

Table 1.1.1 Summary of Baseline (Pre Operational) Ambient Air Quality – Sub Programs

Sub Program	Objective	Period	Frequency	Location(s)	Methodology	Parameters	Interpretation & reporting	Other details
Continuous AQ monitoring	Measure existing levels of key parameters and meteorology parameters	As approved by the Director	Continuous	Rowella AQMS	As approved by the Director	Parameters to include: TRS, NO, NO2, NOX, PM10, PM2.5, SO2, CO  Meteorological data set parameters as specified in D.3.6 of RPDC Guidelines  Other parameters as required by the Director	Annual Return. Full data set with statistical summaries with comparison of observed values to historic data and applicable assessment criteria (Tas EPP (Air Quality) 2004 & NEPMS).	Full digital data set to be provided to the Director at least annually
Continuous AQ monitoring	Measure existing levels of key parameters and meteorology parameters	As approved by the Director	Continuous	Up to 3 other locations as required by the Director	As approved by the Director	TRS, wind speed, wind direction, sigma theta	Annual Return. Full data set with statistical summaries with comparison of observed values to historic data when collected	As above
Discrete (or continuous depending on methodology chosen) AQ monitoring	Measure existing levels of a key parameters.	As approved by the Director	As approved by the Director	Up to 3 other locations as required by the Director	As approved by the Director.  (Partisol, ANSTO, TEOM, Microvol, Continuous Particle Monitor)	PM10, PM2.5	As above	As above
Discrete AQ monitoring	Measure existing levels of a key parameter (PM2.5), including compositional make up.	Commencement point as approved by the Director	2 x 24 hour samples per week	Rowella AQMS and up to 2 other location as required by the Director	ANSTO Aerosol Sampler	PM2.5 – Aerosols with elemental composition analysis  (Total 24 hour average $\mu\text{g}/\text{m}^3$ & composition analysis as % of total)	As above	As above

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Section 1.1 Air Quality Summary Tables V4.0.doc  
Pulp Mill Project Environmental Monitoring Program



Sub Program	Objective	Period	Frequency	Location(s)	Methodology	Parameters	Interpretation & reporting	Other details
	Measure existing levels of key parameters (Dioxins and Furans)	As Above	Monthly	Rowella AQMS	HIVOL Sampler with PUF Filters. USEPA Method TO-9A	Dioxins & furans – including dioxin like PCBs  (Low and Mid bound and upper bound $\text{pg}/\text{m}^3$ WHO <sub>05</sub> TEQ, and I-TEQ)	Annual Return. Full data set with statistical summaries with comparison of observed values to historic data (including that reported by the National Dioxin Program) when collated.	Full digital data set to be provided to the Director at least annually
	Measure existing levels of key parameters (Odorous compounds)	As Above	Quarterly Or as required by the Director	At locations that have potential for odour impact by proposed mill operations (predominantly Rowella/Kayena) and reference locations	1. Summa Canisters 2. Volatile Sampling System (Covey in house protocols) 3. Passive Samplers	Detectable VOCs & TRS compounds. (speciated $\text{mass}/\text{m}^3$ )	Annual Return. Full data set with statistical summaries with comparison of observed values to historic data when collated.	Full digital data set to be provided to the Director at least annually
Odour Nuisance Survey	Establish current status of odour impacts in community	Sampled during the same months each year, commencing 2009.	Annual	As Above	Telephone Survey	FIDOL Factors	Annual Return. Full data set with statistical summaries with comparison of observed values to historic data when collated.	
Odour Diary Survey	Establish ongoing odour impacts at key locations community	Sampled during the same months each year, commencing 2009.	Annual	At locations that have potential for odour impact by proposed mill operations and reference locations	Diary	FIDOL Factors	Annual Return. Full data set with statistical summaries with comparison of observed values to historic data when collated.	
Inorganic Chlorinated Compound Survey	Measure existing levels of key parameters (Inorganic Chlorinated Compounds)	As approved by the Director	As approved by the Director	Rowella AQMS  And another location of known emissions to trial methodology	As approved by the Director	$\text{Cl}_2$ , $\text{HCl}$ & $\text{ClO}_2$	As approved by the Director	Development – managed by ChemSearch Consulting – Dr Peter Forster.

Section 1.1 Air Quality Summary Tables V4.0.doc  
Pulp Mill Project Environmental Monitoring Program



Sub Program	Objective	Period	Frequency	Location(s)	Methodology	Parameters	Interpretation & reporting	Other details
Polychlorinated Dibenzo-p-dioxin and pchlorinated Dibenzofuran levels in Cows Milk (Baseline)	Provide the baseline data set for an MBACI Program, which will determine existing levels of dioxin and furan in cows milk at farms adjacent to the mill, with comparison to another region outside the Tamar Valley.	Commencing 2007 or as required by the Director	4 sample runs per annum (Seasonal)	Two dairy farms within the Local Airshed as defined by the RPDC (Samples A and B) and two remote control site dairies outside of the Local Airshed (Samples C and D).  One additional processed domestic fresh milk sample sourced from a local retailer.	Site Selection, sampling and consignment to Laboratory by Tasmanian Dairy Industry Authority.  Integrated milk sample from on-farm chilled tank collected in prepared sample containers provided by the laboratory.  Experimental design to be approved by the Director	Dioxins ,furans and dioxin like PCB's (Low and Mid bound and upper bound pg/g Lipid WHO <sub>05</sub> TEQ, and I-TEQ)	Results to be normalised for lipid content.  Toxicologist shall interpret and report on the observed results to the Director at the conclusion of the Baseline period.  Report to include comparison to levels reported by the National Dioxins Program	Site selection to ensure constancy of dairy cow breed where possible.  Data pertaining to relative contribution of individual congeners of dioxin, furan and dioxin like PCBs to be retained for subsequent review.
	Provide supporting information for the interpretation of dioxins and furans in cows milk	As above	As above	As above	Soil samples to be taken with each milk sample and archived  To be analysed if required at a later date	Dioxins ,furans and dioxin like PCB's (Low and Mid bound and upper bound pg/g WHO <sub>05</sub> TEQ, and I-TEQ)	As required by the Director	

Table 1.1.2 Summary of Operational Ambient Air Quality – Sub Programs

Sub Program	Objective	Period	Frequency	Location(s)	Methodology	Parameters	Interpretation & reporting	Other details
Boundary monitoring of ambient Inorganic Chlorinated Compounds (ICC)	To monitor ambient concentrations of ICC's at the western boundary of the mill site	From commencement of operations – to be fully operational prior to commissioning or as required by The Director	Continuous	Western boundary of mill site as approved by the Director	OPSIS DOAS or other technology of a similar sensitivity as approved by the Director	ICC's: Cl <sub>2</sub> , HCl & ClO <sub>2</sub>	Annual Return. Full data set with statistical summaries with comparison of observed values to historic data and applicable assessment criteria (Tas EPP (Air Quality) 2004 & NEPMS).	Full digital data set to be provided to the Director at least annually
Continuous AQ monitoring	Monitor Air Quality indicators at the baseline site(s) from commencement of operations.	From commencement of operations. First review after three years of operations	Continuous	Rawella	As approved by the Director	Parameters to include: TRS, NO, NO <sub>2</sub> , NO <sub>x</sub> , PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , CO  Meteorological data set parameters as specified in D.3.6 of RPDC Guidelines  Other parameters as required by the Director	Annual Return. Full data set with statistical summaries with comparison of observed values to historic data and applicable assessment criteria (Tas EPP (Air Quality) 2004 & NEPMS).	Full digital data set to be provided to the Director at least annually
Continuous AQ monitoring	Measure existing levels of key parameters and meteorology parameters	As approved by the Director	Continuous	Up to 3 other locations as required by the Director	As approved by the Director	TRS, wind speed, wind direction, sigma theta	Annual Return. Full data set with statistical summaries with comparison of observed values to historic data when collected	As above
Discrete (or continuous depending on methodology chosen) AQ monitoring	Measure existing levels of a key parameters.	As approved by the Director	As approved by the Director	Up to 3 other locations as required by the Director	As approved by the Director.  (Partisol, ANSTO, TEOM, Microvol)	PM <sub>10</sub> , PM <sub>2.5</sub>	As above	As above

Section 1.1 Air Quality Summary Tables V4.0.doc  
Pulp Mill Project Environmental Monitoring Program



Sub Program	Objective	Period	Frequency	Location(s)	Methodology	Parameters	Interpretation & reporting	Other details
Discrete AQ monitoring	Monitor levels of a key parameter (PM2.5), including compositional make up.	As above	2 x 24 hour samples per week	Rowella AQMS and up to 2 other locations as required by the Director	ANSTO Aerosol Sampler	PM2.5 – Aerosols with elemental composition analysis  (Total 24 hour average $\mu\text{g}/\text{m}^3$ & composition analysis as % of total)	Annual Return. Full data set with statistical summaries with comparison of observed values to historic data when collated.  Or as required by the Director	Full digital data set to be provided to the Director at least annually
	Monitor levels of key parameters (Dioxins and Furans)	As Above	Monthly for at least 30 months and then as required by the Director	Rowella AQMS	HIVOL Sampler with PUF Filters. USEPA Method TO-9A	Dioxins & furans – including dioxin like PCBs  (Low and Mid bound and upper bound $\text{pg}/\text{m}^3$ WHO <sub>05</sub> TEQ, and I-TEQ)	Annual Return. Full data set with statistical summaries with comparison of observed values to historic data (including that reported by the National Dioxin Program & Tas EPP (Air Quality) 2004.  Or as required by the Director	Full digital data set to be provided to the Director at least annually
	Monitor levels of key parameters (Odorous compounds)	As Above	Event driven, or as required by the Director	At locations that have been identified as having a potential odour impact from mill operations, including but not limited to complaint from members of the public, dispersion modelling or other appropriate observation, or as approved by the Director	Any or all of the following techniques as appropriate, determined by Gunns' specialist advice or as directed by The Director of Environmental Management: 1. Summa Canisters 2. Volatile Sampling System (Covey in house protocols) 3. Passive Samplers 4. Mobile TRS Sampler 5. Portable GC/MS	Detectable VOCs & TRS compounds. (speciated $\text{mass}/\text{m}^3$ )	Quarterly Return for the first year of operation with annual thereafter. Full data set with statistical summaries with comparison of observed values to historic data when collated, or as required by the Director	Mobile TRS to include logging of basic meteorological parameters (Wind speed, direction, sigma theta and air temperature) where practicable  Full digital data set to be provided to the Director at least annually.

Section 1.1 Air Quality Summary Tables V4.0.doc  
Pulp Mill Project Environmental Monitoring Program



Sub Program	Objective	Period	Frequency	Location(s)	Methodology	Parameters	Interpretation & reporting	Other details
Odour Nuisance Survey	Establish the current status of odour impacts in the local community	For at least the first three years of operation.  Sampled during the same months each year, commencing within the first year of operation.	Annual	As above and at control sites	Telephone Survey	FIDOL Factors	Annual Return. Full data set with statistical summaries with comparison of observed values to historic data when collated.  Or as required by the Director	
Odour Diary Survey	Establish the current status of odour impacts in the local community	For at least the first three years of operation.  Sampled during the same months each year, commencing 2007.	Ongoing or as otherwise approved by the Director	All locations that have potential for odour impact by proposed mill operations and reference locations	Diary	FIDOL Factors	Annual Return. Full data set with statistical summaries with comparison of observed values to historic data when collated, or as required by the Director	
Web camera Monitoring of emissions	To facilitate real time visual monitoring of plant emissions	From commencement of construction or as required by the Director	Continuous	As approved by the Director	Web camera	Sequential images	Continuously updating Website available continuously to the Director of Environmental Management, with full archiving facilities.	

Section 1.1 Air Quality Summary Tables V4.0.doc  
Pulp Mill Project Environmental Monitoring Program



Sub Program	Objective	Period	Frequency	Location(s)	Methodology	Parameters	Interpretation & reporting	Other details
Live Dispersion Modelling	Monitor levels of key parameters (atmospheric pollutants)	From commencement of operations. First review after three years of operations	Period averages to be approved by the Director	Modelling domain as approved by the Director	Using an approved atmospheric dispersion model	Including but not limited to: Odour (TRS) PM10 PM2.5 SO <sub>2</sub> NOx CO Cl <sub>2</sub> HCl & ClO <sub>2</sub> Expressed as predicted periodic ground level concentrations.	Continuously updating Website available continuously to the Director of Environmental Management, with full archiving and trace back facilities.  A Report examining the model's precision and accuracy to be submitted at by end of the third year of operation.	"Continuous" requires a reasonable and practicable definition, allowing for instrument and equipment and network maintenance and or failure.  Full digital data set to be provided to the Director at least annually
Polychlorinated Dibenzo-p-dioxin and pchlorinated Dibenzofuran levels in Cows Milk (Baseline)	Provide the post operational comparison data set for a MBACI Program, which will determine existing levels of dioxin and furan in cows milk at farms adjacent to the mill, with comparison to another region outside the Tamar Valley.	2.5 Years. Commencing no later than one year after operation of the mill commences.	4 sample runs per annum (Seasonal)	Where possible, the same locations as those sampled by the Baseline component. If not possible then at other site(s) acceptable to the Director  Identification of alternate sites if required is to be managed by The Tasmanian Dairy Industry Authority (TDIA).  Experimental design to be approved by the Director	Site selection, sampling and consignment to Laboratory by Tasmanian Dairy Improvement Authority.  Integrated milk samples from on-farm chilled tank collected in prepared sample containers provided by the laboratory.	Dioxins ,furans and dioxin like PCB's (Low and Mid bound and upper bound pg/m <sup>3</sup> WHO <sub>05</sub> TEQ, and I-TEQ)	Results to be normalised for lipid content.  Toxicologist shall interpret and report on the observed results to the Director at the conclusion of the Sub Program.  Report to include comparison to levels reported by the NationalDioxins Program and congener profiles if detected from the Baseline component.	Site selection to ensure constancy of dairy cow breed where possible.

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Sub Program	Objective	Period	Frequency	Location(s)	Methodology	Parameters	Interpretation & reporting	Other details
	Provide supporting information for the interpretation of dioxins and furans in cows milk	As above	As above	As above	Soil samples to be taken with each milk sample and archived  To be analysed if required at a later date	Dioxins ,furans and dioxin like PCB's (Low and Mid bound and upper bound pg/g WHO <sub>05</sub> TEQ, and I-TEQ)	As required by the Director	

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