

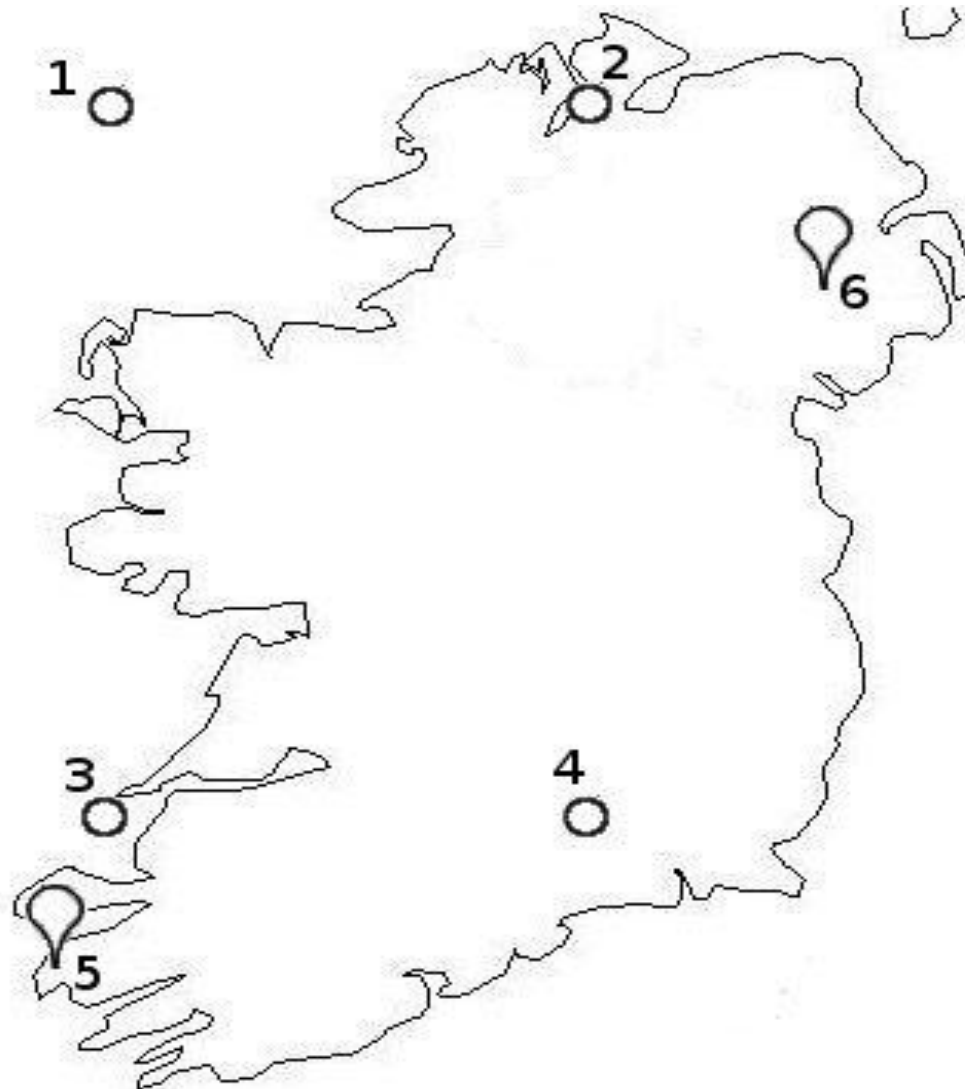
# Airborne Wind Energy in Ireland

Carbon Tracking Ltd.

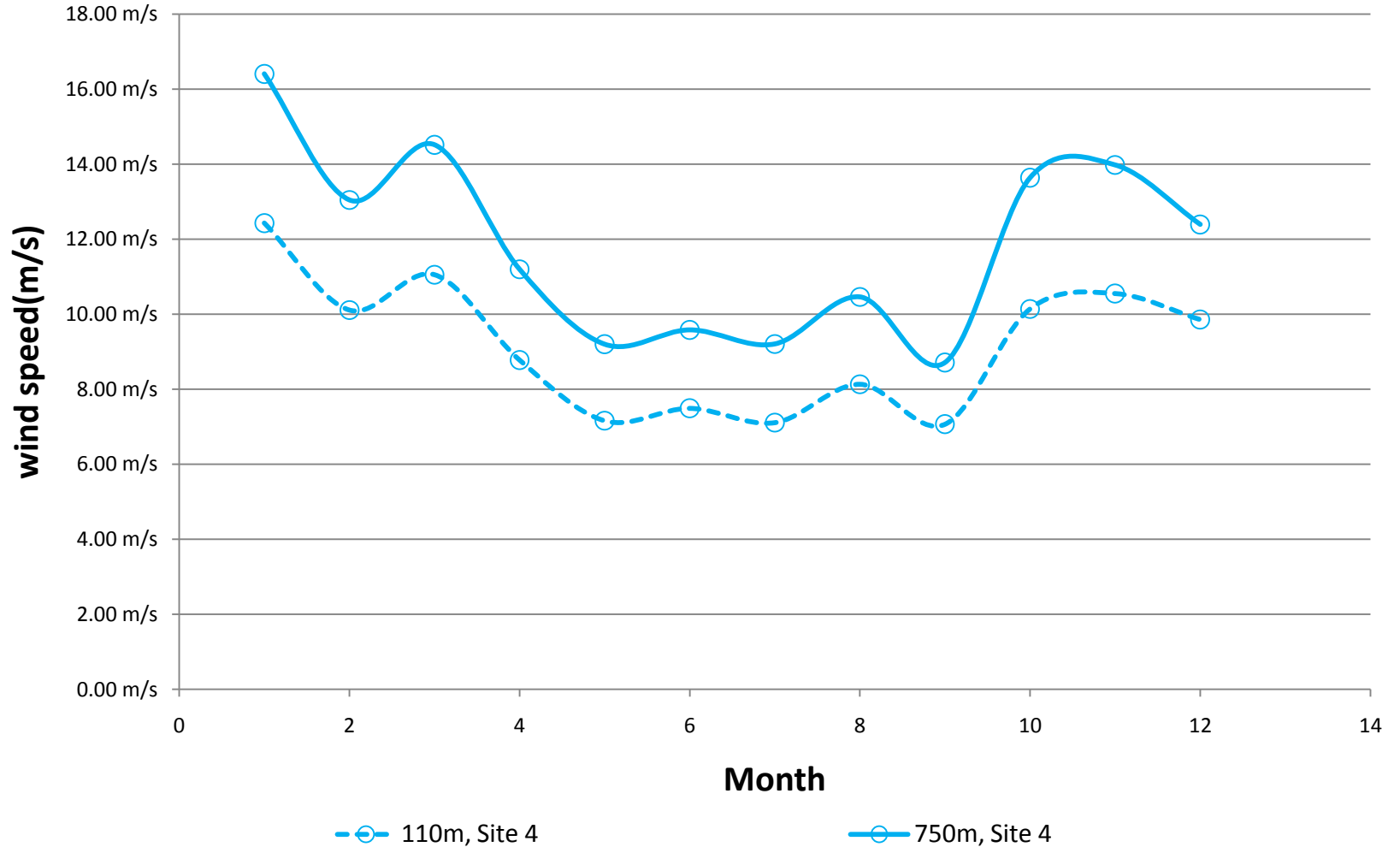
Colm O'Gairbhith

- What does Reanalysis data show us ?
- Finding an AWE test-site.
- Randomness

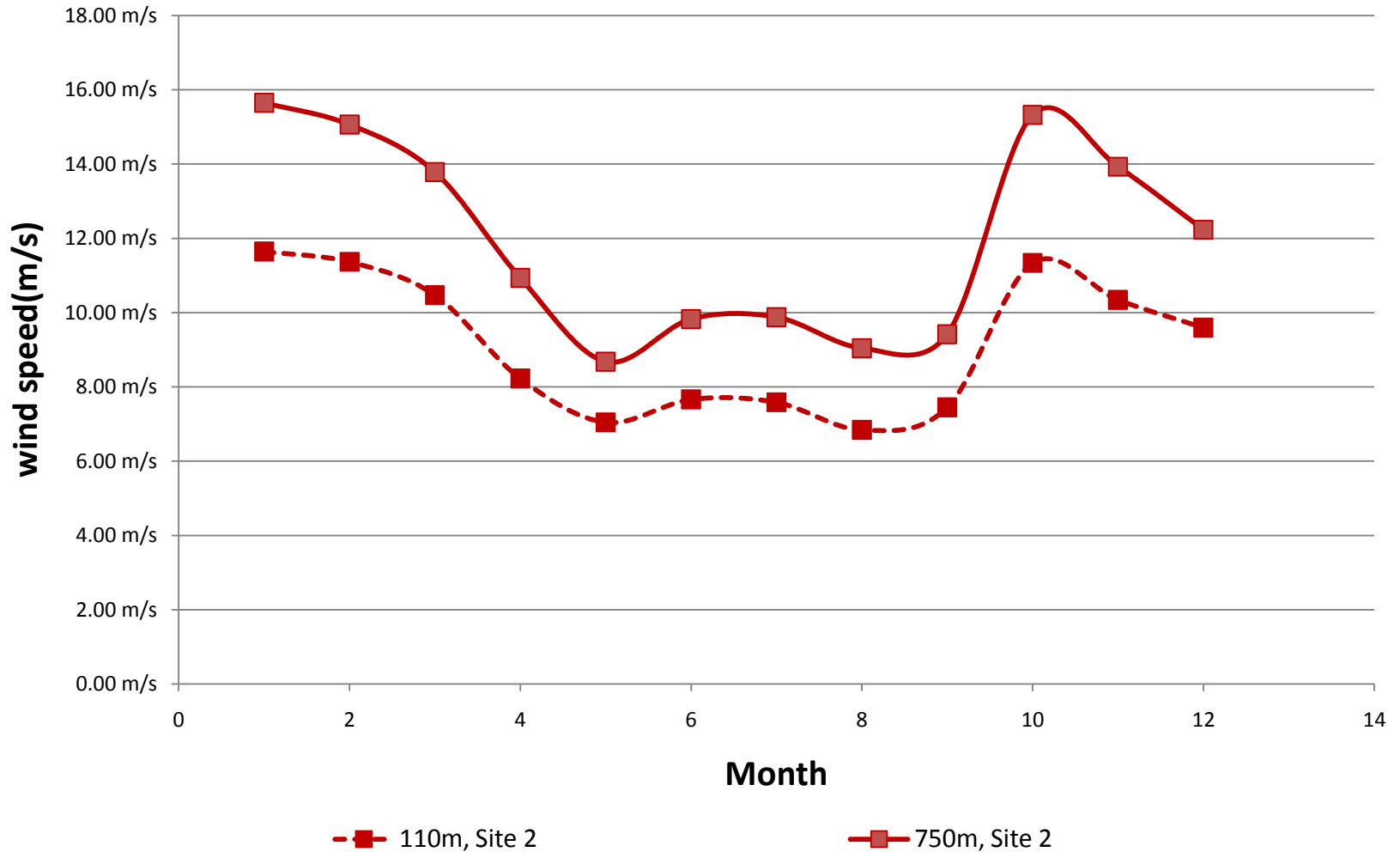
# Irish sites for Reanalysis and RadioSonde Data



# Wind speed data for Site 4



# Wind speed data for Site 2



# Bord Gais / Statkraft Objective

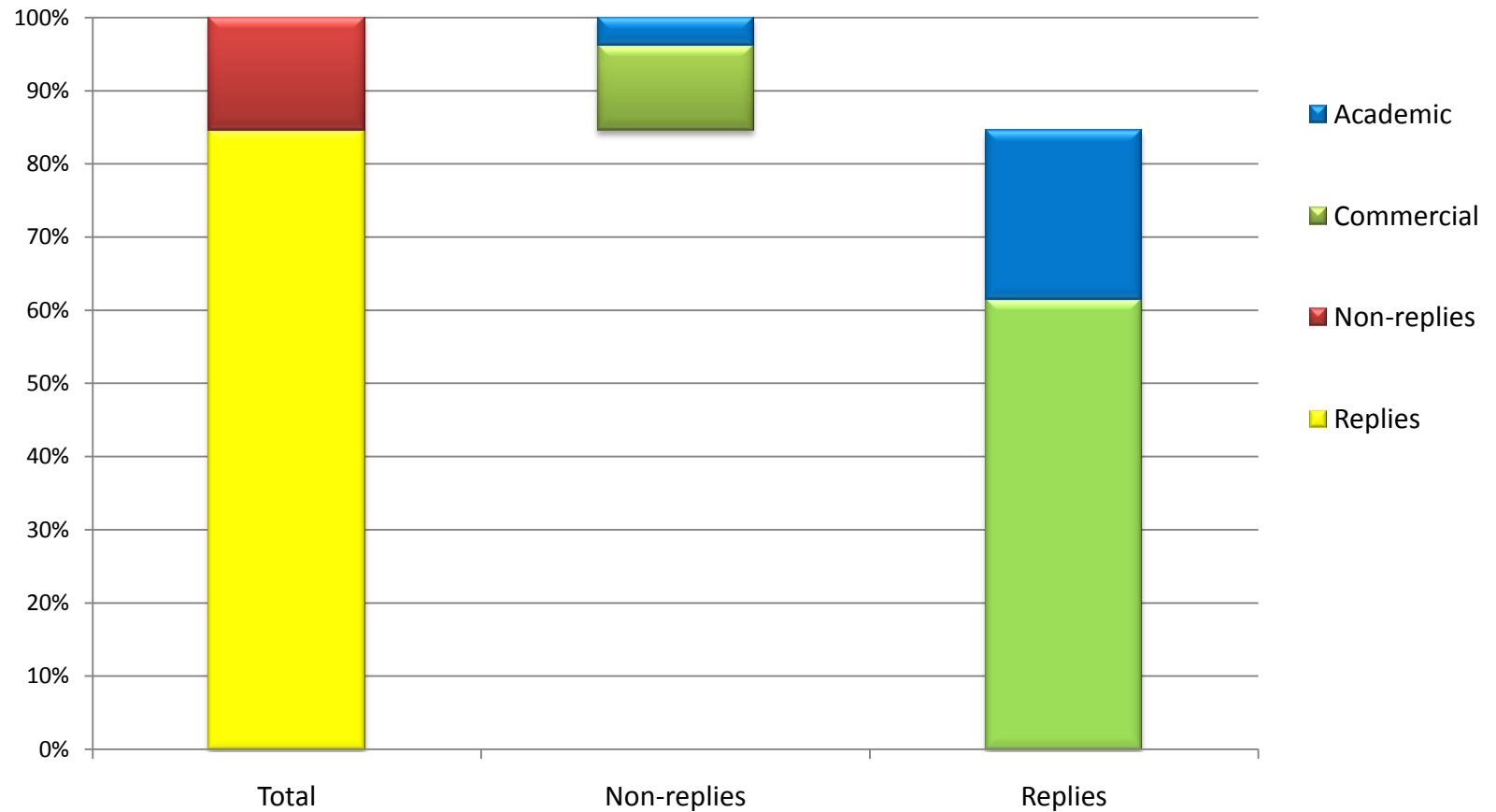
- Assess the potential for a test-site which would serve as a common facility for AWE projects, both commercial and academic
- Full report and associated GIS work on <http://www.carbontracking.com/#previous>

# Report Structure

- Stakeholder Consultation and Survey
- Identification and assessment of specific test-sites
- Proposed design and layout of test sites
- Proposed Model for Development and Operation of identified test-sites
- Evaluation of Policy Options
- Definition of acceptance process with Irish Aviation Authority

# Stakeholder Consultation and Survey

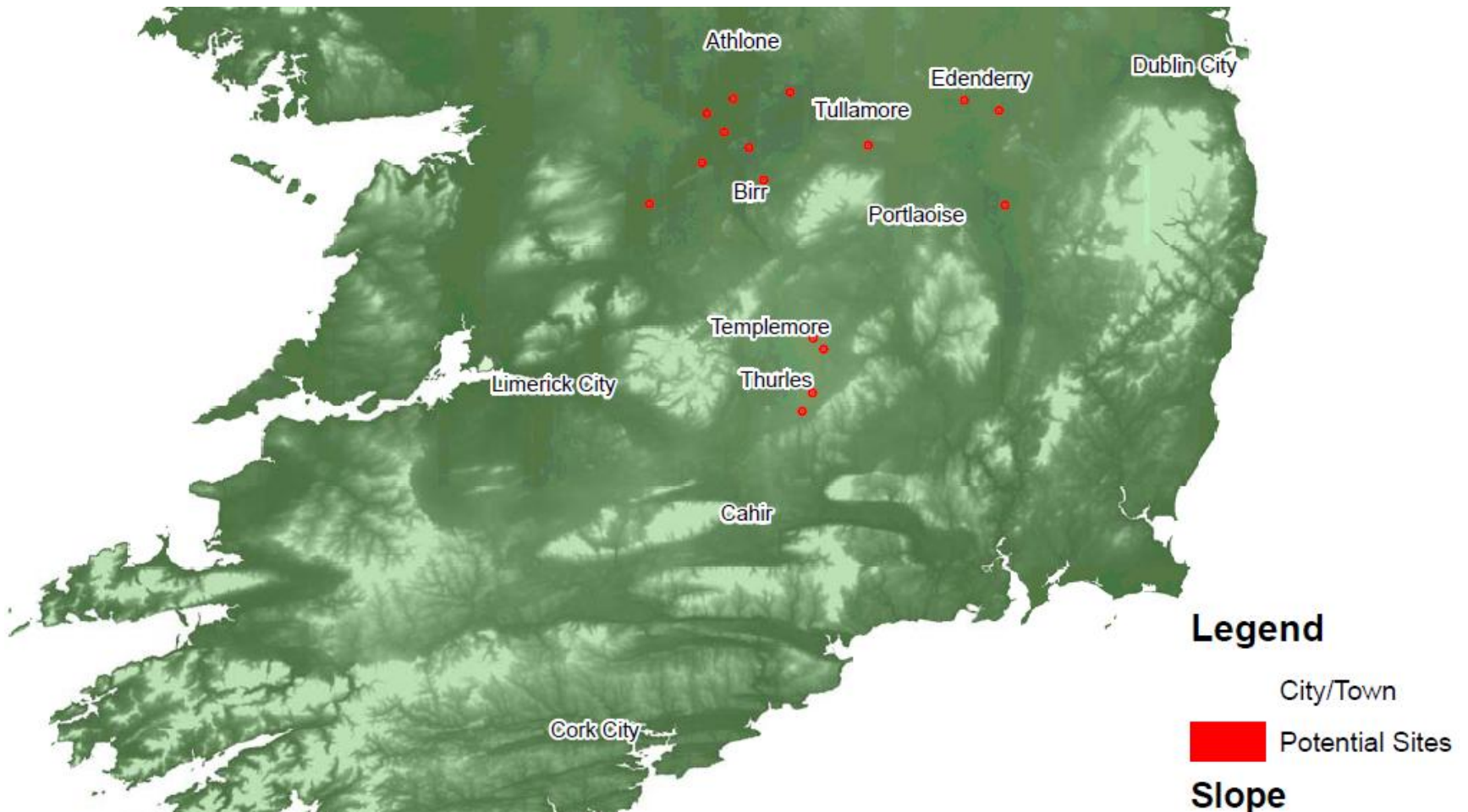
## Participation Levels



# Stakeholder Consultation and Survey

- Main findings.
- 69% would find a test-site very useful, 31% somewhat useful
- 57% would envisage using such a site in 2011, 26% in 2010
- 65~70% would accept co-testing, stressing security.
- Export/Metering very important to 26%, somewhat so to 65%
- Feed In Tariff not important to 57%. €150/MWh acceptable.
- Permanent fly-zone ideal for 78%, brief notification acceptable to 96%.
- Most testing to be done sub 600m up to 2015.
- 82% expect >7 day flight length by 2014.

# Identification and assessment of specific test-sites



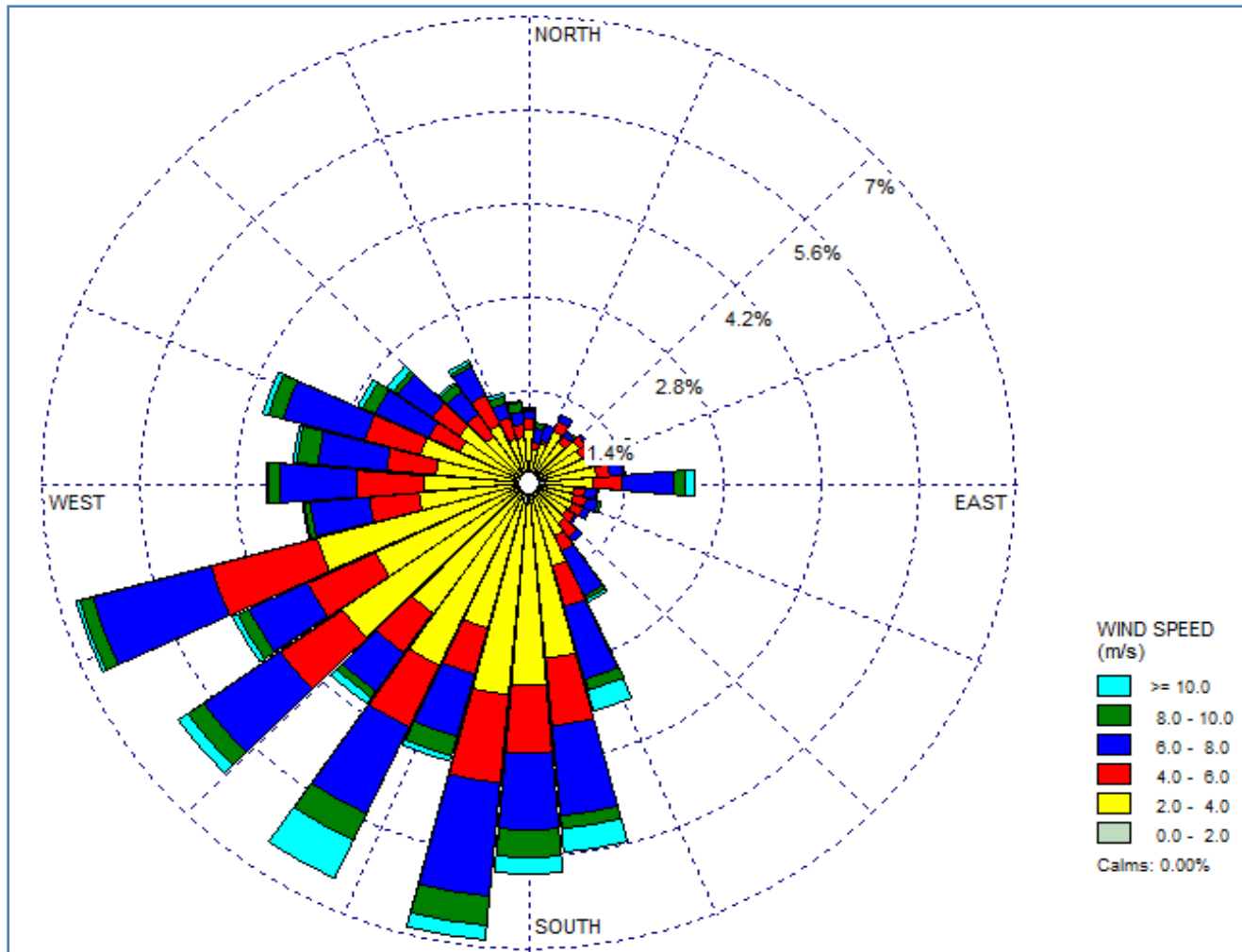
# Test-site selection criteria

- Sites must have a radius of 1km and be circular in shape
- Urban areas to be avoided
- Proximity to 38kv electricity line, no overhead lines to traverse the site
- Proximity to local, regional and national roads
- No dwellings to be located within site
- Wind speed of site to be checked
- No significant rivers to cross the site
- No forestry within the site – or other impediments to wind flow
- No development on slopes greater than 8 degrees ( $\leq 8$ )
- No development within protected areas including SPA, SAC, NHA or pNHA status
- Ensure site is not located within civil/military aviation zone

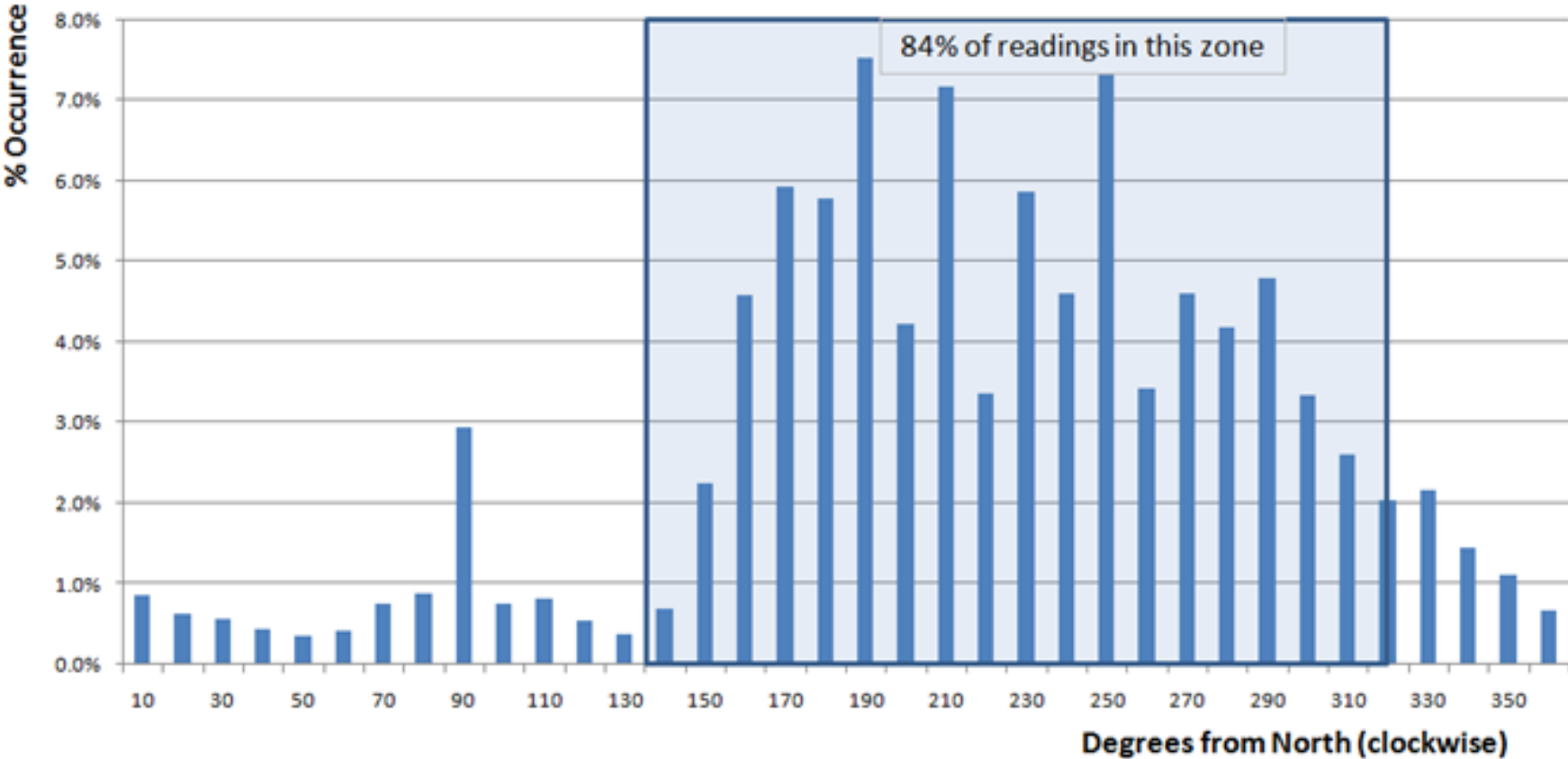
Typical assessed site : flat, black



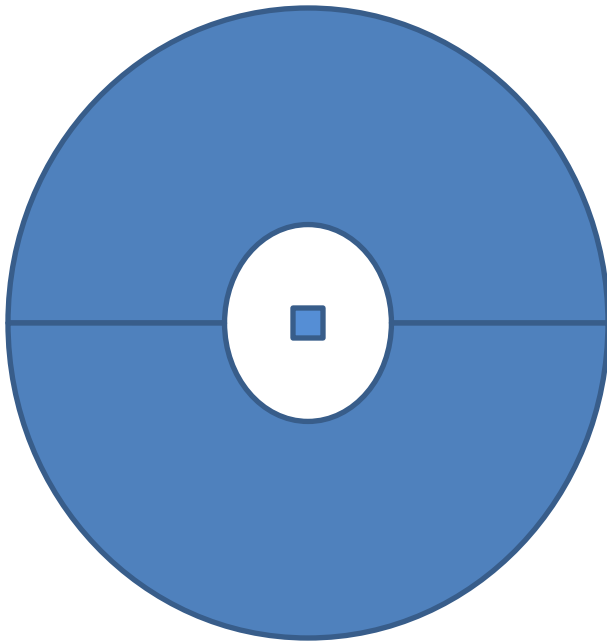
# Wind-rose of prime site



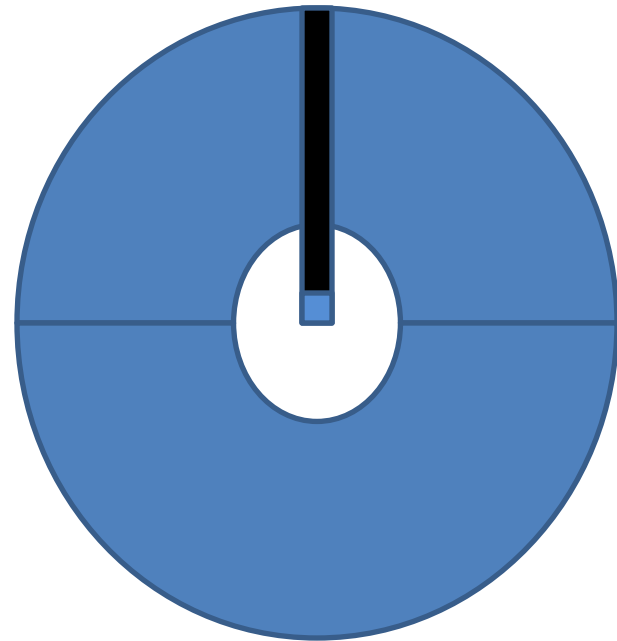
### Directional distribution of wind, >5.5m/s



# Test-Site configuration



**Radius : 1km**  
**Land requirement : 314 ha**



**Radius : 1km**  
**Land requirement : 200 ha**  
**36% reduction**

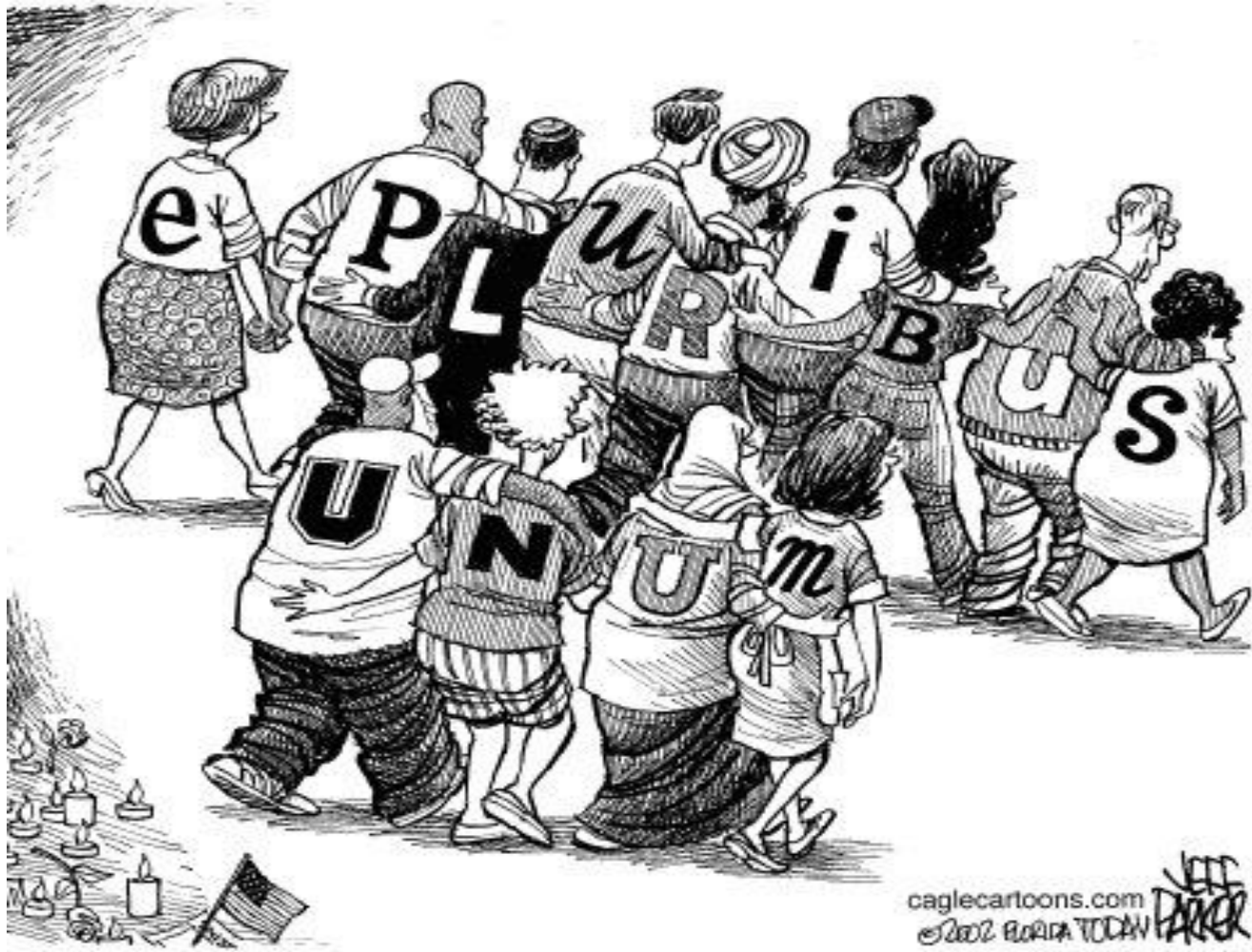
# Random points

- Aviation Authorities : An EU wide approach is needed.
- Broader potential for a joint EU approach
- UK Refit policy.

# UK REFIT Tariffs

Table of tariffs up to 2013

| Technology | Scale        | Tariff level for new installations in period (p/kWh) [NB tariffs will be inflated annually] |                                |                                | Tariff lifetime (years) |
|------------|--------------|---|--------------------------------|--------------------------------|-------------------------|
|            |              | Year 1:<br>1/4/10 –<br>31/3/11  | Year 2:<br>1/4/11 –<br>31/3/12 | Year 3:<br>1/4/12 –<br>31/3/13 |                         |
| Wind       | ≤1.5kW       | 34.5  | 34.5                           | 32.6                           | 20                      |
| Wind       | >1.5-15kW    | 26.7  | 26.7                           | 25.5                           | 20                      |
| Wind       | >15-100kW    | 24.1  | 24.1                           | 23.0                           | 20                      |
| Wind       | >100-500kW   | 18.8  | 18.8                           | 18.8                           | 20                      |
| Wind       | >500kW-1.5MW | 9.4   | 9.4                            | 9.4                            | 20                      |



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