APPENDIX B16:D

APPENDIX D – CALPUFF Model Inputs

CALPUFF was set up with the parameters as described in Appendix A, using a three-dimensional wind field prepared using TAPM/CALMET. The construction scenario was modelled using the following general approach to estimate dust levels at sensitive locations outside of the SCA Boundary:

- Emissions were assigned to area sources corresponding to stockpile, exposed runway, active work and general site activity areas
- The active work area was placed at the south-eastern end of the new runway area, closest to sensitive receptors, to ensure the worst-case potential for dust was considered (Figure 1)
- The general site activity has been modelled as a large area source that is representative of areas where construction will occur, but also includes some relatively small areas where construction will not occur (Figure 1). For example, the area source covers some regions of *Allocasuarina emuina* (Mount Emu She-oak) where no construction activity will occur
- The emission rate of dust caused by the wind erosion of stockpiles was calculated based on the modelled wind speed, extracted from the CALMET wind field at the site
- Emissions due to construction activities (as opposed to wind erosion) were modelled between 7am and 6pm

Details of the inputs are presented in Table 2, and the locations are shown in Figure 1.

APPENDIX B16:D

Table 2 CALPUFF source details for construction scenario

Source	X coordinates (m)	Y coordinates (m)	Effective height (m)	Initial sigma Z (m)	Emission rates (g/s/m²)		
					TSP	PM_{10}	$PM_{2.5}$
Topsoil stockpile	507657	7059006	6	1.5	hourly varying		
	507875	7058731					
	507812	7058691					
	507607	7058966					
General stockpile 1	507455	7059270	6	1.5	hourly varying		
	507614	7059065					
	507545	7059016					
	507383	7059214					
General stockpile 2	507462	7058748	6	1.5	hourly varying		
	507551	7058728					
	507508	7058516					
	507432	7058519					
Runway 1	509058	7057799	4	1.0	1.10E-05	4.59E-06	5.85E-07
	508809	7057586					
	508592	7057865					
	508846	7058072					
Runway 2	508328	7058203	4	1.0	1.10E-05	4.59E-06	5.85E-07
	508592	7058400					
	508846	7058072					
	508592	7057865					
Runway 3	507604	7059130	4	1.0	1.10E-05	4.59E-06	5.85E-07
	507877	7059323					
	508334	7058733					
	508074	7058528					
Runway 4	507877	7059323	4	1.0	1.10E-05	4.59E-06	5.85E-07
	507604	7059130					
	507114	7059759					
	507378	7059966					
Runway 5	508809	7057586	4	1.0	1.10E-05	4.59E-06	5.85E-07
	509058	7057799					
	509278	7057516					
	509019	7057318					
Runway 6	508592	7058400	4	1.0	1.10E-05	4.59E-06	5.85E-07
	508328	7058203					
	508074	7058528					
	508334	7058733					
General site activity area	507550	7059191	10	2.5	1.39E-05	4.98E-06	5.53E-07
	508079	7058545					
	507565	7058143					
	507063	7058831					
Active area	508809	7057586	5	1.3	1.25E-05	5.83E-06	1.54E-06
	509058	7057799					
	509278	7057516					
	509019	7057318					

APPENDIX B16:D

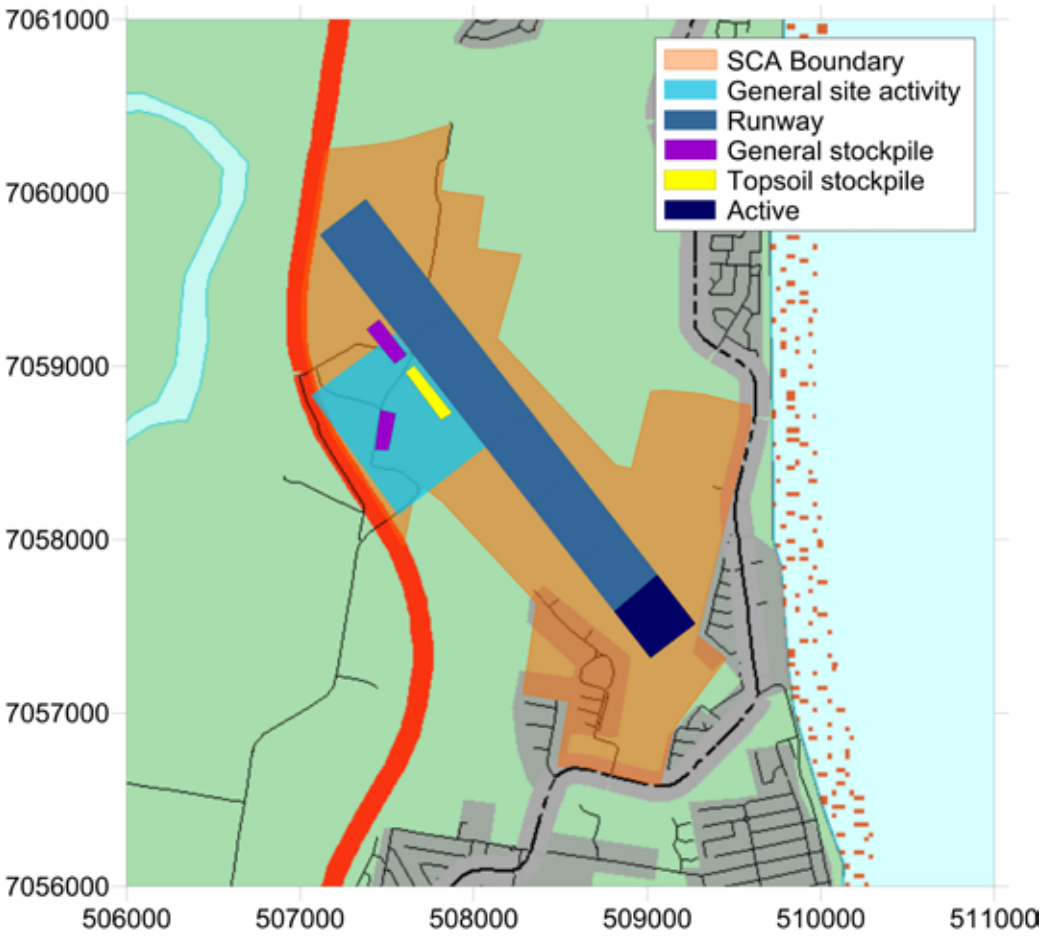

Figure 1: Locations of modelled CALPUFF sources for the construction scenario