Document 6.2

The West Midlands Rail Freight Interchange Order 201X
Technical Appendix 2.6 - Wind Microclimate Technical Note
Regulation 5(2)(a)
RWDI - January 2017

West Midlands Interchange

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MEMORANDUM

DATE:	2017-01-26	**RWDI REFERENCE #:** 1701716
TO:	Emma Jones	**EMAIL:** ejones@ramboll.com
	CC: Rachel Naylor	**EMAIL:** rnaylor@ramboll.com
FROM:	Andy Gypps	**Email:** andy.gypps@rwdi.com
RE:	**West Midlands Interchange**	

Dear Emma,

Introduction

This letter will discuss and explain how in RWDI's professional opinion, a wind microclimate assessment will not be required for the Proposed West Midlands Interchange Development.

The Proposed Development is an intermodal rail freight terminal with connections to the West Coast Main Line (WCML), container storage and associated Heavy Goods Vehicle (HGV) parking. The development will also have a new road infrastructure and a new access to the Site from the A5 alongside works to the existing road infrastructure.

The Proposed Development consists of several warehouse buildings which are up to 30m in height. Additionally, there will be several landscaped areas in and around the buildings of the Proposed Development. There is an existing industrial park to the south of the Proposed Development which consists of several low-rise warehouse and car parking areas.

Discussion

Local Climate and Terrain

The local wind climate (taken from Birmingham Airport – shown in Figure 1) shows that the majority of the oncoming winds originate from a broad westerly sector (ranging from the south through to the north west) throughout the year.

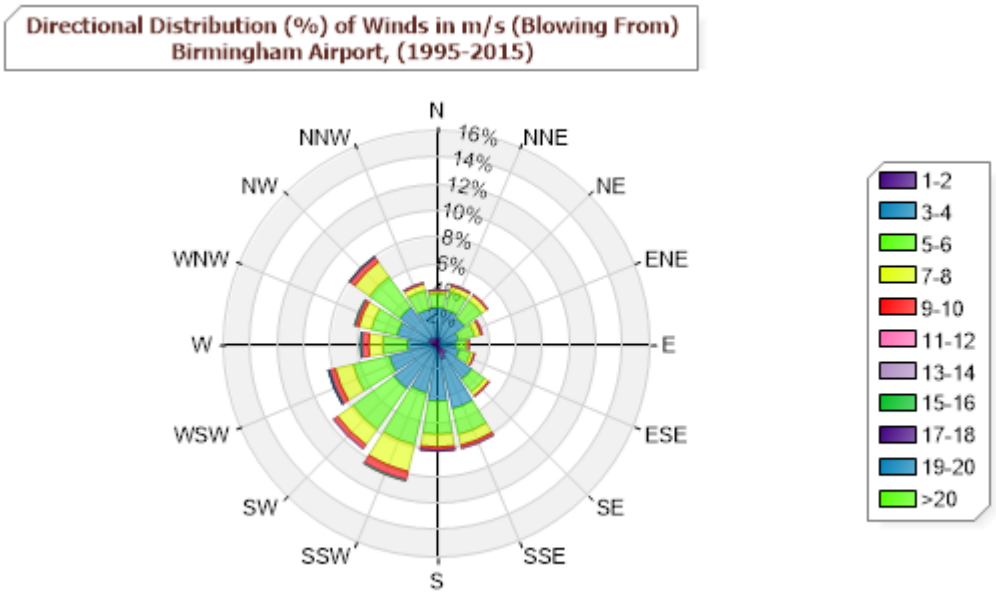

Figure 1: wind roses taken from Birmingham Airport

The surrounding terrain around the Site consists of very few obstruction and large areas of open fields. This type of terrain does not break up the oncoming flow and therefore the oncoming flow will have a relatively high mean wind speed and low turbulence (i.e. the flow is less 'gusty' than it would be in an urban area).

Suitability

As the buildings of the Proposed Development are similar in height, although noted to be relatively taller than their immediate surroundings, the oncoming winds are expected to flow over them with limited down-draughting occurring. The buildings are notably wider than they are tall (high aspect ratio) which will promote the flow to remain above ground level and flow over and around the buildings as a whole rather than through the spaces between buildings. Any acceleration due to the buildings themselves will be very localised. They will likely occur on the exposed south-eastern, south-western and north-western corners of the buildings. As this is an industrial estate it is not expected that wind conditions would be intolerable for workers.

It is noted that the exterior areas immediately around the buildings are primarily for parking and access (i.e. not particularly 'sensitive' to wind conditions) and therefore pedestrians are not expected to spend the majority of their time outside (only to walk to and from their vehicles). As a result, the desired wind conditions around the Site can be somewhat windier than in a pedestrian busy area such as a town center. It is expected that the windiest areas will occur at the building corners where the oncoming flow will locally accelerate around them. Areas to the north-east will likely be calmer than areas to the south-west as they will be sheltered from the prevailing winds from the south through to the north-west.

There are noted landscaped park areas (shown in Figure 2 below) around the Proposed Development and, if intended specifically for outdoor seating use, will likely require measures to break up the oncoming flow and create comfortable wind conditions. In the illustrative masterplan, there are several landscaping features in these areas which will help to reduce wind speeds. It would be prudent to ensure that if seating areas within these landscaped areas are desired, that localised landscaping features are implemented in order to ensure locally comfortable conditions for occupants. It is expected that wind conditions would not be worse than conditions existing on Site, and would likely be suitable for 'active' recreational pursuits such as walking, running and cycling.

Figure 2: Illustrative Masterplan

Conclusion

In summary, the local climate highlights that the prevailing winds originate from the south through to the north-west and the terrain leading up to the Site is relatively flat with limited obstruction. The buildings of the Proposed Development are significantly taller than then immediate surroundings; however, as they are much wider than they are tall (high aspect ratio), the oncoming wind will remain above ground level and have limited impact on the ground. Workers at the Proposed Development are expected to spend the majority of their time indoors and only spend time outside to go to and from their vehicles. Wind conditions are expected to suitable for the intended use of the Site. the landscaped areas, if intended for amenity use will likely require localised landscaping features around any proposed seating areas to ensure wind conditions are suitable for amenity use. It should be noted that when the Proposed Development is in situ, wind conditions are not expected to be windier than the existing Site. Additionally, any landscaping measures can be advised by an experienced wind consultant without needing any specific detailed assessments.

Overall, in RWDI's professional opinion, the Proposed Development will not require a more in depth wind microclimate assessment.

Yours truly,

[redacted]

Krishan Jayyaratnam, M.Eng
Project Engineer

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Andy Gypps
Senior Project Manager