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INTRODUCTION

- 7.1 This section of the Environmental Impact Statement (EIS) addresses the issues related to climate within the development area. It involves an assessment of the prevailing climatic conditions, and assesses the potential impact of the development on this baseline situation.
- 7.2 An assessment of the potential impact upon climate has been undertaken with reference to EIA good practice, the EIA Regulations, and other guidance documents.
- 7.3 The objective of this study was to:
- Assess the prevailing climatic conditions of the development area on a local and regional level
 - Determine the impact, if any, of the development on the local micro-climate and regional climate.
 - Determine any interaction between other aspects of the proposed development and the climate of the area.
- 7.4 SLR Consulting Ireland prepared this section of the EIS. The data used in this section was supplied by MET Eireann. Data from the following weather monitoring station was used.
- Dublin Airport – Grid Reference: Q 169434
- 7.5 This station is located approximately 1.8 km north-east of the site.
- 7.6 The data gathered was then evaluated and it's relevance to the proposed development assessed

CLIMATE DATA

- 7.7 Ireland has a typical maritime climate with relatively mild and moist winters and cool, cloudy summers. The prevailing winds are south westerly in direction. The climate is influenced by warm maritime air associated with the Gulf Stream which has the effect of moderating the climate, and results in high average annual humidity across the country. Consequently, Ireland does not suffer from the extremes of temperature experienced by many other countries at similar latitude. The area of the least precipitation is along the eastern seaboard of the country, in the rain shadow of the Leinster uplands. The climate data recorded within the region of the development is from Dublin Airport; refer to Figure 7.2 for location.

Wind Climate

- 7.8 Results from the synoptic meteorological station at Dublin Airport (located approx. 1.8 km to the north-east of the development, refer to Figure 7.2) over the period 1990 – 2010 indicate that the main wind direction is from a south westerly direction, with an annual incidence of 49% for winds between 200-280 degrees (refer to Table 7.1). The lowest frequency is for winds blowing from the NE quadrant and these occur for about 12% of the time. The annual average wind speed is 10 knots (5.1 m/s) and low wind speed conditions

(<3knots (<1.5m/s)) occur for about 7.5% of the year and calm conditions for about 3% of the time. The incidence of winds above 11 knots (5.7 m/s) is about 42% of the year with wind speeds of above 21 knots (10.8 m/s) present for approximately 4% of the time. Based on this data a wind rose is provided on Figure 7.1.

Table 7.1
Frequency of Wind Direction and Wind Speed for Hourly Observations at Dublin Airport (1990-2010).*

Direction	Percentage Occurrence of Wind Speeds (knots)						All
	<3	4-6	7-10	11-16	17-21	>21	
350-10	0.6	0.9	1	0.2	0	0	2.7
20-40	0.5	0.9	1.2	1.2	0	0	3.8
50-70	0	0.9	1.2	1.4	0	0	3.5
80-100	0.6	1.6	1.6	1.1	0.1	0	5
110-130	0.9	1.9	2.6	1.8	0.2	0	7.4
140-160	0.9	1.7	2.4	2.7	0.8	0	8.5
170-190	0.3	0.9	1.2	1.3	0.3	0	4
200-220	0.5	1.6	3	4.2	1.8	0.6	11.7
230-250	0.7	2.3	4.9	7.4	3.4	1.9	20.6
260-280	0.9	2.6	5.1	5.4	2.2	0.8	17
290-310	0.8	1.9	3.1	2	0.2	0	8
320-340	0.8	1.1	1.7	1.1	0	0	4.7
Calms	3.1						3.1
Total	10.6	18.3	29	29.8	9	3.3	100

*Data is gathered to two decimal places and reported by MET Eireann to one decimal place. As a result, wind speeds less than 0.05 but greater than 0 are not reported which results in a total of less than 100% above

Precipitation (Rainfall)

- 7.9 Rainfall in Ireland normally comes from Atlantic frontal systems which travel north-east over bringing cloud and rain. Mean monthly rates of precipitation are typically between 46.6 – 77.1 mm for the North Dublin area; with the winter months receiving the heaviest amounts (refer to Table 7-2).
- 7.10 Annual rates of precipitation during the period 1990 – 2010 were between 623.9 – 1095.4mm at the Dublin Airport station; with the winter months receiving the heaviest amounts (refer to Table 7.2). The Dublin Airport station is located approximately 1.8km north-east of the site and for the purpose of this section may be considered similar to that rainfall which occurs at the study site. The mean of the Met Eireann records indicate that average annual rainfall for the area of the site is approximately 732.1mm / yr (refer to Table 7.2) indicating that it is one of the “drier” locations in the country.

Table 7.2
Annual Average Precipitation Dublin Airport (mm) 1990-2010

Year	Monthly Precipitation Dublin Airport (mm) 1990 - 2010												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
1990	68.4	108.8	10.2	24.2	38.9	71.9	48.0	49.8	16.4	149.2	64.0	78.7	728.5
1991	71.4	59.0	91.1	92.3	3.6	79.8	26.4	36.9	42.8	85.6	50.3	38.1	677.3
1992	32.9	23.9	65.1	70.3	39.5	37.4	69.9	85.3	64.2	29.7	64.1	41.6	623.9
1993	57.9	19.5	26.2	48.7	149.7	148.3	60.1	36.8	89.9	86.5	45.4	105.7	874.7
1994	83.0	99.4	71.6	60.8	52.5	21.2	64.5	58.6	87.9	46.3	54.8	86.0	786.6
1995	109.1	92.0	44.7	27.3	49.2	11.6	70.2	7.2	43.6	38.0	145.6	72.6	711.1
1996	86.6	62.4	70.3	58.3	69.8	20.8	36.8	102.9	19.0	102.4	103.5	54.4	787.2
1997	13.7	62.3	15.1	48.4	61.4	125.3	54.1	81.2	19.1	67.8	87.2	90.5	726.1
1998	79.5	14.1	65.9	115.6	27.2	113.1	54.2	45.0	95.8	75.1	76.7	69.2	831.4
1999	73.6	32.2	36.4	75.2	39.2	49.0	42.6	106.8	104.3	30.5	43.5	82.5	715.8
2000	40.1	46.1	21.0	89.5	50.2	30.9	48.0	62.8	99.9	87.2	141.4	126.3	843.4
2001	31.8	49.5	56.2	77.9	49.4	41.9	30.5	97.1	41.7	90.3	40.6	21.7	628.6
2002	48.4	125.9	30.3	81.7	121.3	81.2	68.9	50.8	22.6	181.2	185.8	97.3	1095.4
2003	62.8	20.9	27.1	37.0	97.4	86.8	47.6	14.5	37.4	106.6	55.0	60.4	653.5
2004	80.4	22.1	43.5	32.2	49.8	50.7	38.1	133.9	46.8	120.2	39.9	45.0	702.6
2005	64.0	40.6	21.5	72.0	65.6	32.7	83.0	26.1	55.8	101.8	46.7	73.0	683.1
2006	16.4	37.7	69.7	41.0	117.0	26.5	18.2	57.6	84.9	107.3	69.1	94.6	740.0
2007	73.2	77.8	38.8	14.7	35.0	126.4	127.1	95.5	39.2	15.7	53.8	63.8	761.0
2008	97.3	13.8	102.8	27.6	32.7	76.4	111.4	189.9	104.8	101.7	44.8	39.4	942.6
2009	62.1	56.0	26.3	71.1	35.5	64.3	165.4	69.5	24.1	63.1	171.3	68.8	917.5
2010	45.5	36.7	54.8	26.7	34.6	53.6	78.6	48.0	104.3	30.8	100.0	58.1	671.7
Average	58.6	47.2	46.6	55.6	58.1	60.9	61.7	67.0	58.5	74.7	77.1	66.1	732.1

General Weather

7.11 The average number of days per month with other types of weather at Dublin Airport over the period 1961 to 1990 is reported in Table 7-3. The general picture is of a higher than national average of snow or sleet.

Table 7-3
General Meteorological Conditions Dublin Airport 1961 - 1990

WEATHER (mean no. of days with)	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Year
Snow or sleet	6.0	5.5	4.3	1.7	0.3	0.0	0.0	0.0	0.0	0.1	0.9	2.9	21.6
Snow lying at 0900UTC	2.1	1.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	4.5
Hail	0.7	0.9	2.2	2.4	1.4	0.3	0.1	0.1	0.0	0.2	0.5	0.8	9.5

Thunder	0.1	0.1	0.2	0.3	0.6	0.7	0.7	0.6	0.3	0.3	0.1	0.1	4.1
Fog	4.8	4.3	3.9	4.5	3.6	3.1	3.6	5.3	4.9	4.7	4.0	3.9	50.5

ASSESSMENT OF IMPACTS

Direct Impacts

7.12 The development is not of sufficient scale to have any direct impacts on the regional or local climatic conditions. Conversely, the development is not affected to any significant degree by the prevailing weather conditions of the area.

Indirect Impacts

7.13 The effect of climatic conditions (e.g. rainfall, wind etc) on other potential impacts of the development (e.g. dust deposition, surface water etc.), are dealt with in the relevant sections of this EIS: Section 6 – Water and Section 8 – Air Quality.

MITIGATION AND MONITORING

7.14 As the development is not of sufficient scale to have any direct or indirect impacts on the regional or local climatic conditions, there is no requirement to carry out mitigation measures or monitoring within, or in the vicinity of the development, in relation to climate.

FIGURES

Figure 7-1 Wind Rose Dublin Airport (1990 – 2010)

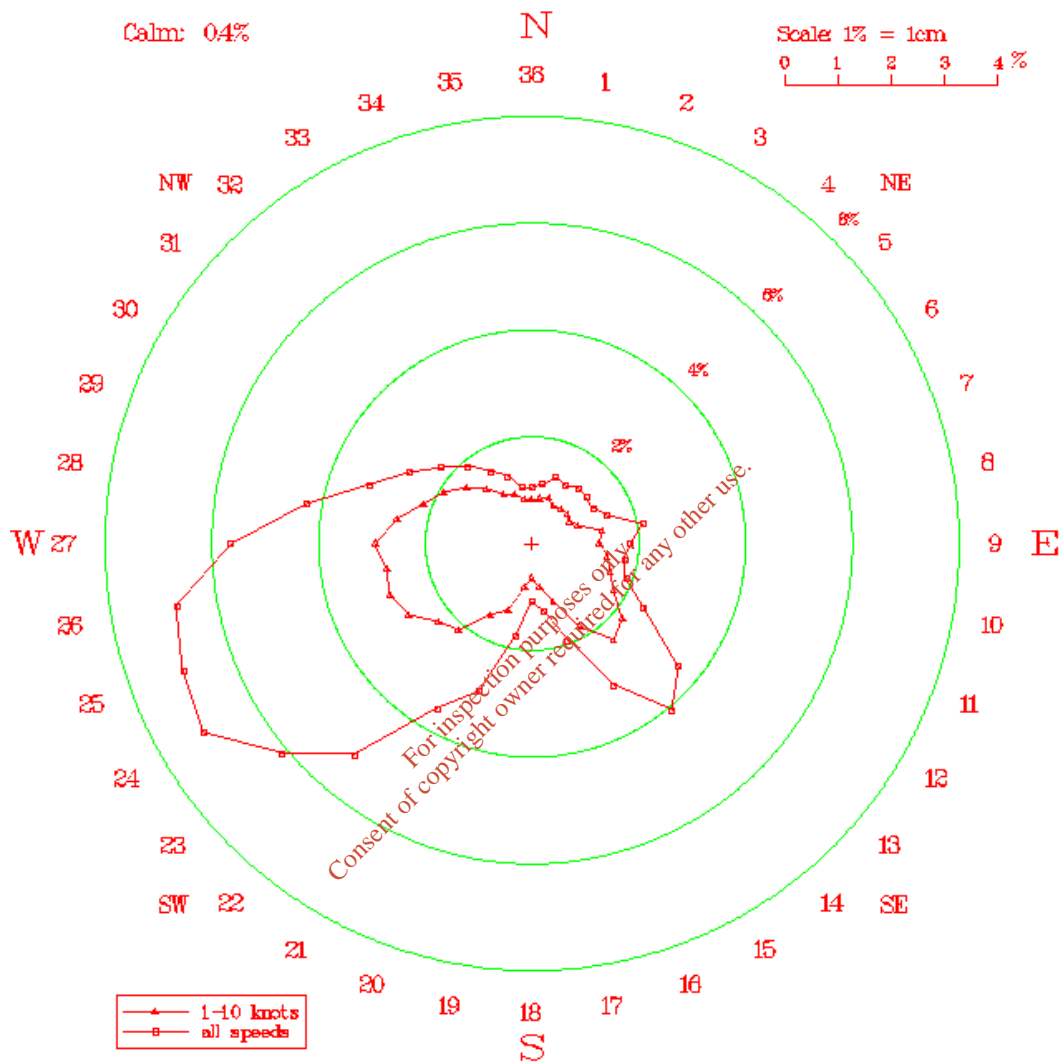
Figure 7-2 Weather Monitoring Station Location

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Dublin Airport

1990–2010

Percentage Frequency of Occurrence of Wind Directions



Percentage Frequency of Occurrence of Wind Speeds

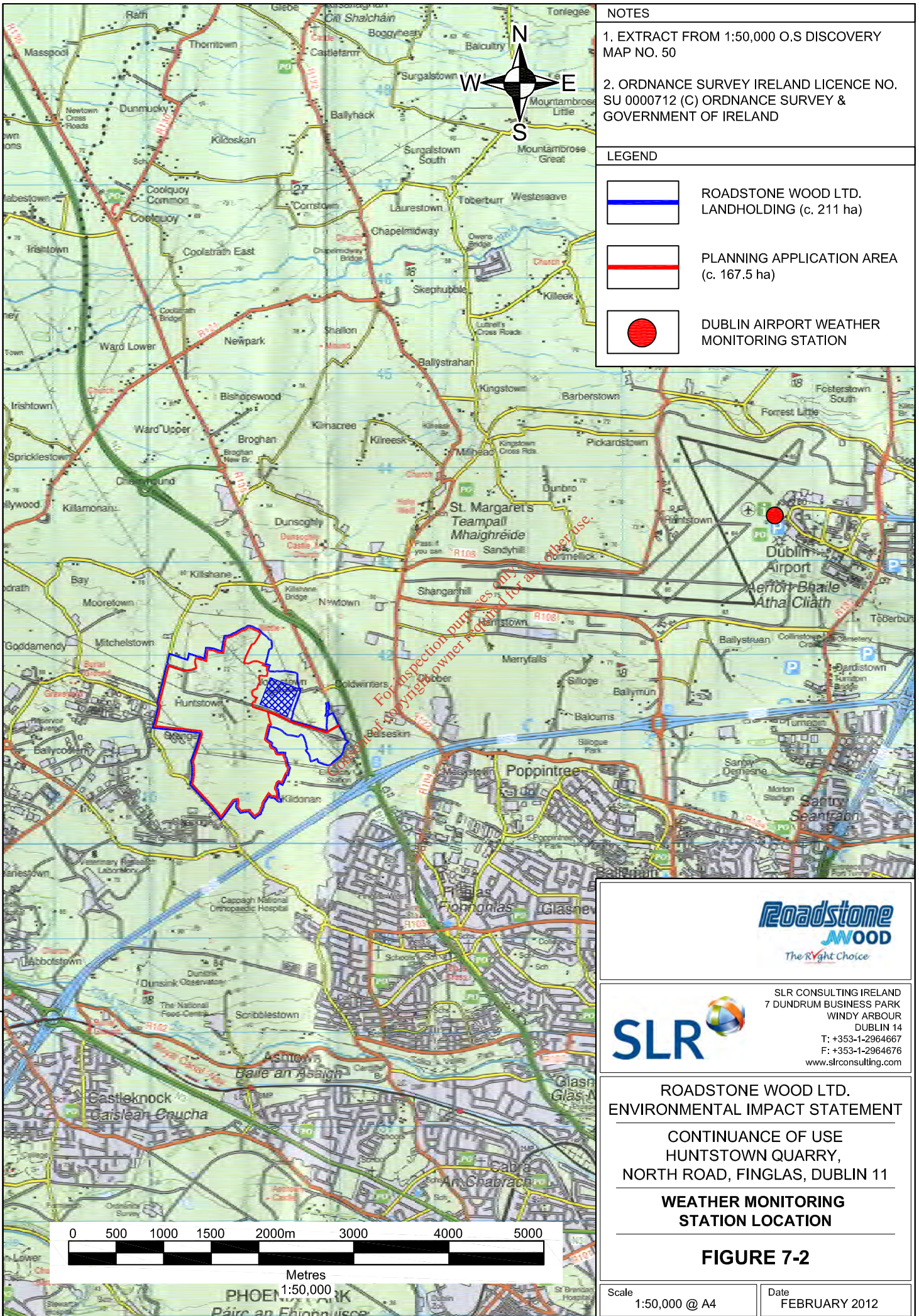
0	1-3	4-6	7-10	11-16	17-21	22-27	28-33	34-40	41-47	over 48	knots	%
0.4	7.8	18.3	28.9	29.5	10.7	3.7	0.6	+	+	0.0		

mean wind speed: 10.5 knots
anemometer height: 12m

standard deviation: 5.7 knots

Met Eireann, Glasnevin Hill, Dublin 9.


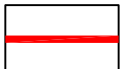
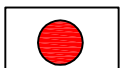
Figure 7.1
Wind Rose (1990-2010): Dublin Airport



NOTES

- EXTRACT FROM 1:50,000 O.S DISCOVERY MAP NO. 50
- ORDNANCE SURVEY IRELAND LICENCE NO. SU 0000712 (C) ORDNANCE SURVEY & GOVERNMENT OF IRELAND

LEGEND

-  ROADSTONE WOOD LTD. LANDHOLDING (c. 211 ha)
-  PLANNING APPLICATION AREA (c. 167.5 ha)
-  DUBLIN AIRPORT WEATHER MONITORING STATION

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**ROADSTONE WOOD LTD.
 ENVIRONMENTAL IMPACT STATEMENT**

**CONTINUANCE OF USE
 HUNTSTOWN QUARRY,
 NORTH ROAD, FINGLAS, DUBLIN 11**

**WEATHER MONITORING
 STATION LOCATION**

FIGURE 7-2

Scale: 1:50,000 @ A4 Date: FEBRUARY 2012

0180.00011.18.7-2.R0.Weather Station Loc.dwg