

Assessment of Measures Planned for T4 for Fugitive Dust Mitigation against Current Best Practice

This assessment has been based on a best practice guide developed for people living in coal-affected communities near ports, along coal train lines and near mines. Here it is used as a tool to assess what steps PWCS plan to take to protect local residents from the harms of dust pollution. Best practice involves implementing an overall strategy that addresses these approaches and techniques in a comprehensive way that stops dust impacting on neighboring communities. The measures identified by PWCS for T4 will not protect community health and do not meet current best practice standards.

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Purpose

This assessment has been conducted by drawing on a best practice guide developed for people living in coal-affected communities living near ports, along coal train lines and near mines. It has been used as a tool to assess what coal companies, in this instance, Port Waratah Coal Service (PWCS), are doing to protect local residents from the harms of dust pollution. The guide describes over a hundred techniques drawn from national and international literature that coal companies can implement to minimise and stop dust pollution at each stage of the coal chain.

The health and social harms of coal mining, coal transport and exports are well documented. Studies have shown that people living in coal-affected communities are more likely to suffer heart, lung and kidney cancer, respiratory and cardiovascular disease and birth defects (Colagiuri, Cochrane and Girgis, 2012). There is a direct link between long-term exposure to dust pollution and a range of respiratory ailments and hospital admission and emergency department attendance (Colagiuri *et al*, 2012). Government and industry standards and regulations have thus far failed to protect the community from these harms. .

How this guide has been used to assess T4

In the table below the first column describes the mining activity indicating the source of dust pollution. For the purpose of this assessment of T4 only port activities have been used and the other sections have been removed (the guide begins with section J). The second column describes the approach taken to deal with the dust. Arguably it is best practice to avoid activities that generate dust pollution, to limit or minimise the amount of dust generated and to contain what dust pollution does occur. The third column describes the specific techniques that can be used to avoid, limit, suppress and contain dust pollution from the mining activity or process. The fourth column identified if technique is being implemented or not.


Best practice involves implementing an overall strategy that addresses these approaches and techniques in a comprehensive way that stops dust impacting on neighboring communities. The measures identified by PWCS for T4 will not protect community health and do not meet current best practice standards.

<i>Mining activity (dust source)</i>	<i>Approach</i>	<i>Mitigation measure (technique used to minimise dust)</i>	<i>Used Y/N</i>	<i>Comments</i>	
J. Conveyors and transfers (Conveyors are used at various sites along the coal chain to move materials from one stage to the next).	Containment	J1. Fully enclose conveyors^	N		
		J2. Partially enclose conveyors^	Y		
		J3. Use of laterally displaceable hopper cars with discharge conveyors and transfer chutes^	N		
		J4. Fully enclose transfer towers~	N		
		J5. Soft-loading chutes`	Y		
	Wind reduction	J6. Provide wind shielding - roof OR side walls of conveyors*	Y		
		J7. Provide wind shielding - roof AND side walls of conveyors*	N		
	Management	J8. Belt cleaning and spillage minimisation of conveyors*	N		
	Best Practice	J1 + J4 + J7 + J8	NO		
	“In a detailed review of best practice and benchmarking study...Connell Hatch found that the design of the conveyors and transfers within the material transport system has a large bearing upon their potential to emit particulate matter. Water application and wind shielding were the most important items in reducing the quantity of particulate matter emitted from coal whilst being transported by conveyor” (Benchmarking Study: International Best Practice Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining - 2011: pp. 189).				
K. Conveyor belts	Management	K1. Belt maintenance and training>	Y	Insufficient information for K4	
		K2. Clean belt by scraping and washing>	Y		
		K3. Use rotary brush to clean the conveying side of the belt>	N		
	Suppression	K4. Wet dry belts>	?		
	Best Practice	All of the above	NO		
L. Stage loader/crusher (The mechanical compression of material to reduce the size).	Management	L1. Use a high-pressure water-powered scrubber>	Y	Insufficient information for L4 and L7	
		L2. Wet coal in the crusher and stage loader area>	Y		
		L4. Use scrubber technology in the stage loader/crusher area>	?		
	Containment	L5. Fully enclose the stage loader/crusher>	N		
		L6. Install and maintain a gob curtain>	Y		
		L7. Install wing or cut-out curtains between the panel side rib & the stage loader>	?		
	Best Practice	L1-L5	NO		

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M. Wind erosion and maintenance on coal stockpiles (Coal stockpiles are found at various stages of the coal chain: pits, coal processing plants and ports).	Avoidance	M1. Bypassing stockpiles*	N	
	Surface stabilisation	M2. Watering - use automatic sprinklers that are triggered by wind speed/direction or vibration^	Y	
		M3. Chemical wetting agents*	N	
		M4. Surface crusting agent*	N	
		M5. Carry over wetting from loading*	Y	
		Containment	M6. Silo with bag house*	
	M7. Cover storage pile with a tarp during high winds*		N	
	M8. Erect three-sided enclosure around storage piles*		N	
	M9. Reduced pile height*		Y	
	Wind speed reduction	M10. Wind screens/fences*	N	
		M11. Pile shaping/orientation*	Y	
		M12. Vegetative windbreaks*	Y	
	Best Practice	M1 + M6 (or M8) + M10-11-12	NO	
	The Fog Cannon® has been shown to suppress up to 95% of airborne dust particles. The smaller units are ideal for suppressing dust where it is generated in high concentrations at easily defined point sources such as discharging onto stockpiles, discharging into ships, reclaiming from stockpiles, dumping, crushing and loading/unloading trucks. In this case the Fog Cannon is directed at the point source of dust and it rapidly suppresses the emitted dust before it can disperse. The larger units are where the Fog Cannon® are unique, as they are able to suppress general airborne open area dust through fogging the general area. The larger units are also capable of suppressing dust caused by high volume dust events such as blasting - and the long throw distance is usually necessary for this. Fog Cannons are also useful for dust suppression of stockpiles where their low water use is an advantage.			
Source: http://www.wetearth.com.au/Fog-Cannon-Airborne-Dust-Control				



Mining activity (dust source)	Approach	Mitigation measure (technique used to minimise dust)	Used Y/N	Comments	
N. Stacking and reclaiming product coal (Stackers can be used to form standardised stockpiles along the length of a conveyor, and reclaimers used to retrieve the coal).	Avoidance	N1. Bypass coal stockpiles*	N		
	Containment	N2. Cover stockpiles+	N		
	Limitation	N3. Variable height stack when loading coal stockpiles*	Y		
	Stabilisation	N4. Boom tip water sprays when loading coal stockpiles*	Y		
		N5. Telescopic chute with water sprays when loading coal stockpiles*	N		
		N6. Use bucket-wheel, portal or bridge reclaimer with water application when unloading coal stockpiles*	N		
	Best Practice	N1 + N2	NO		
O. Train transportation	Containment	O1. Cover load with custom fit lids ^{<}	N		
		O2. Use gondola style train carriages with rotary dump capabilities ^{<}	N		
		O3. Cover load with custom fit tarpaulin*	N		
		O4. Use bed liners to minimise seepage in bottom opening carriages*	N		
		O5. Limit load size to ensure coal is well below sidewalls*	N		
		O6. Maintain a consistent load profile*	Y		
	Suppression	O7. Conduct train wheel, carriage and undercarriage washing after loading and unloading*	N		
		O8. Wetting the coal product during transport ^{>}	Y		
		O9. Reduce train speeds ⁼	Y		
	Best Practice	O1 + O2 + O7	NO		
	Coal wagon covers provide a number of benefits including:				
	<div><div><ul style="list-style-type: none">Eliminates coal wagon dustingAvoids ballast contaminationAvoids product lossImproves fuel efficiencyImproves coal wagon unloadingResponsible corporate image</div><div><ul style="list-style-type: none">Railcars are kept free from contaminationNo cross-contamination of other products on railcarsEmpty trains can operate on a faster scheduleNo railcar loading restrictions, i.e. can load (concentrate) finesDelivered product is the same as was loaded, therefore:</div></div>				
	Source: http://www.ecofab.com/benefits.html				

Mining activity (dust source)	Approach	Mitigation measure (technique used to minimise dust)	Used Y/N	Comments
P. Coal Terminal	Containment	P1. Completely enclosed terminal system	NO	
	Ambre Energy's proposed coal export terminal (design shown below) at Port of Morrow in Boardman US. Conveyer belts, stockpiles and barges will all be fully enclosed. 			
Source: http://www.oregonlive.com/environment/index.ssf/2012/12/planned_oregon_coal_export_ter.html				

Sources

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different shelter covers', *Journal of Wind Engineering and Industrial Aerodynamics*, 91: 1271–1283.

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ˆWaratah Coal Supplementary EIS (2013)
<http://www.waratahcoal.com/publications.htm>

#WRAP Fugitive Dust Handbook – US Colorado (2006)
http://www.wrapair.org/forums/dejf/fdh/content/fdhandbook_rev_06.pdf

+Amber Energy – proposed coal terminal Oregon
<http://www.morrowpacific.com/the-project>

Other references

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<http://www.ecofab.com/benefits.html> (Benefits of covering coal wagons)
<http://veestaar.webs.com/apps/photos/photo?photoid=44775205> (enclosed conveyors)
<http://www.canoseco.com/general-description/cano-seco-policies/modern-coal-mine-development-policies.html> (enclosed stockpiles)
http://www.oregonlive.com/environment/index.ssf/2012/12/planned_oregon_coal_export_ter.html (enclosed terminal systems)
<http://www.ambreenenergy.com/morrow-pacific-project> v's
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