



Pedestrian Wind Environment Statement

for the proposed development at

639 Gardeners Road, Mascot

November 13, 2009

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Document Control

Revision Number	Date	Revision History	Prepared By (initials)	Initial Review By (initials)	Reviewed & Authorised By (initials)
0	12/11/2009	Initial	DYF	AB	TR
1	13/11/2009	Minor updates to reference the latest tree planting scheme	AB	-	TR

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1.0 Introduction

This report is in relation to the proposed development known as the Sydney Internet Exchange Facility, located at 639 Gardeners Road, Mascot. This report presents an opinion on the likely impact of the proposed development on the local wind environment, and addresses the requirements of Section 6.5.2 of the Mascot Station Precinct Development Control Plan (2004) for pedestrian wind comfort.

The effect of wind activity within and around the proposed development site is examined for the three predominant wind directions for Sydney; i.e. north-east, south and west. The analysis of the wind effects relating to the proposal was carried out in the context of the local wind climate, building morphology and land topography. Note that since the subject development site is located in an area of Mascot with many nearby proposed developments, this study of the local wind effects of the subject development addresses the existing and expected future surrounding buildings cases.

The conclusions of this report are drawn from our extensive experience in this field and are based on an examination of the architectural drawings prepared by Drew Dickson Architects Pty Ltd, received in November 2009. No wind tunnel tests have been undertaken for the subject development. As such, this report addresses only the general wind effects and any localised effects that are identifiable by visual inspection. Any recommendations in this report are made only in-principle and are based on our extensive experience in the study of wind environment effects.

2.0 Local Wind Climate

Three principal wind directions potentially affect the development. These winds prevail from the north-east, south and west, Table 1 is a summary of the principal time of occurrence of these winds. This summary is based on data obtained by the Bureau of Meteorology from Sydney Airport, between 1939 and 2008. Table 1 presents a summary of the principal time of occurrence of these winds.

Table 1: Principal Time of Occurrence of Winds for Sydney

Month	Wind Direction		
	North-Easterly	Southerly	Westerly
January	X	X	
February	X	X	
March	X	X	
April		X	X
May			X
June			X

Table 1: Principal Time of Occurrence of Winds for Sydney (cont..)

Month	Wind Direction		
	North-Easterly	Southerly	Westerly
July			X
August			X
September		X	X
October	X	X	
November	X	X	
December	X	X	

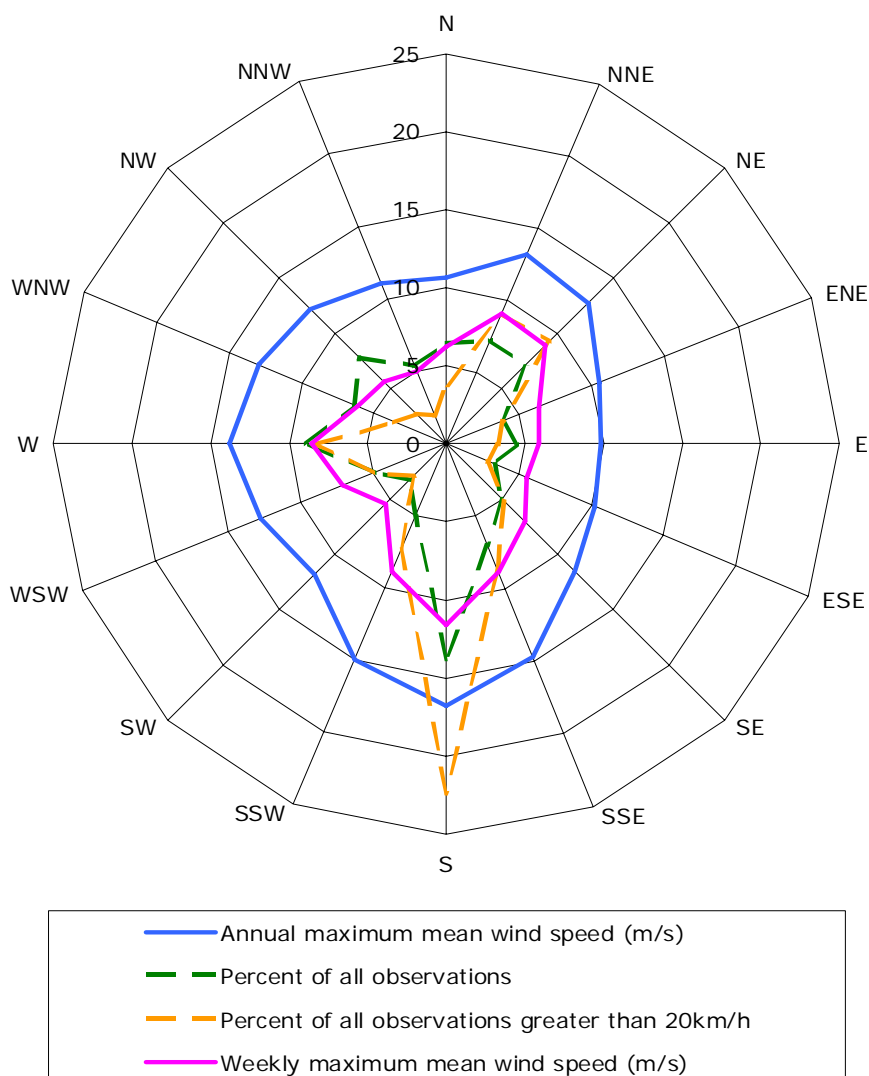


Figure 1: Annual and Weekly Mean Wind Speed Data for Sydney (based on continuous 10 minute mean observations at Kingsford Smith Airport, recorded from 1939 to 2008, and corrected for open terrain at 10m height)

3.0 Wind Effects on People

The acceptability of wind in any area is dependent upon its use. For example, people walking or window-shopping will tolerate higher wind speeds than those seated at an outdoor restaurant.

The following table, developed by Penwarden (1975), is a modified version of the Beaufort Scale, and describes the effects of various wind intensities on people. Note that the applicability column related to wind conditions occurring frequently (exceeded approximately once per week on average). Higher ranges of wind speeds can be tolerated for rarer events.

Table 2: Summary of Wind Effects on People (after Penwarden, 1975)

Type of Winds	Beaufort Number	Gust Speed (m/s)	Effects	Applicability
Calm, light air	1	0 - 1.5	Calm, no noticeable wind	Generally acceptable for Stationary, long exposure activities such as in outdoor restaurants, landscaped gardens and open air theatres.
Light breeze	2	1.6 - 3.3	Wind felt on face	
Gentle breeze	3	3.4 - 5.4	Hair is disturbed, Clothing flaps	
Moderate breeze	4	5.5 - 7.9	Raises dust, dry soil and loose paper - Hair disarranged	Generally acceptable for walking & stationary, short exposure activities such as window shopping, standing or sitting in plazas.
Fresh breeze	5	8.0 - 10.7	Force of wind felt on body	Acceptable as a main pedestrian thoroughfare
Strong breeze	6	10.8 - 13.8	Umbrellas used with difficulty, Hair blown straight, Difficult to walk steadily, Wind noise on ears unpleasant.	Acceptable for areas where there is little pedestrian activity or for fast walking.
Near Gale	7	13.9 - 17.1	Inconvenience felt when walking.	
Gale	8	17.2 - 20.7	Generally impedes progress, Great difficulty with balance.	Unacceptable as a public accessway.
Strong gale	9	20.8 - 24.4	People blown over by gusts.	Completely unacceptable.

4.0 Description and Location of the Proposed Development

The development site is located at 639 Gardeners Road, Mascot, at the south-eastern corner of the intersection of Gardeners Road and Bourke Street. The proposed development has a height of approximately 20m above ground, and consists of three levels including a mezzanine level. The northern and western site boundaries are along Gardeners Road and Bourke Street respectively, with pedestrian footpaths to be retained along these areas. The local topography immediately around the site is relatively flat.

The subject site is generally surrounded by single and double-storey industrial buildings and several taller high-density residential buildings. The residential buildings around the site are relatively recent additions to the area, and more are expected to be constructed in the future on the current industrial sites. The height of these newer residential buildings is typically in the range of 5 to 10 stories above ground. A development is proposed for the site on the south-western corner of Gardeners Road and Bourke Street with an overall height of approximately 34m.

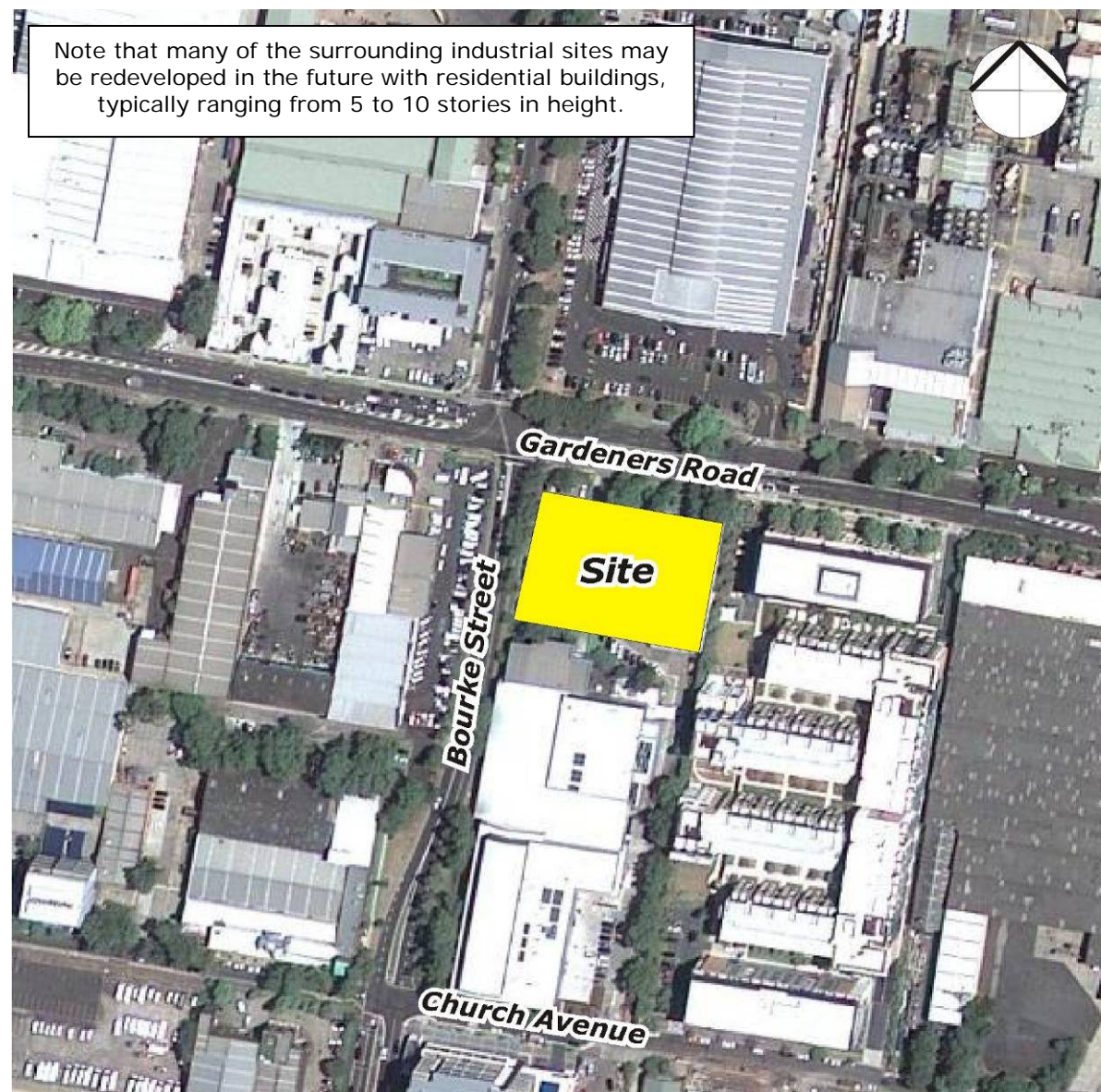


Figure 2: Aerial Image of the Site Location

5.0 Wind Conditions Within and Around the Site

For each of the three predominant wind directions for the Sydney region the interaction between the wind and the building morphology in the area was considered. Important features taken into account include the distances between the proposed building forms, their overall heights and bulk, as well as the landform. Only the potentially critical wind effects are discussed in this report. Note that the effect of the existing surrounding buildings and the proposed future surrounding buildings are discussed.

5.1 North-Easterly Winds

The pedestrian footpath along the northern site boundary along Gardeners Road is somewhat exposed to the prevailing north-easterly winds due to the lack of shielding provided by upstream buildings. However, it should be noted that the proposed development is not tall enough for downwash effects to be of concern, and hence it is expected that wind conditions along the Gardeners Road pedestrian footpath will be acceptable with the inclusion of the proposed trees along this area, as shown in the architectural drawings set. The height of the development is not expected to cause any speed-up effects at the north-western corner of the site.

Future surrounding buildings are not expected to have any significant impact on wind conditions for the subject site. The construction of taller buildings to the north of the site may even provide additional shielding to the site from the prevailing north-easterly winds, and hence provide even calmer wind conditions.

It should also be noted that, due to the effective architectural design of the façade of the proposed development, side-streamed winds are not expected to be of concern. This is due to the recesses in the building form, and the many horizontal and vertical columns/fins that feature on the façade. These are expected to break-up attached wind flow. It is not expected that the proposed development will have an adverse effect on the wind conditions in the local surrounding streets and pedestrian footpaths and thoroughfares, for the existing or future surrounding buildings cases.

5.2 Southerly Winds

The pedestrian access areas of the proposed development site are expected to benefit from the shielding provided by the local surrounding buildings to the south and south-west of the site. Wind conditions along the Bourke Street pedestrian footpath are expected to be acceptable with the inclusion of the proposed trees along this area as shown in the architectural drawings set. The proposed development is not expected to create any adverse wind effects to the local surrounding area due to its low height.

Future surrounding buildings are not expected to have any significant impact on wind conditions for the site. If the future buildings are larger

than the existing surrounding buildings then wind conditions may even be further enhanced for the development site.

5.3 Westerly Winds

The pedestrian footpaths along Bourke Street and Gardeners Road are somewhat exposed to the prevailing westerly winds due to the lack of shielding provided by upstream buildings. However, it should be noted that the proposed development is not tall enough for downwash effects to be of concern, and side-streaming is not expected to be a concern due to the effective architectural design of the building façade. Hence it is expected that wind conditions along the Bourke Street and Gardeners Road pedestrian footpaths will be acceptable with the inclusion of the proposed trees along these areas, as shown in the architectural drawings set.

Future surrounding buildings are not expected to have any significant impact on wind conditions for the subject site. Construction of the 34m high proposed residential building on the south-western side of the Bourke Street and Gardeners Road intersection to the west of the subject site is expected to provide additional shielding to the site from the prevailing westerly winds, and hence will result in even calmer wind conditions.

It is not expected that the proposed development will have an adverse effect on the wind conditions in the local surrounding streets and pedestrian footpaths and thoroughfares, for the existing or future surrounding buildings cases.

6.0 Conclusions

An analysis of the wind environment impact with respect to the principal wind directions for Sydney has been completed for the proposed development known as the Sydney Internet Exchange Facility, located at 639 Gardeners Road, Mascot. This report addresses the requirements of Section 6.5.2 of the Mascot Station Precinct Development Control Plan (2004) for pedestrian wind comfort.

The results of the study indicate that the proposed development is not expected to cause any adverse wind effects to the local surrounding area. It should also be noted that, due to the effective architectural design of the façade of the proposed development, side-streamed winds are not expected to be of concern. This is due to the recesses in the building form, and the many horizontal and vertical columns/fins that feature on the façade. These are expected to break-up attached wind flow.

The pedestrian footpaths along Bourke Street and Gardeners Road are somewhat exposed to prevailing winds due to the lack of shielding provided by upstream buildings to the north and the west of the site. However, it is expected that wind conditions along these footpath areas will be acceptable with the inclusion of the proposed densely foliating trees along these areas, as shown in the architectural drawings set.

It is not expected that the future proposed buildings around the site will have any significant impact on the wind conditions for the subject development site. For some areas of the subject site the addition of larger neighbouring buildings could provide additional shielding to the site from the prevailing winds, and result in even calmer wind conditions for the site. This is expected to be the case when the proposed 34m high residential development on the south-western side of the Bourke Street and Gardeners Road intersection is completed, which is expected to provide shielding to the subject site from the prevailing westerly winds.

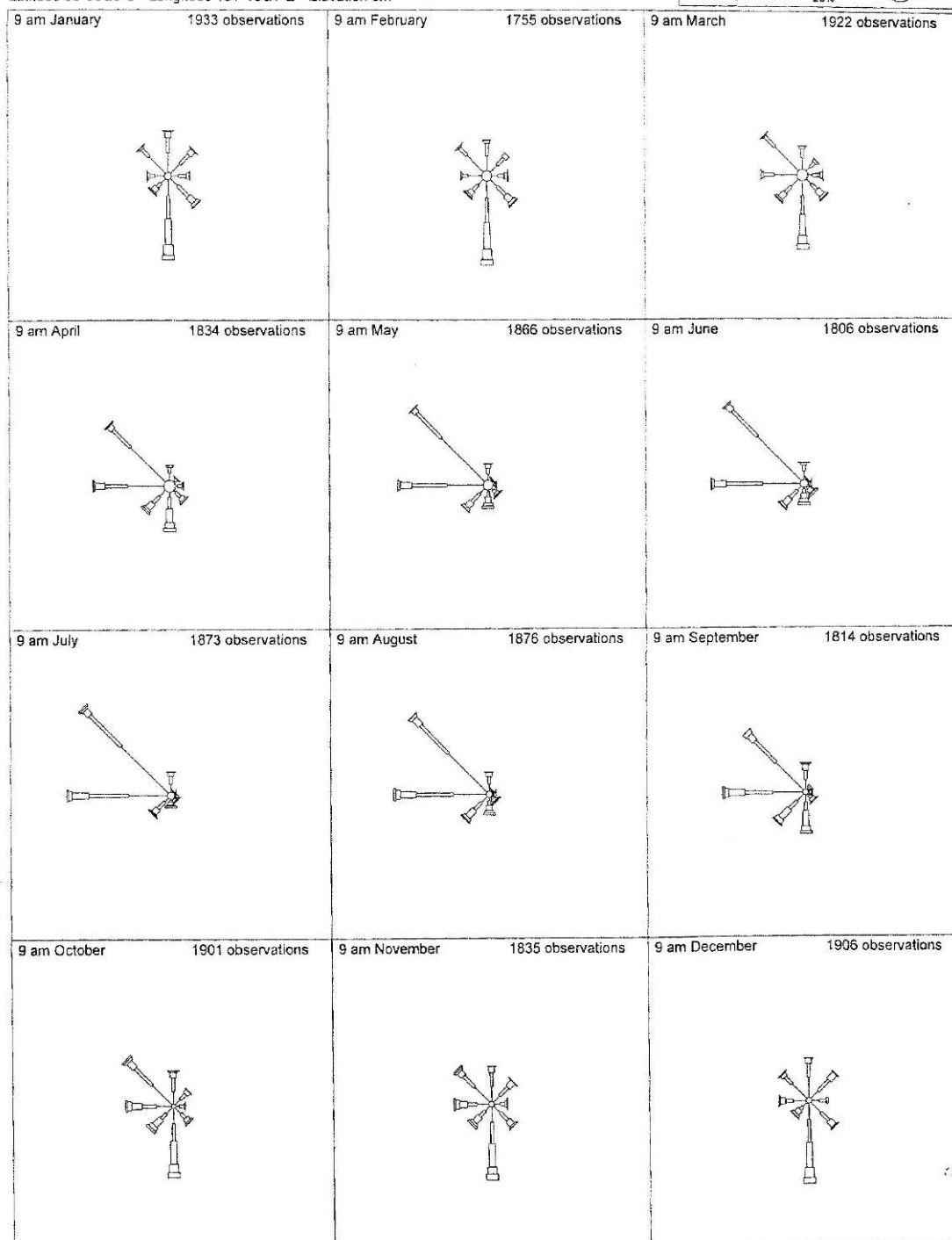
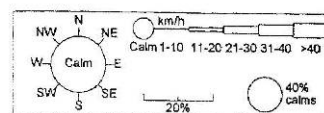
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Appendix

Wind Roses for Sydney Airport
1939-2000

Wind Roses using available data between 1939 and 2000 for SYDNEY AIRPORT AMO

Site Number 066037 • Locality: SYDNEY AIRPORT • Opened Jan 1929 • Still Open
Latitude 33°56'28"S • Longitude 151°10'21"E • Elevation 6m

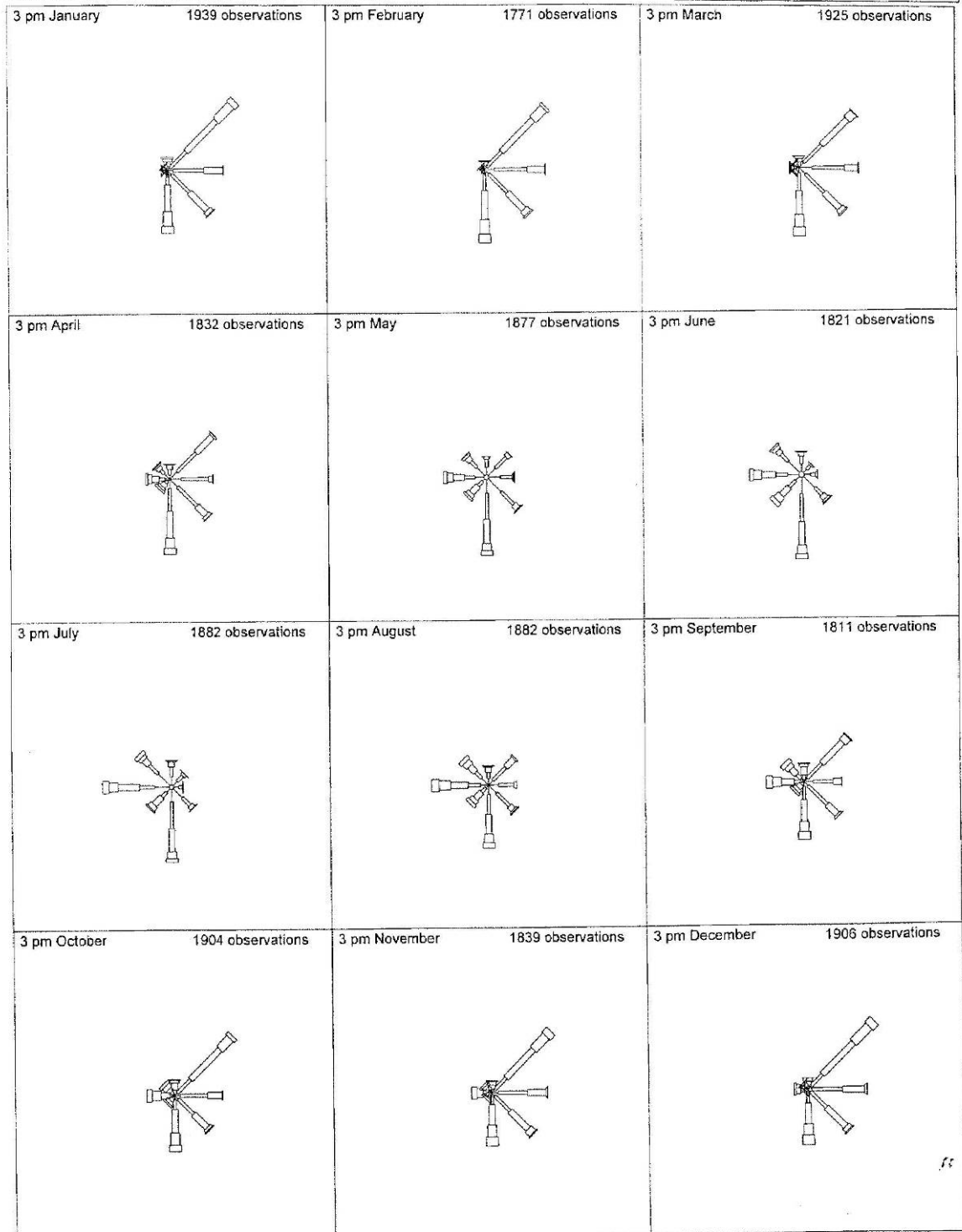
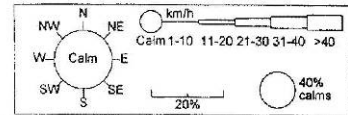


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Page 1 of 1

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Page 1 of 1