



esp

Environmental &
Safety Professionals

Report To
AUSTRALIAN RAIL TRACK CORPORATION LTD
Southern Sydney Freight Line Project
METEOROLOGICAL MONITORING RESULTS FOR
March 2009



Prepared by:

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1. BACKGROUND

A.R.T.C. Ltd is constructing the Southern Sydney Freight Line (SSFL), a thirty six (36) kilometre long, dedicated freight rail line alongside the existing passenger rail line between Macarthur and Sefton Railway Stations, Sydney NSW.

ESP – Environmental has been contracted by A.R.T.C. Ltd to establish two (2) stand-alone ‘weather stations’ to monitor typical meteorological conditions for this rail corridor during the construction period.

ESP will establish one (1) weather station in each of two (2) discreet contract zones.

2. SITES

A.R.T.C. directed ESP to locate the monitoring stations within its contractor's compounds. ESP has now established one (1) weather station within the site compound of contractor, Arengo (NSW) Pty Ltd. (Gate 11), Llewellyn Ave., Villawood. This site will be referred to hereafter as the Villawood site.

A second station is operational within the confines of contractor, The Reed Group's site office compound at Manning Street, Warwick Farm; now to be referred to as the Warwick Farm site.

3. PURPOSE OF MONITORING

ESP understands the purpose of this monitoring regime as pursuant to approval consent conditions imposed by the EPA when granting A.R.T.C. Ltd an Environmental Protection Licence under the POEO Act 1997.

4. SCOPE OF WORK

ESP understands the scope of work to be monitoring, at the two (2) locations, for:

- wind conditions, directional and velocity and
- temperature and humidity

The information will be represented in both tabular and graphical form for a variety of parameters.

5. WEATHER STATION EQUIPMENT

ESP will be utilising the Weathermaster 2000 manufactured by Envirodata Australia Pty Ltd in Warwick, Queensland and its ‘*Envirodata Compact Weather Data Recording System*’

This equipment will monitor for:

1	AVERAGE	Air Temperature	DegC
2	MAXIMUM	Air Temperature	DegC
3	MINIMUM	Air Temperature	DegC
4	AVERAGE	Wind Speed	km/h
5	MAXIMUM	Wind Speed	km/h
6	CURRENT	Wind Direction	Deg
7	AVERAGE	Relative Humidity	%
8	MAXIMUM	Relative Humidity	%
9	MINIMUM	Relative Humidity	%
10	VWSP	Wind Speed	km/h
11	VWDIR	Wind Direction	Deg
12	MAXIMUM	Peak Wind Gust	km/h

Monitoring will be 24 hour with logging (or sampling) frequency in 15 minute, hourly and daily summary report form. Current readings are available but would require an ESP staff member being present on site.

6. DATA PRESENTATION

Wind Rose Graph

A 'wind rose' diagram shows the spread or distribution of wind speeds for each wind direction for the chosen period. This graph depicts the frequency of occurrence of winds in each of the specified wind direction sectors and wind classes for a given location and time period.

The length of a particular colour equates to the frequency of occurrence of that speed range. The overall length in a particular direction represents the frequency of occurrence of that particular direction.

The 'calm' value (in the centre) shows the percentage of time when there was no wind.

Wind Rose Table

The Wind Rose table shows the same information numerically. Data is expressed as a percentage of the total time (called 'normalised').

The total at the bottom of each column shows the percentage of time for a particular direction. The total to the right of each row shows the total time for each speed.

Appendix A

Villawood Site Data

March 2009

Station	Table	Date	Time	Average Air Temp.	Max. Air Temp.	Min. Air Temp.	Avg. Wind Speed	Max. Wind Speed	Current Wind Direction	Avg. Relative Humidity	Max. Relative Humidity	Min. Relative Humidity	Vector Wind Speed	Vector Wind Direction	Max. Peak Wind Gust
224 ESP	Daily Summary	27-Feb-09	9:00:00	20.2	40.1	16	1.4	44.9	248	64.3	81.7	34.2	0.8	228	54
224 ESP	Daily Summary	28-Feb-09	9:00:00	20.1	26.7	15.4	2.5	12	355	59.6	83.2	33.8	1.7	102	20
224 ESP	Daily Summary	01-Mar-09	9:00:00	24.3	31.3	19.9	3.5	16.3	149	59	80.5	27.9	-2.3	102	22
224 ESP	Daily Summary	02-Mar-09	9:00:00	23.4	28.2	20.2	3.2	13.7	26	58	75.2	37.8	-2.3	102	20
224 ESP	Daily Summary	03-Mar-09	9:00:00	22.8	28.2	18.4	3.8	15.7	18	62.9	87	36.7	-1.7	90	22
224 ESP	Daily Summary	04-Mar-09	9:00:00	24.8	30.2	22.6	3.9	16	250	56.4	71.3	32.8	-2.3	72	24
224 ESP	Daily Summary	05-Mar-09	9:00:00	20.7	25.1	14.2	5.1	19.2	258	35.4	69	18.2	-0.4	258	24
224 ESP	Daily Summary	06-Mar-09	9:00:00	18.3	26.8	12.2	3.1	15	308	48.8	76.6	14.2	0.7	210	22
224 ESP	Daily Summary	07-Mar-09	9:00:00	20.6	26.6	15.7	3.3	14.1	347	58.5	88.3	21.8	1.5	84	22
224 ESP	Daily Summary	08-Mar-09	9:00:00	23.1	30.3	18.5	2.9	12	154	63.7	88.7	25	1.2	126	20
224 ESP	Daily Summary	09-Mar-09	9:00:00	20	25.3	17.2	3.2	10.5	225	79.8	94.3	52.7	1.4	210	22
224 ESP	Daily Summary	10-Mar-09	9:00:00	20.9	24.4	17.6	2.7	13	94	77.6	95.1	56.5	2	96	20
224 ESP	Daily Summary	11-Mar-09	9:00:00	20.7	26.1	15.8	4.1	16.7	170	65.6	89.8	39.5	-1.5	96	22
224 ESP	Daily Summary	12-Mar-09	9:00:00	19.6	24.1	16	2.5	11.6	30	80	96.1	54.4	1.9	102	18
224 ESP	Daily Summary	13-Mar-09	9:00:00	22.1	27.4	18.3	3	16.4	244	67.7	90.4	38.8	-2.4	78	24

Report of data collected and presented by
ESP Environmental and Safety Professionals

A.R.T.C. LTD / Southern Sydney Freight Line Project
WEATHER DATA REPORT FOR MARCH 2009

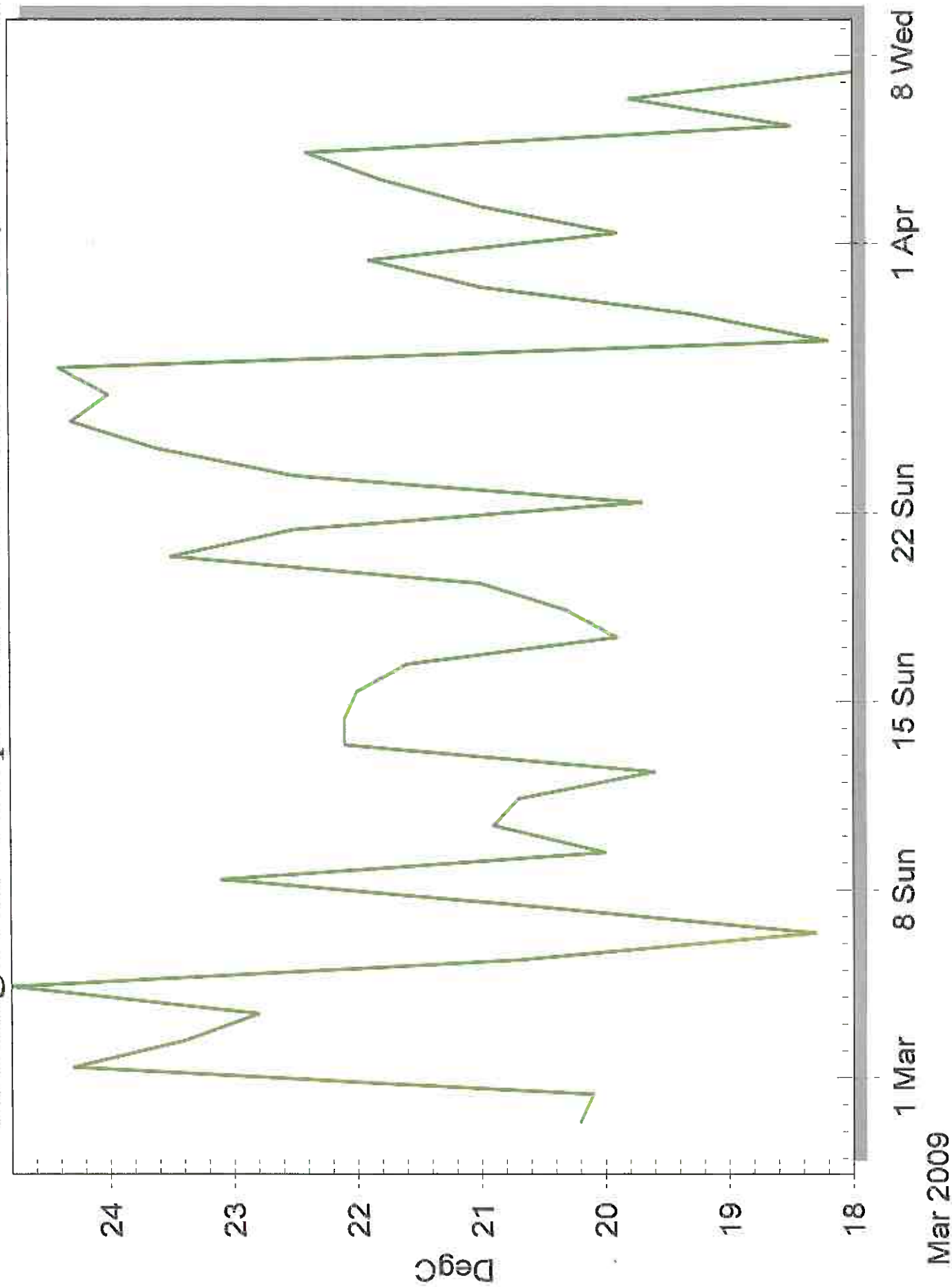
224 ESP	Daily Summary	14-Mar-09	9:00:00	22.1	28.8	17.3	1.5	7.7	100	73.9	95.4	41.3	0.4	30	12
224 ESP	Daily Summary	15-Mar-09	9:00:00	22	31.7	17.3	3	19.4	244	75.6	95.9	29.5	1.2	324	34
224 ESP	Daily Summary	16-Mar-09	9:00:00	21.6	32.3	14.2	3.3	13.1	253	50.7	73.8	28.6	0.4	114	22
224 ESP	Daily Summary	17-Mar-09	9:00:00	19.9	28.8	12.3	2.9	12.5	283	43.4	74.8	18.1	1.2	276	20
224 ESP	Daily Summary	18-Mar-09	9:00:00	20.3	27.5	14.7	2.7	12.8	257	55.7	88.2	19.6	0.7	126	22
224 ESP	Daily Summary	19-Mar-09	9:00:00	21	28.3	14.9	3.4	17.8	52	62.7	93.5	31.4	-2.4	60	24
224 ESP	Daily Summary	20-Mar-09	9:00:00	23.5	32.9	17.2	2.8	13.2	145	60.5	91.3	21.2	1.5	66	18
224 ESP	Daily Summary	21-Mar-09	9:00:00	22.5	30.2	17.3	3.2	15.7	261	71.7	95	30.6	2.3	84	22
224 ESP	Daily Summary	22-Mar-09	9:00:00	19.7	26.1	14.5	2.2	12.7	316	77.8	96.9	42.9	1.1	78	18
224 ESP	Daily Summary	23-Mar-09	9:00:00	22.5	30.7	16.4	3.6	18.4	221	62.2	93.4	22.8	1.8	48	28
224 ESP	Daily Summary	24-Mar-09	9:00:00	23.6	30	18.6	3.7	13.4	347	65.5	93.6	33.4	2.4	78	22
224 ESP	Daily Summary	25-Mar-09	9:00:00	24.3	32	18.7	4.1	17.5	326	63.1	89	26.1	-1.7	84	26
224 ESP	Daily Summary	26-Mar-09	9:00:00	24	32.9	19.4	3	13.4	258	68.9	91.9	34	1.1	84	20
224 ESP	Daily Summary	27-Mar-09	9:00:00	24.4	34.4	19	2.7	22.5	152	62.4	83.2	26.4	0.8	198	36
224 ESP	Daily Summary	28-Mar-09	9:00:00	18.2	24	13.4	2.3	12	266	73.6	94.9	48.8	1.2	120	20
224 ESP	Daily Summary	29-Mar-09	9:00:00	19.3	27	13.1	2.6	13.7	309	66.2	95.6	32.1	1.6	66	18

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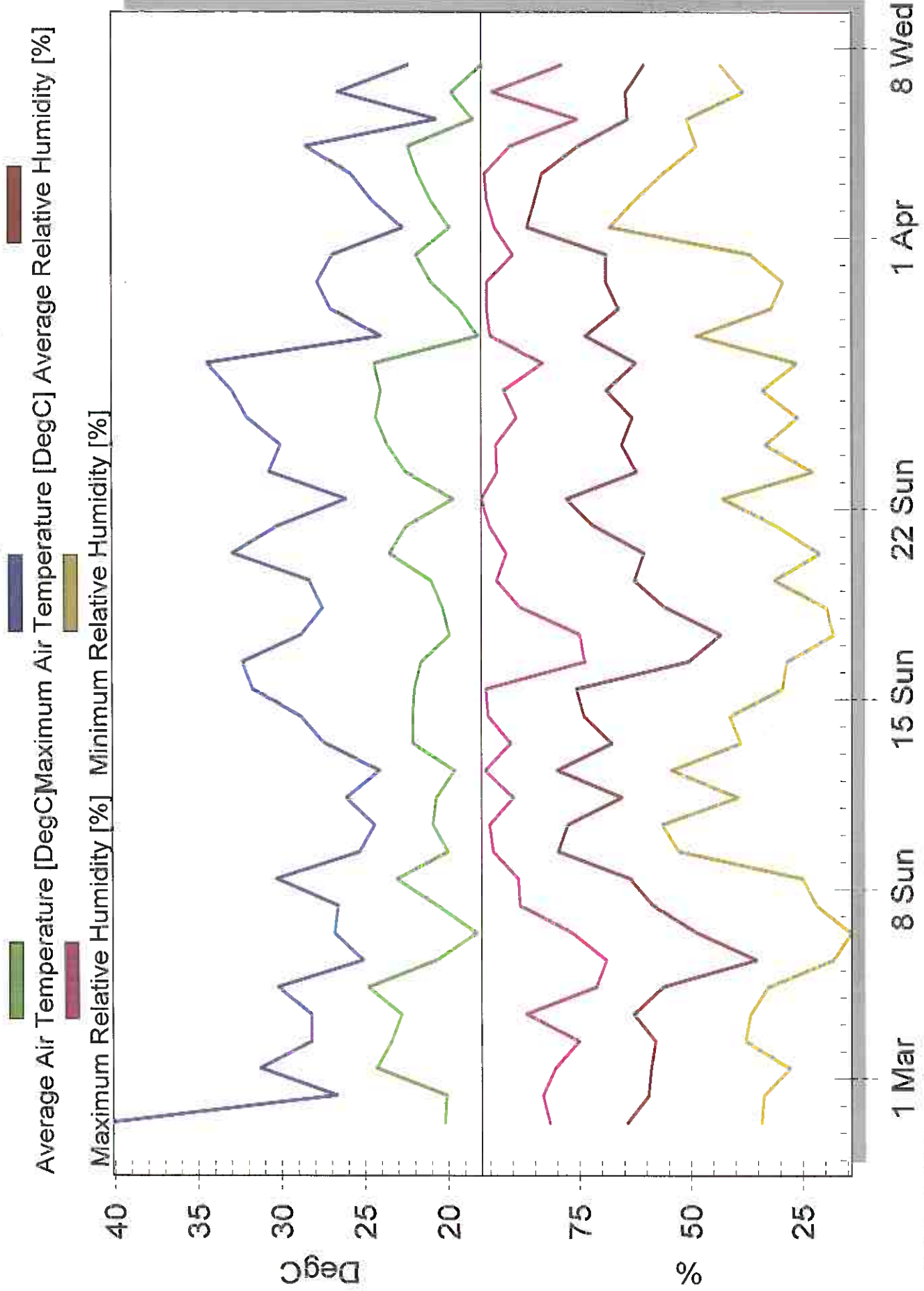
A.R.T.C. LTD / Southern Sydney Freight Line Project
WEATHER DATA REPORT FOR MARCH 2009

224 ESP	Daily	30-Mar-09	9:00:00	21	27.8	16.1	3.1	17.8	124	69	95.6	29.4	1.9	84	24
	Summary														
224 ESP	Daily	31-Mar-09	9:00:00	21.9	26.9	19	4.2	13.7	260	69	89.8	36.7	2.3	132	24
	Summary														
224 ESP	Daily	01-Apr-09	9:00:00	19.9	22.7	18.3	4.9	18.6	137	86.7	93.9	68.2	-1.5	120	28
	Summary														
224 ESP	Daily	02-Apr-09	9:00:00	21	24.5	19	5	16.7	84	84.9	95.6	62.7	-0.6	108	28
	Summary														
224 ESP	Daily	03-Apr-09	9:00:00	21.8	25.8	19.3	4	15.7	281	83.3	96.1	56.2	-1.4	90	24
	Summary														
224 ESP	Daily	04-Apr-09	9:00:00	22.4	28.5	18.1	3.2	16.4	266	75.3	90.5	48.8	1.5	60	26
	Summary														
224 ESP	Daily	05-Apr-09	9:00:00	18.5	20.7	16.8	2.8	8.9	152	64.2	75.5	50.9	1.4	228	18
	Summary														
224 ESP	Daily	06-Apr-09	9:00:00	19.8	26.6	14	2.9	11.1	162	64.6	94.5	38.3	0.7	360	20
	Summary														

"Average Air Temperature" in Current-Daily Summary



Current-Daily Summary



Appendix B

Warwick Farm Site

March 2009

Station	Table	Date	Time	Average Air Temp.	Max. Air Temp.	Min. Air Temp.	Avg. Wind Speed	Max. Wind Speed	Current Wind Direction	Avg. Relative Humidity	Max. Relative Humidity	Min. Relative Humidity	Vector Wind Speed	Vector Wind Direction	Max. Peak Wind Gust
224 ESP	Daily Summary	01-Mar-09	9:00:00	24.3	31.3	19.9	3.5	16.3	140	59	80.5	27.9	-2.3	102	22
224 ESP	Daily Summary	02-Mar-09	9:00:00	23.2	28.2	20.2	3.2	13.7	26	58	75.2	37.8	-2.3	102	20
224 ESP	Daily Summary	03-Mar-09	9:00:00	22.8	28.2	18.4	3.8	15.7	20	62.9	87	36.7	-1.7	90	22
224 ESP	Daily Summary	04-Mar-09	9:00:00	24.4	30.2	22.6	3.9	16	250	56.4	71.3	32.2	-2.3	72	24
224 ESP	Daily Summary	05-Mar-09	9:00:00	20.7	25.1	14.2	5.1	19.2	250	35.4	69	18.2	-0.4	258	24
224 ESP	Daily Summary	06-Mar-09	9:00:00	18.3	26.8	12.2	3.1	15	308	48.8	76.6	14.2	0.7	210	22
224 ESP	Daily Summary	07-Mar-09	9:00:00	20.2	26.6	15.7	3.3	14.1	340	58.5	88.3	21.8	1.5	84	22
224 ESP	Daily Summary	08-Mar-09	9:00:00	23.1	30.3	18.5	2.9	12	154	63.7	88.7	25	1.2	126	20
224 ESP	Daily Summary	09-Mar-09	9:00:00	20	25.3	17.2	3.2	10.5	200	79.8	94.3	52.7	1.4	210	22
224 ESP	Daily Summary	10-Mar-09	9:00:00	20.9	24.4	17.6	2.7	13	94	77.6	95.1	56.5	2	96	20
224 ESP	Daily Summary	11-Mar-09	9:00:00	20.7	26.1	15.8	4.1	16.7	160	65.6	89.8	39.5	-1.5	96	22
224 ESP	Daily Summary	12-Mar-09	9:00:00	19.8	24.1	16	2.5	11.6	30	80	96.1	54.4	1.9	102	18
224 ESP	Daily Summary	13-Mar-09	9:00:00	22.1	27.4	18.3	3	16.4	244	67.7	90.4	38.8	-2.4	78	24
224 ESP	Daily Summary	14-Mar-09	9:00:00	22.1	28.8	17.3	1.5	7.7	100	73.9	95.4	41.3	0.4	30	12

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224 ESP	Daily Summary	20-Mar-09	9:00:00	23.5	32.9	17.2	2.8	13.2	145	60.5	91.3	21.2	1.5	66	18
224 ESP	Daily Summary	21-Mar-09	9:00:00	22.5	30.2	17.3	3.2	15.7	261	71.7	95	30.6	2.3	84	22
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224 ESP	Daily Summary	25-Mar-09	9:00:00	24.3	32	18.7	4.1	17.5	326	63.1	89	26.1	-1.7	84	26
224 ESP	Daily Summary	26-Mar-09	9:00:00	24	32.9	19.4	3	13.4	258	68.9	91.9	34	1.1	84	20
224 ESP	Daily Summary	27-Mar-09	9:00:00	24.4	34.4	19	2.7	22.5	152	62.4	83.2	26.4	0.8	198	36
224 ESP	Daily Summary	28-Mar-09	9:00:00	18.2	24	13.4	2.3	12	266	73.6	94.9	48.8	1.2	120	20
224 ESP	Daily Summary	29-Mar-09	9:00:00	19.3	27	13.1	2.6	13.7	309	66.2	95.6	32.1	1.6	66	18
224 ESP	Daily Summary	30-Mar-09	9:00:00	21	27.8	16.1	3.1	17.8	124	69	95.6	29.4	1.9	84	24

MONITORING SITE: Contractor (The Reed Group) Compound, Manning Street, Warwick Farm

224 ESP	Daily Summary	31-Mar-09	9:00:00	21.9	26.9	19	4.2	13.7	260	69	89.8	36.7	2.3	132	24
224 ESP	Daily Summary	01-Apr-09	9:00:00	19.9	22.7	18.3	4.9	18.6	137	86.7	93.9	68.2	-1.5	120	28
224 ESP	Daily Summary	02-Apr-09	9:00:00	21	24.5	19	5	16.7	84	84.9	95.6	62.7	-0.6	108	28
224 ESP	Daily Summary	03-Apr-09	9:00:00	21	25.8	19.3	4	15.7	281	83.3	96.1	56.2	-1.4	90	24
224 ESP	Daily Summary	04-Apr-09	9:00:00	22.4	28.5	18.1	3.2	16.4	266	75.3	90.5	48	1.5	60	26
224 ESP	Daily Summary	05-Apr-09	9:00:00	18.5	20.7	16.8	2.8	8.9	152	64.2	75.5	50.9	1.4	228	18
224 ESP	Daily Summary	06-Apr-09	9:00:00	19.8	26.6	14	2.9	11.1	162	64.6	94.5	38.3	0.7	360	20