76
Topsoil removal - Dozers/Excavators stripping topsoil - Houston	42 43 44
Topsoil removal - Sh/Ex/FELs loading topsoil - Houston	42 43 44
Topsoil removal - Hauling topsoil to emplacement area (east) - Houston	44 45
Topsoil removal - Hauling topsoil to emplacement area (west) - Houston	42 43 49
Topsoil removal - Emplacing topsoil at emplacement area - Houston	45 46 47 48 49 50 51
OB - Drilling - Houston	42 43 44
OB - Blasting - Houston	42 43 44
OB - Dozers on Dragline OB in-pit - Houston	42 43
OB - Dragline removal of OB - Houston	42 43 48 49
OB - Dozers on Excavator OB in-pit - Houston	44
OB - Excavator loading OB to haul truck - Houston	44
OB - Hauling to emplacement area (east) - Houston	44 45
OB - Hauling to emplacement area (west) - Houston	42 43 49
OB - Dozers on OB haul roads (east) - Houston	44 45
OB - Dozers on OB haul roads (west) - Houston	42 43 49
OB- Emplacing at emplacement area - Houston	45 46 47 48 49 50 51
OB - Dozers on OB emplacement area - Houston	45 46 47 48 49 50 51
OB - Dozers in-pit ancillary tasks - Houston	42 43 44
OB - Dozers ripping/pushing/clean-up Partings - Houston	42 43 44
OB - Loading partings to trucks - Houston	42 43 44
OB - Hauling partings to emplacement area (east) - Houston	44 45
OB - Hauling partings to emplacement area (west) - Houston	42 43 49
CL - Emplacing partings at emplacement area - Houston	45 46 47 48 49 50 51
CL - Dozers ripping/pushing/clean-up ROM (in-pit) - Houston	42 43 44
CL - Sh/Ex/FELs loading open coal to trucks - Houston	42 43 44
CL - Hauling open coal in-pit roads (east) - Houston	5 44 45
CL - Hauling open coal in-pit roads (west) - Houston	5 42 43
CL - Hauling open coal to ROM pad (east) - Houston	57 62 63 64 65 66 67 68 69 70 71 72 73 74 75
CL - Hauling open coal to ROM pad (west) - Houston	50 51 52 57 62 65 66 67 68 69 70 71 72 73 74 75
CL - Unloading ROM to ROM stockpiles/hopper - Houston	76
CL - Handle coal at CHPP - Houston	77
CL - Rehandle ROM coal at stockpiles/hopper - Houston	76
CL - Dozers ROM Coal Handling & Rejects - ROM stockpile	76 77
CL - Loading rejects	77
CL - Transporting rejects	73 80 81
CL - Unloading rejects	82
CL - Loading product stockpile	78
CL - Loading product coal to trains	79
WE - OB dump & disturbed area - Uncontrolled	6 7 8 9 10 11 12 13 16 17 18 20 27 33 34 35 36 37 38 39 40 41 45 46 47 48 49 50 51
WE - OB dump & disturbed area - Controlled	6 7 8 9 10 11 12 13 16 17 18 20 27 33 34 35 36 37 38 39 40 41 45 46 47 48 49 50 51
WE - Open mining area - Whynot	1 2 3 4 5
WE - Open mining area - Blakefield	14 15 19
WE - Open mining area - Redbank	21 22 23 24 25 26 28 29 30 31 32
WE - Open mining area - Houston	42 43 44
WE - ROM stockpiles	76
WE - Product stockpiles	78

Table C.6: Year 20 – Drayton South Source Allocation

Activity	Source																								
Topsoil removal & Site preparation - Dozers on Whynot	1	2	3	4	5	6	7	8	9																
Topsoil removal - Sh/Ex/FELs loading topsoil - Whynot	1	2	3	4	5	6	7	8	9																
Topsoil removal - Hauling topsoil to emplacement area (east) - Whynot	5	7	9	10																					
Topsoil removal - Hauling topsoil to emplacement area (west) - Whynot	1	3	15																						
Topsoil removal - Emplacing topsoil at emplacement area - Whynot	10	11	12	13	14	15	16	17	18	19	20														
OB - Drilling - Whynot	1	2	3	4	5	6	7	8	9																
OB - Blasting - Whynot	1	2	3	4	5	6	7	8	9																
OB - Dozers on Dragline OB in-pit - Whynot	5	6	7	8	9																				
OB - Dragline removal of OB - Whynot	5	6	7	8	9	10	11	12																	
OB - Dozers on Excavator OB in-pit - Whynot	1	2	3	4																					
OB - Excavator loading OB to haul truck - Whynot	1	2	3	4																					
OB - Hauling excavator OB to emplacement area (east) - Whynot	5	7	9	10																					
OB - Hauling excavator OB to emplacement area (west) - Whynot	1	3	15																						
OB - Dozers on OB haul roads (east) - Whynot	5	7	9	10																					
OB - Dozers on OB haul roads (west) - Whynot	1	3	15																						
OB - Emplacing excavator OB at emplacement area - Whynot	10	11	12	13	14	15	16	17	18	19	20														
OB - Dozers on OB emplacement area - Whynot	10	11	12	13	14	15	16	17	18	19	20														
OB - Dozers in-pit ancillary tasks - Whynot	1	2	3	4	5	6	7	8	9																
OB - Dozers ripping/pushing/clean-up Partings - Whynot	1	2	3	4	5	6	7	8	9																
OB - Loading partings to haul trucks - Whynot	1	2	3	4	5	6	7	8	9																
OB - Hauling partings to emplacement area (east) - Whynot	5	7	9	10																					
OB - Hauling partings to emplacement area (west) - Whynot	1	3	15																						
OB - Emplacing Partings at emplacement area - Whynot	10	11	12	13	14	15	16	17	18	19	20														
CL - Drilling coal and partings - Whynot	1	2	3	4	5	6	7	8	9																
CL - Blasting coal and partings - Whynot	1	2	3	4	5	6	7	8	9																
CL - Dozers ripping/pushing/clean-up ROM in-pit - Whynot	1	2	3	4	5	6	7	8	9																
CL - Sh/Ex/FELs loading open coal to trucks - Whynot	1	2	3	4	5	6	7	8	9																
CL - Hauling open coal in-pit roads (east) - Whynot	5	7	9	10	20																				
CL - Hauling open coal to ROM pad (east) - Whynot	47	49	50	51	52	53	54	55	56	57	58	59													
CL - Hauling open coal in-pit roads (middle) - Whynot	1	3	4																						
CL - Hauling open coal to ROM pad (middle) - Whynot	13	18	19	38	45	46	47	49	50	51	52	53	54	55	56	57	58	59							
CL - Unloading ROM to ROM stockpiles/hopper - Whynot	60																								
CL- Handle coal at CHPP - Whynot	61																								
CL - Rehandle ROM coal at stockpiles/hopper - Whynot	60																								
CL - Highwall transfer point - Blakefield (Y18)	39	40																							
CL - Highwall conveyor - Blakefield	39	40																							
CL - Sh/Ex/FELs loading open coal to trucks - Blakefield	39	40																							
CL - Hauling open coal in-pit roads - Blakefield	39	40	41																						
CL - Hauling open coal to ROM pad - Blakefield	38	42	43	44	45	46	47	49	50	51	52	53	54	55	56	57	58	59							
CL - Unloading ROM to ROM stockpiles/hopper - Blakefield	60																								
CL- Handle coal at CHPP - Blakefield	61																								
CL - Rehandle ROM coal at stockpiles/hopper - Blakefield	60																								
CL - Highwall transfer point - Redbank (Y20)	21	23																							
CL - Highwall conveyor - Redbank	21	23																							
CL - Sh/Ex/FELs loading open coal to trucks - Redbank	21	23																							
CL - Hauling open coal in-pit roads - Redbank	21	23	24																						
CL - Hauling open coal to ROM pad - Redbank	25	38	45	46	47	49	50	51	52	53	54	55	56	57	58	59									
CL - Unloading ROM to ROM stockpiles/hopper - Redbank	60																								
CL- Handle coal at CHPP - Redbank	61																								
CL - Rehandle ROM coal at stockpiles/hopper - Redbank	60																								

Activity	Source																							
Topsoil removal & Site preparation - Dozers on Houston	33	34																						
Topsoil removal - Sh/Ex/FELs loading topsoil - Houston	33	34																						
Topsoil removal - Hauling topsoil to emplacement area (east) - Houston	32	34																						
Topsoil removal - Hauling topsoil to emplacement area (west) - Houston	33	36																						
Topsoil removal - Emplacing topsoil at emplacement area - Houston	32	35	36	37																				
OB - Drilling - Houston	33	34																						
OB - Blasting - Houston	33	34																						
OB - Dozers on Dragline OB in-pit - Houston	33																							
OB - Dragline removal of OB - Houston	33	36																						
OB - Dozers on Excavator OB in-pit - Houston	34																							
OB - Excavator loading OB to haul truck - Houston	34																							
OB - Hauling to emplacement area (east) - Houston	32	34																						
OB - Hauling to emplacement area (west) - Houston	33	36																						
OB - Dozers on OB haul roads - Houston	32	33	34	36																				
OB - Emplacing at emplacement area - Houston	32	35	36	37																				
OB - Dozers on OB emplacement area - Houston	32	35	36	37																				
OB - Dozers in-pit ancillary tasks - Houston	33	34																						
OB - Dozers ripping/pushing/clean-up Partings - Houston	33	34																						
OB - Loading partings to trucks - Houston	33	34																						
OB - Hauling partings to emplacement area (east) - Houston	32	34																						
OB - Hauling partings to emplacement area (west) - Houston	33	36																						
CL - Emplacing partings at emplacement area - Houston	32	35	36	37																				
CL - Dozers ripping/pushing/clean-up ROM (in-pit) - Houston	33	34																						
CL - Sh/Ex/FELs loading open coal to trucks - Houston	33	34																						
CL - Hauling open coal in-pit roads - Houston	10	20	32	33	34																			
CL - Hauling open coal to ROM pad - Houston	47	48	49	50	51	52	53	54	55	56	57	58	59											
CL - Unloading ROM to ROM stockpiles/hopper - Houston	60																							
CL- Handle coal at CHPP - Houston	61																							
CL - Rehandle ROM coal at stockpiles/hopper - Houston	60																							
CL - Dozers ROM Coal Handling & Rejects - ROM stockpile	60	61																						
CL - Loading rejects	61																							
CL - Transporting rejects	57	64	65																					
CL - Unloading rejects	66																							
CL - Loading product stockpile	62																							
CL - Loading product coal to trains	63																							
WE - OB dump & disturbed area - Uncontrolled	10	11	12	13	14	15	16	17	18	19	20	25	26	27	28	29	30	31	32	35	36	37		
WE - OB dump & disturbed area - Controlled	10	11	12	13	14	15	16	17	18	19	20	25	26	27	28	29	30	31	32	35	36	37		
WE - Open mining area - Whynot & Redbank	1	2	3	4	5	6	7	8	9	21	22	23	24											
WE - Open mining area - Blakefield (Y18)	39	40																						
WE - Open mining area - Houston	33	34																						
WE - ROM stockpiles	60																							
WE - Product stockpiles	62																							

Table C.7: Year 27 – Drayton South Source Allocation

Activity	Source Number																	
OB - Drilling - Whynot	1	2	3	4	5	6	7	9	10									
OB - Blasting - Whynot	1	2	3	4	5	6	7	9	10									
OB - Dozers on Dragline OB in-pit - Whynot	1	2	3	4	5	6	7											
OB - Dragline removal of OB - Whynot	1	2	3	4	5	6	7	8	11	12	13	14	15					
OB - Dozers on OB emplacement area - Whynot	8	11	12	13	14	15												
OB - Dozers in-pit ancillary tasks - Whynot	1	2	3	4	5	6	7	9	10									
OB - Dozers ripping/pushing/clean-up Partings - Whynot	1	2	3	4	5	6	7	9	10									
OB - Loading partings to haul trucks - Whynot	1	2	3	4	5	6	7	9	10									
OB - Hauling partings to emplacement area (east) - Whynot	1	2	3	4	10	15												
OB - Hauling partings to emplacement area (west) - Whynot	5	6	7	9	11													
OB - Emplacing Partings at emplacement area - Whynot	8	11	12	13	14	15	16	17	18	19	20	21	22	23				
CL - Highwall transfer point - Whynot	4	5																
CL - Highwall conveyor - Whynot	4	5																
CL - Dozers ripping/pushing/clean-up ROM in-pit - Whynot	1	2	3	4	5	6	7	9	10									
CL - Sh/Ex/FELs loading open coal to trucks - Whynot	1	2	3	4	5	6	7	9	10									
CL - Hauling open coal in-pit roads (east) - Whynot	1	2	3	4	10													
CL - Hauling open coal to ROM pad (east) - Whynot	16	24	28	29	30	31	32	33	34	35	36	37	38	39				
CL - Hauling open coal in-pit roads (middle) - Whynot	5	6	7	9														
CL - Hauling open coal to ROM pad (middle) - Whynot	18	19	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	
CL - Unloading ROM to ROM stockpiles/hopper - Whynot	40																	
CL- Handle coal at CHPP - Whynot	41																	
CL - Rehandle ROM coal at stockpiles/hopper - Whynot	40																	
CL - Dozers ROM Coal Handling & Rejects - ROM stockpile	40	41																
CL - Loading rejects	41																	
CL - Transporting rejects	37	44	45															
CL - Unloading rejects	46																	
CL - Loading product stockpile	42																	
CL - Loading product coal to trains	43																	
WE - OB dump & disturbed area - Uncontrolled	8	11	12	13	14	15	16	17	18	19	20	21	22	23				
WE - OB dump & disturbed area - Controlled	8	11	12	13	14	15	16	17	18	19	20	21	22	23				
WE - Open mining area - Whynot	1	2	3	4	5	6	7	9	10									
WE - ROM stockpiles	40																	
WE - Product stockpiles	42																	