

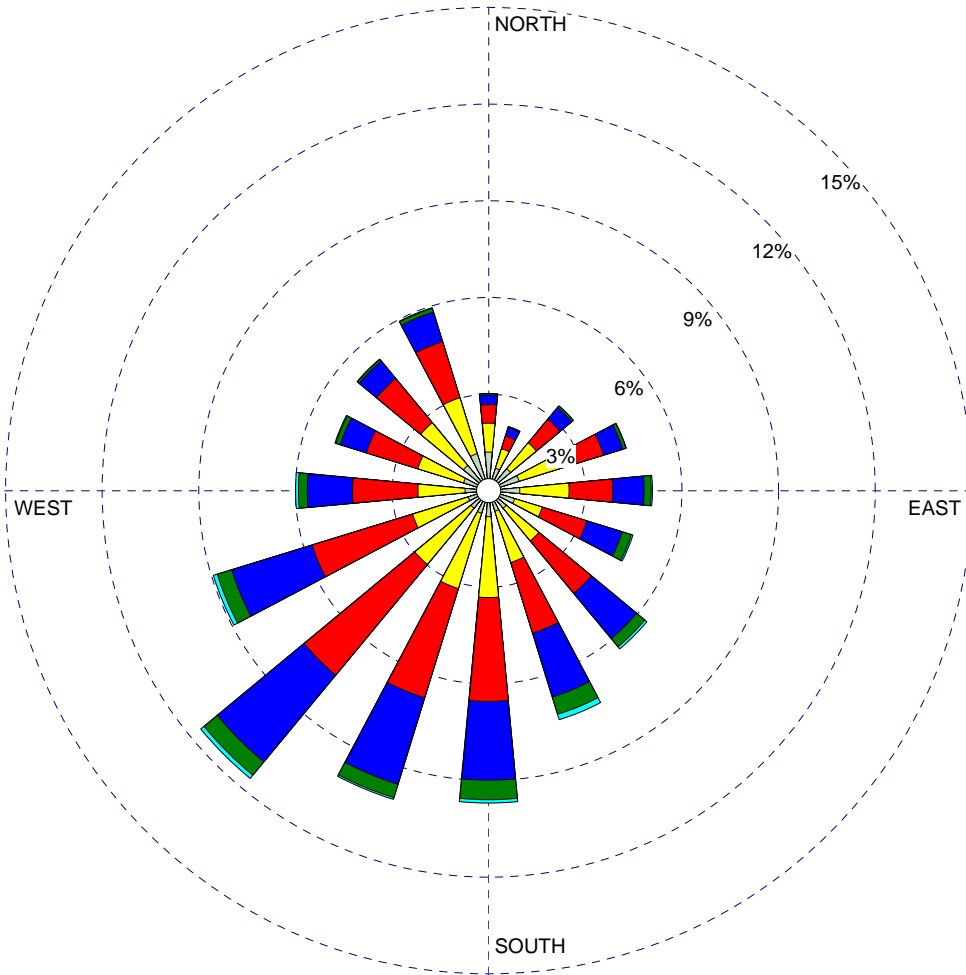
Appendix 14.1 Wind Roses

WIND ROSE PLOT:

Belfast (Aldergrove) International Airport

DISPLAY:

**Wind Speed
Direction (blowing from)**



WIND SPEED
(m/s)

- >= 11.1
- 8.8 - 11.1
- 5.7 - 8.8
- 3.6 - 5.7
- 2.1 - 3.6
- 0.5 - 2.1

Calms: 1.14%

COMMENTS:

DATA PERIOD:

**Start Date: 01/01/2004 - 00:00
End Date: 31/12/2012 - 23:00**

COMPANY NAME:

Atkins Ltd.

MODELER:

TSM

CALM WINDS:

1.14%

TOTAL COUNT:

78762 hrs.

AVG. WIND SPEED:

4.22 m/s

PROJECT NO.:

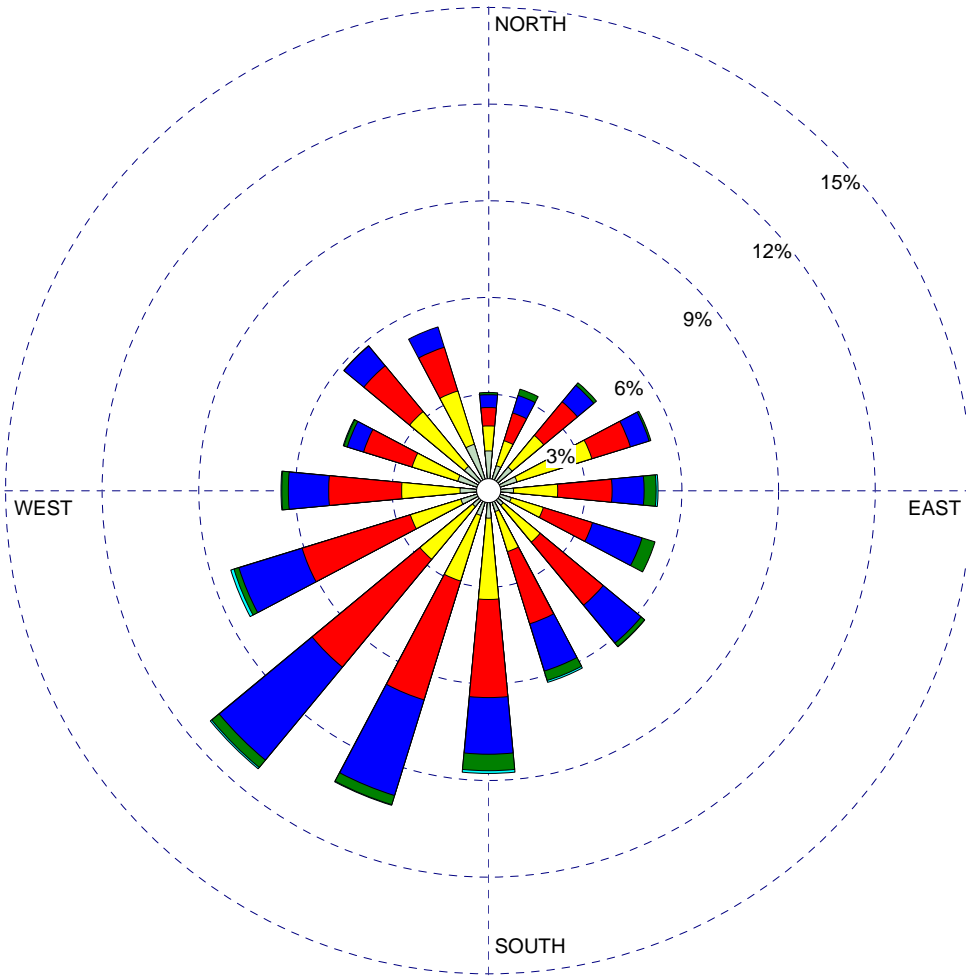
Northern Ireland

WIND ROSE PLOT:

Belfast (Aldergrove) International Airport

DISPLAY:

**Wind Speed
Direction (blowing from)**



WIND SPEED (m/s)

- >= 11.1
- 8.8 - 11.1
- 5.7 - 8.8
- 3.6 - 5.7
- 2.1 - 3.6
- 0.5 - 2.1

Calms: 0.15%

COMMENTS:

DATA PERIOD:

**Start Date: 01/01/2012 - 00:00
End Date: 31/12/2012 - 23:00**

COMPANY NAME:

Atkins Ltd.

MODELER:

TSM

CALM WINDS:

0.15%

TOTAL COUNT:

8784 hrs.

AVG. WIND SPEED:

4.10 m/s

PROJECT NO.:

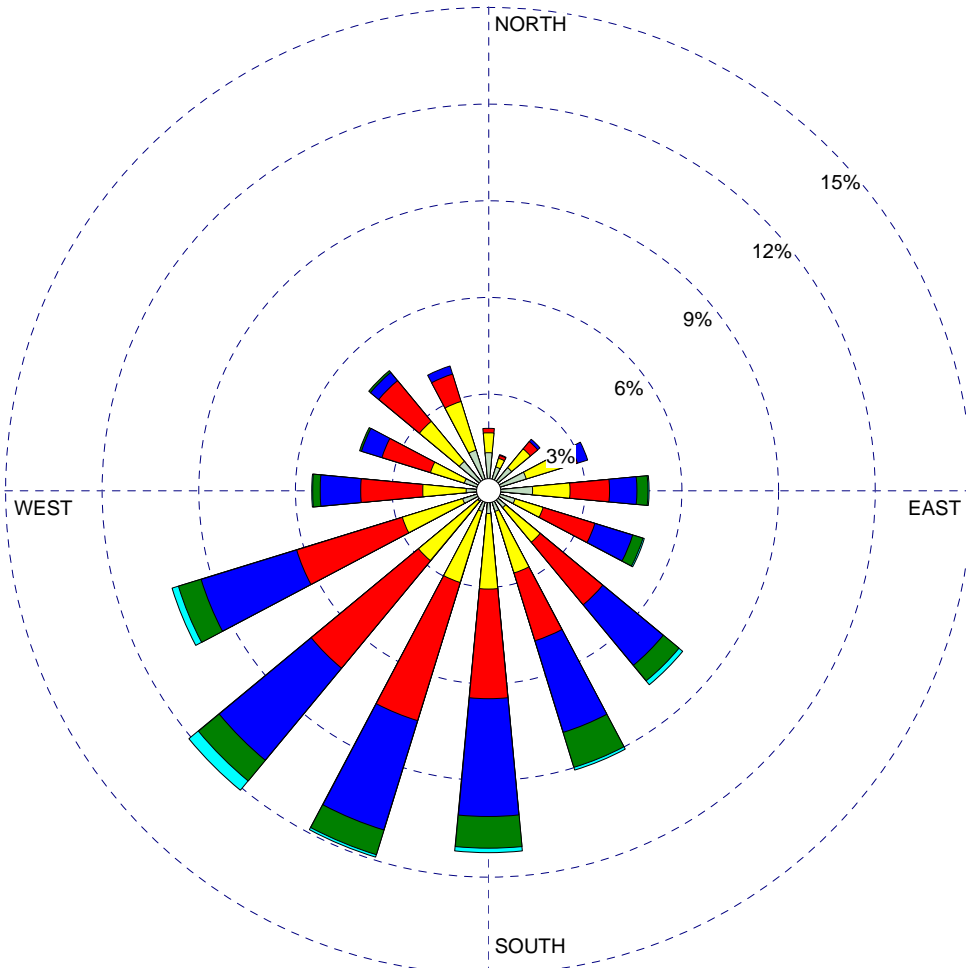
Northern Ireland

WIND ROSE PLOT:

Belfast (Aldergrove) International Airport

DISPLAY:

**Wind Speed
Direction (blowing from)**



WIND SPEED
(m/s)

- >= 11.1
- 8.8 - 11.1
- 5.7 - 8.8
- 3.6 - 5.7
- 2.1 - 3.6
- 0.5 - 2.1

Calms: 0.81%

COMMENTS:

DATA PERIOD:

**Start Date: 01/01/2011 - 00:00
End Date: 31/12/2011 - 23:00**

COMPANY NAME:

Atkins Ltd.

MODELER:

TSM

CALM WINDS:

0.81%

TOTAL COUNT:

8753 hrs.

AVG. WIND SPEED:

4.42 m/s

PROJECT NO.:

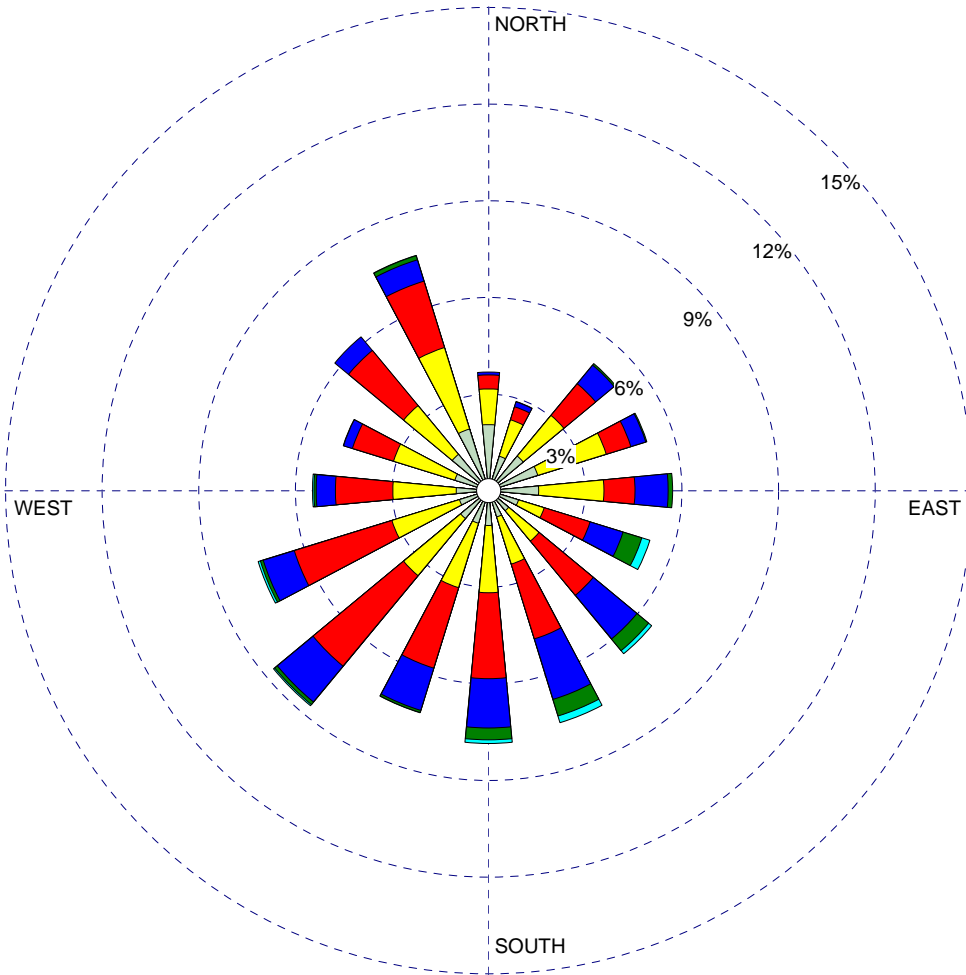
Northern Ireland

WIND ROSE PLOT:

Belfast (Aldergrove) International Airport

DISPLAY:

**Wind Speed
Direction (blowing from)**



WIND SPEED
(m/s)

- >= 11.1
- 8.8 - 11.1
- 5.7 - 8.8
- 3.6 - 5.7
- 2.1 - 3.6
- 0.5 - 2.1

Calms: 3.06%

COMMENTS:

DATA PERIOD:

**Start Date: 01/01/2010 - 00:00
End Date: 31/12/2010 - 23:00**

COMPANY NAME:

Atkins Ltd.

MODELER:

TSM

CALM WINDS:

3.06%

TOTAL COUNT:

8760 hrs.

AVG. WIND SPEED:

3.56 m/s

PROJECT NO.:

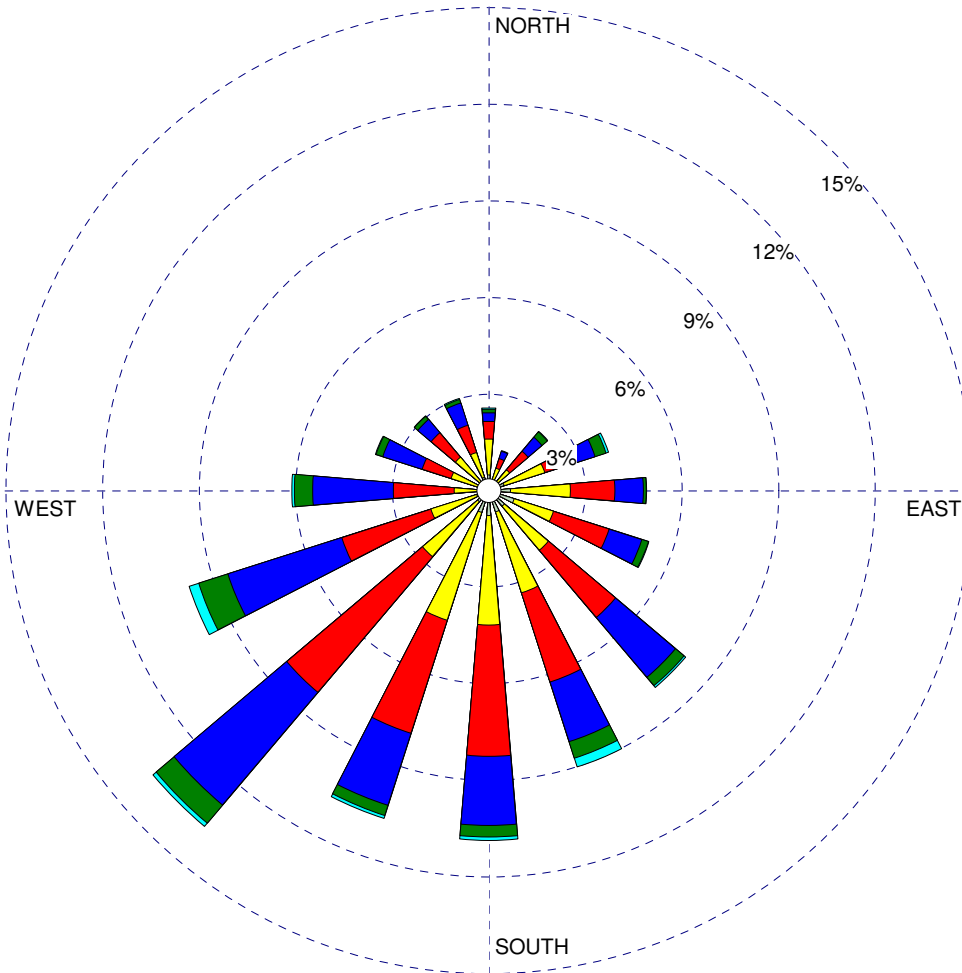
Northern Ireland

WIND ROSE PLOT:

Belfast (Aldergrove) International Airport

DISPLAY:

**Wind Speed
Direction (blowing from)**



WIND SPEED (m/s)

- >= 11.1
- 8.8 - 11.1
- 5.7 - 8.8
- 3.6 - 5.7
- 2.1 - 3.6
- 0.5 - 2.1

Calms: 2.04%

COMMENTS:

DATA PERIOD:

**2009
Jan 1 - Dec 31
00:00 - 23:00**

COMPANY NAME:

Atkins Ltd.

MODELER:

TSM

CALM WINDS:

2.04%

TOTAL COUNT:

8731 hrs.

AVG. WIND SPEED:

4.53 m/s

PROJECT NO.:

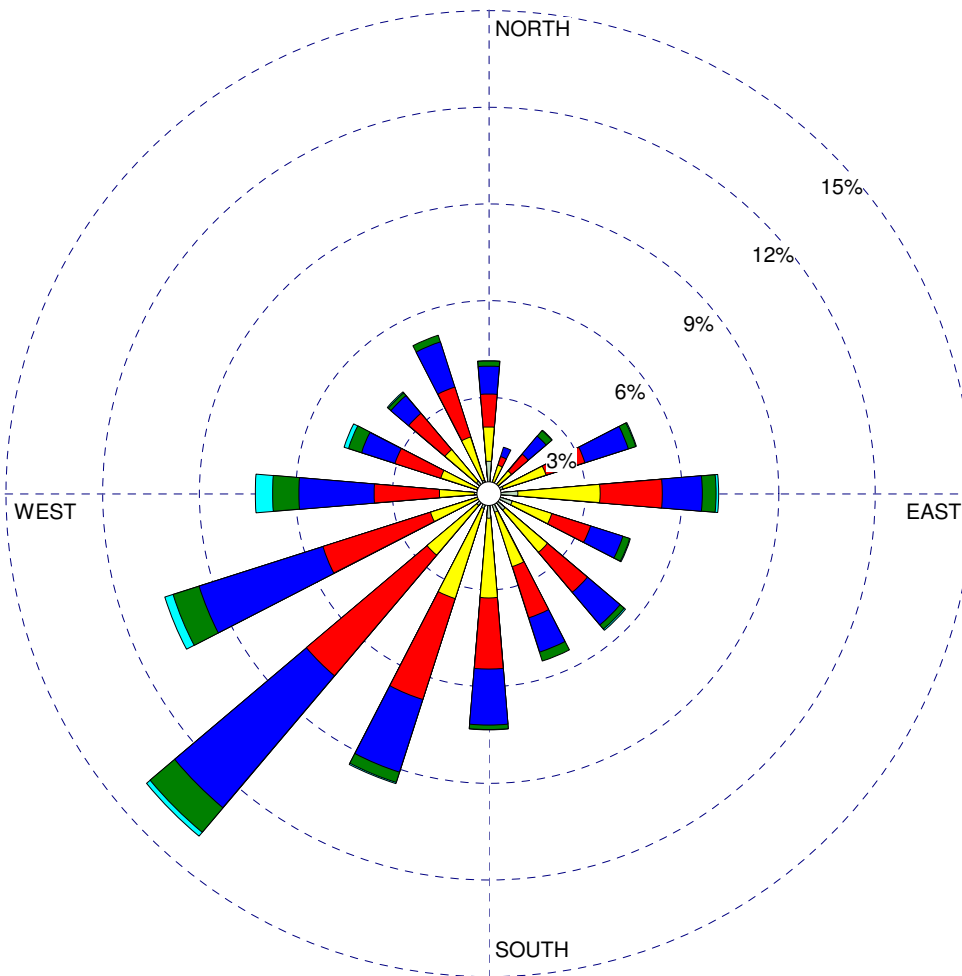
Northern Ireland

WIND ROSE PLOT:

Belfast (Aldergrove) International Airport

DISPLAY:

**Wind Speed
Direction (blowing from)**



WIND SPEED
(m/s)

- >= 11.1
- 8.8 - 11.1
- 5.7 - 8.8
- 3.6 - 5.7
- 2.1 - 3.6
- 0.5 - 2.1

Calms: 1.83%

COMMENTS:

DATA PERIOD:

**2008
Jan 1 - Dec 31
00:00 - 23:00**

COMPANY NAME:

Atkins Ltd.

MODELER:

TSM

CALM WINDS:

1.83%

TOTAL COUNT:

8741 hrs.

AVG. WIND SPEED:

4.60 m/s

PROJECT NO.:

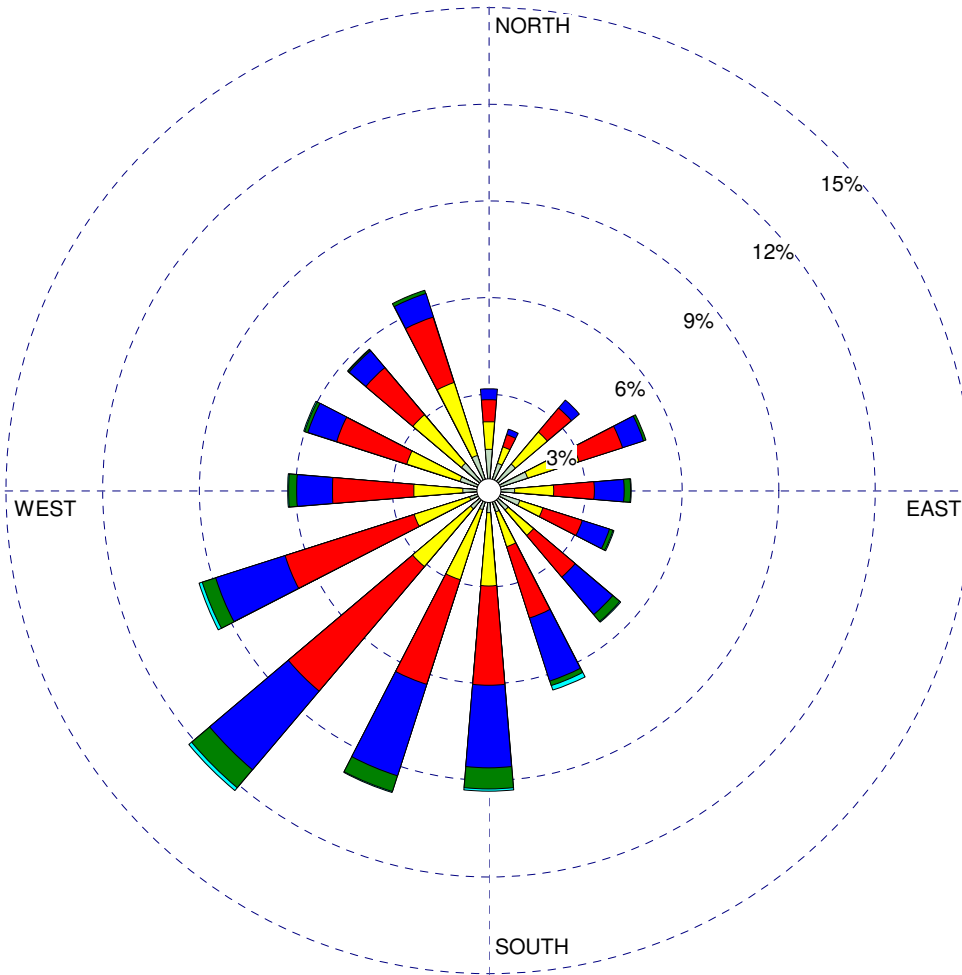
Northern Ireland

WIND ROSE PLOT:

Belfast (Aldergrove) International Airport

DISPLAY:

**Wind Speed
Direction (blowing from)**



WIND SPEED
(m/s)

- >= 11.1
- 8.8 - 11.1
- 5.7 - 8.8
- 3.6 - 5.7
- 2.1 - 3.6
- 0.5 - 2.1

Calms: 0.46%

COMMENTS:

DATA PERIOD:

**2007
Jan 1 - Dec 31
00:00 - 23:00**

COMPANY NAME:

Atkins Ltd.

MODELER:

TSM

CALM WINDS:

0.46%

TOTAL COUNT:

8710 hrs.

AVG. WIND SPEED:

4.13 m/s

PROJECT NO.:

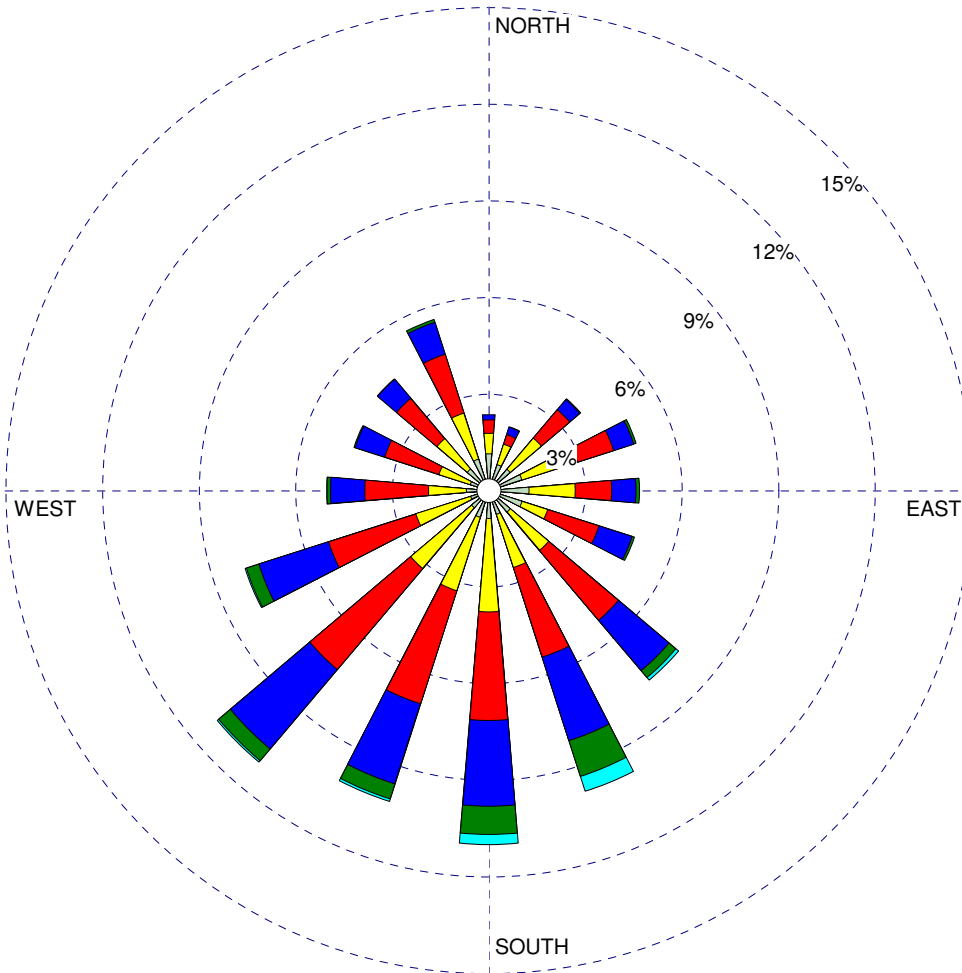
Northern Ireland

WIND ROSE PLOT:

Belfast (Aldergrove) International Airport

DISPLAY:

**Wind Speed
Direction (blowing from)**



COMMENTS:

DATA PERIOD:

**2006
Jan 1 - Dec 31
00:00 - 23:00**

COMPANY NAME:

Atkins Ltd.

MODELER:

TSM

CALM WINDS:

0.59%

TOTAL COUNT:

8753 hrs.

AVG. WIND SPEED:

4.24 m/s

PROJECT NO.:

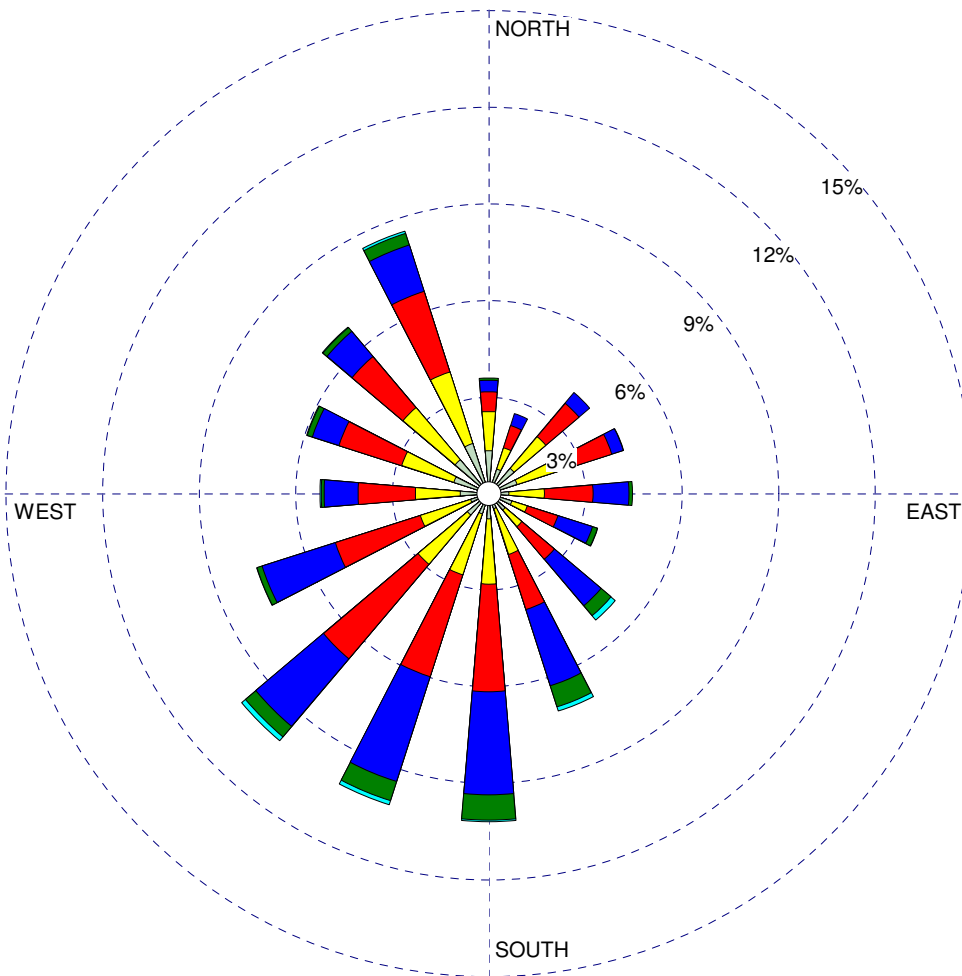
Northern Ireland

WIND ROSE PLOT:

Belfast (Aldergrove) International Airport

DISPLAY:

**Wind Speed
Direction (blowing from)**



WIND SPEED
(m/s)

- >= 11.1
- 8.8 - 11.1
- 5.7 - 8.8
- 3.6 - 5.7
- 2.1 - 3.6
- 0.5 - 2.1

Calms: 0.76%

COMMENTS:

DATA PERIOD:

**2005
Jan 1 - Dec 31
00:00 - 23:00**

COMPANY NAME:

Atkins Ltd.

MODELER:

TSM

CALM WINDS:

0.76%

TOTAL COUNT:

8760 hrs.

AVG. WIND SPEED:

4.25 m/s

PROJECT NO.:

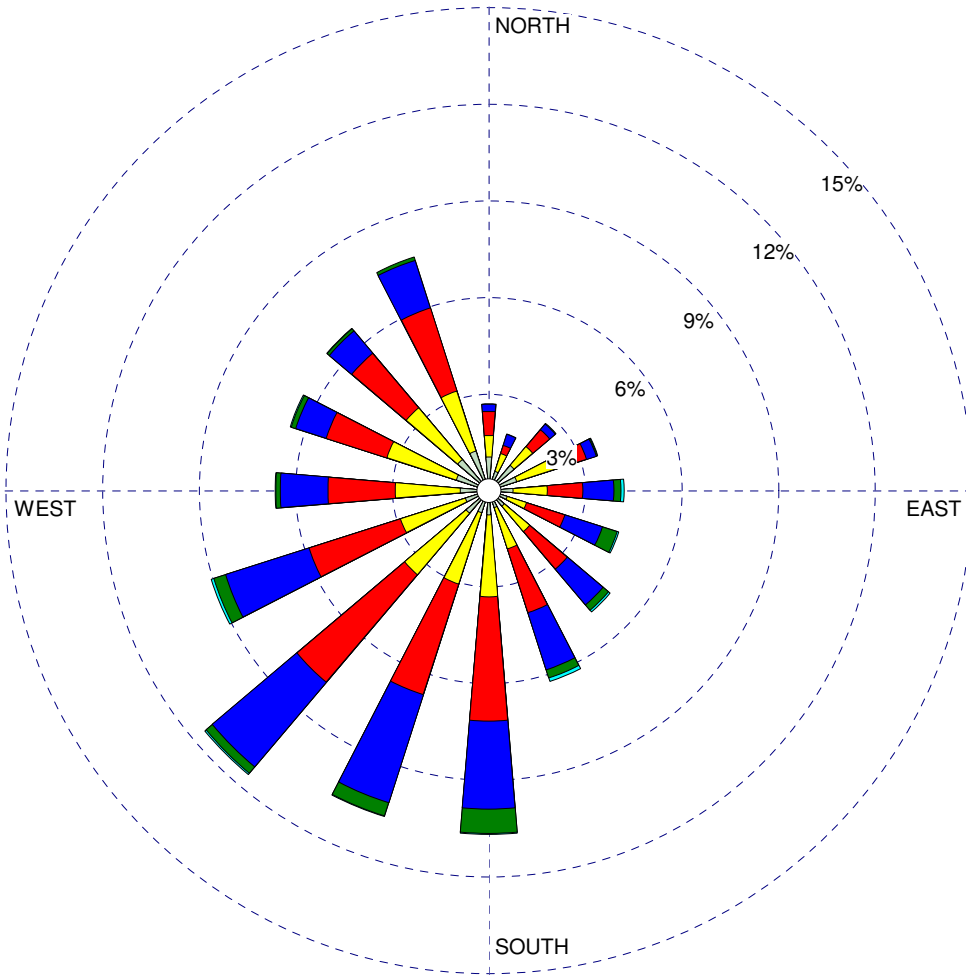
Northern Ireland

WIND ROSE PLOT:

Belfast (Aldergrove) International Airport

DISPLAY:

**Wind Speed
Direction (blowing from)**



WIND SPEED
(m/s)

- >= 11.1
- 8.8 - 11.1
- 5.7 - 8.8
- 3.6 - 5.7
- 2.1 - 3.6
- 0.5 - 2.1

Calms: 0.56%

COMMENTS:

DATA PERIOD:

**2004
Jan 1 - Dec 31
00:00 - 23:00**

COMPANY NAME:

Atkins Ltd.

MODELER:

TSM

CALM WINDS:

0.56%

TOTAL COUNT:

8770 hrs.

AVG. WIND SPEED:

4.19 m/s

PROJECT NO.:

Northern Ireland