



Renaker
1st Floor, NQ Building
47 Bengal Street, Ancoats
Manchester M4 6BB

23 August 2024

Dear Sir/Madam,

Trinity Islands D1 amendments and the effect on wind microclimate

WSP were appointed as the wind microclimate consultants for the 'Trinity Islands' development bound by Regent Road, Trinity Way, and Water Street, which was originally approved by MCC in February 2022 under planning permission (ref: 132429/FO/2021) and the ES Addendum approved by S73 Permission (ref: 134039/JO/2022). In these documents, it is noted that no proposed landscaping was modelled on the terraces.

WSP have qualitatively reviewed the proposed changes to the landscape design set out in *ZD-TPM-G710-RP-XX-512 (July 2024)*. A summary of the changes is listed below:

- Minor boundary treatment change to Regent Road
- Provision of additional external bin store
- Removal of trees to riverside and re-provision of these within the site (note: these trees were not included in the original CFD simulations presented at the planning stage).
- Inclusion of a dedicated dog park
- Creation of additional soft landscaping to river walkway
- Update to the children's play area design
- Other minor layout updates such as the provision of vehicle management bollards

In our professional opinion, we do not expect the above changes to materially impact the wind microclimate assessment conducted to date and therefore the conclusions of the wind microclimate study submitted in support of the original planning application (132429/FO/2021) and subsequent addendum (134029/JO/2022) are expected to remain valid and unchanged.

Furthermore, the following amendments to 'Building D1', which are relevant to the wind microclimate, have been considered through further testing:

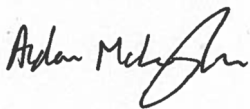
- Level 3 - soffit level lowered by c. 800mm (with transom raised by 600mm) due to the inclusion of the proposed swimming pool.

Computational Fluid Dynamics (CFD) simulations including the above changes have been performed for the 'worst-case for wind' surrounds scenario identified in the planning submission (Buildings D1 & D2 in existing surrounds). Again, no proposed landscaping has been modelled on the terraces. The results of the study are presented as an addendum to this letter.

The results of the study show that wind conditions remain broadly in line with those identified at the planning stage and therefore the conclusions of the wind microclimate study submitted in support of the original planning application (132429/FO/2021) and subsequent addendum (134029/JO/2022) remain valid and unchanged. These include the presence of areas within the terrace levels at the bottom of 'Tower D1' that exceed the wind safety threshold of 15m/s for more than 2.2 hours per year.

To address the above-mentioned breaches of the wind safety criterion, additional wind mitigation measures could be introduced within the spaces that are affected. Alternatively, a wind management strategy could be developed and put in place to prevent the access to the private spaces that are affected when strong winds are forecast in the area. As the latter is the preferred option of the applicant - WSP is currently working together with the developer to define the implementation of such strategy in detail.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'Aidan McLoughlin'.

Aidan McLoughlin
Senior CFD Engineer

A handwritten signature in black ink, appearing to read 'S. Cammelli'.

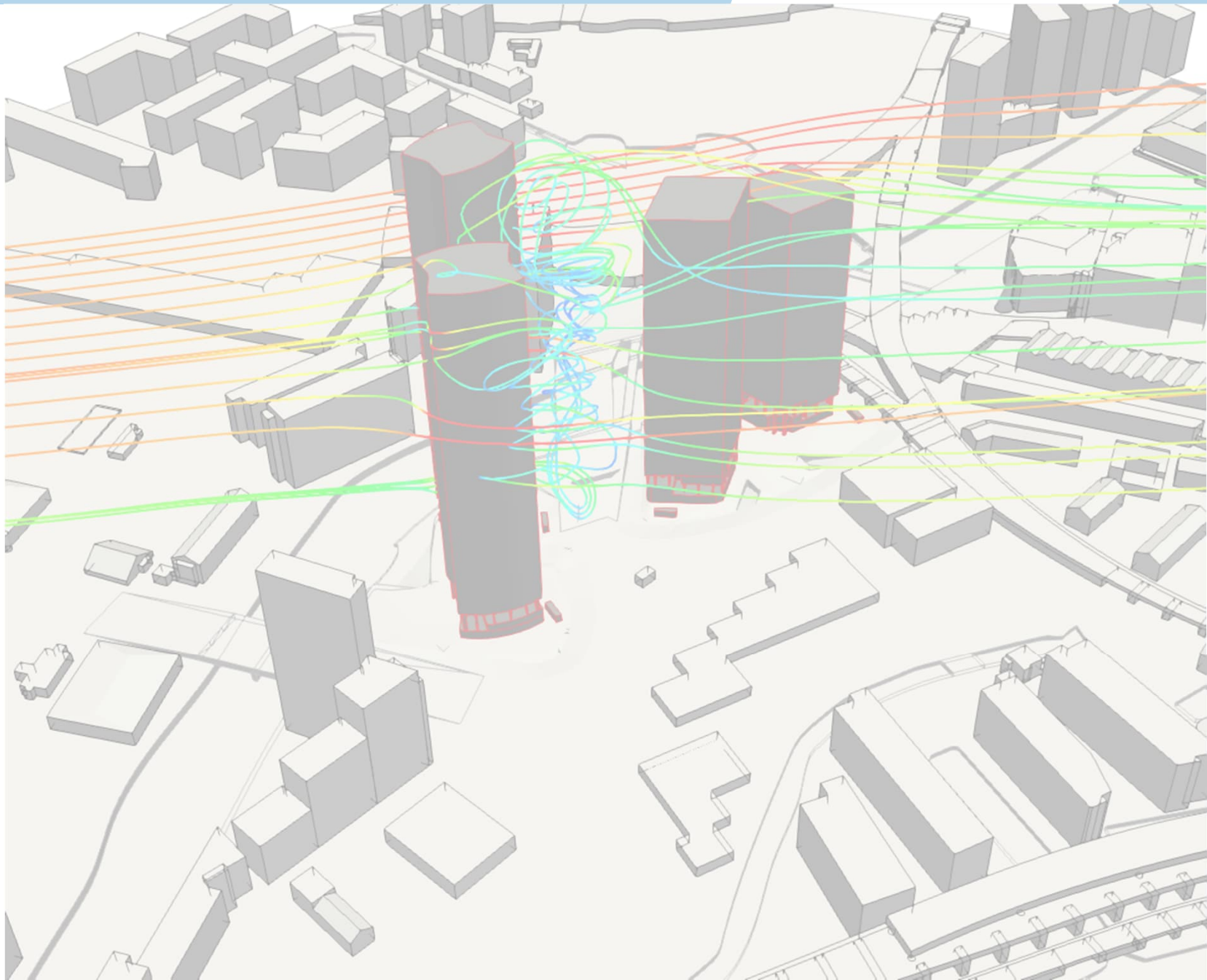
Stefano Cammelli
Director – Wind Engineering

Trinity Islands – D1 terraces

CFD wind
safety/comfort analysis

Technical note

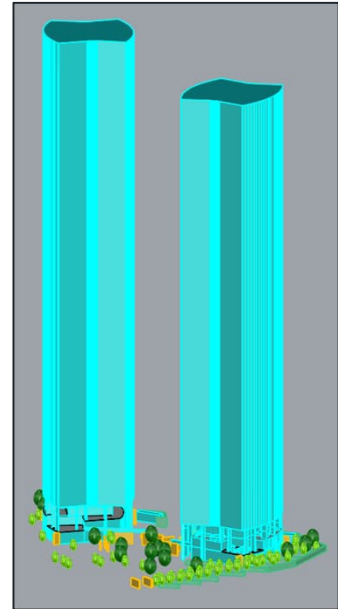
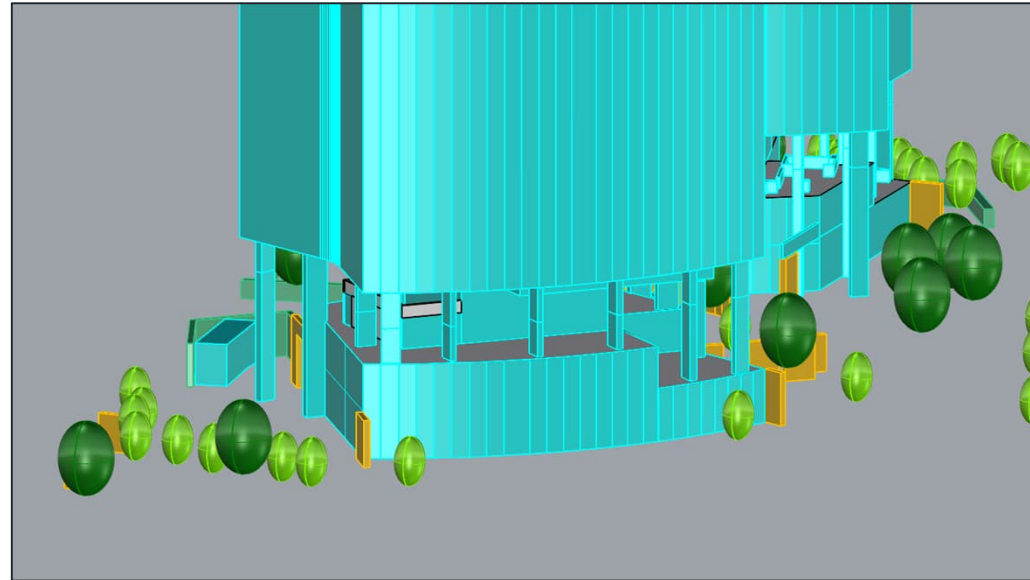
10 July 2024



BACKGROUND

CFD-based pedestrian-level wind study of the proposed D1 terraces

- D1 and D2 in existing surrounds (worst-case) simulated.
- ~500m radius explicitly modelled.
- Proposed landscaping included at ground level.
- **No landscaping modelled at terrace level.**
- Included soffit drop due to swimming pool on D1.
- No balustrades on the edges.
- Results combined with historical weather data from Manchester Airport, transposed to the site.
- Lawson LDDC criteria used to assess pedestrian safety and comfort on the terraces.

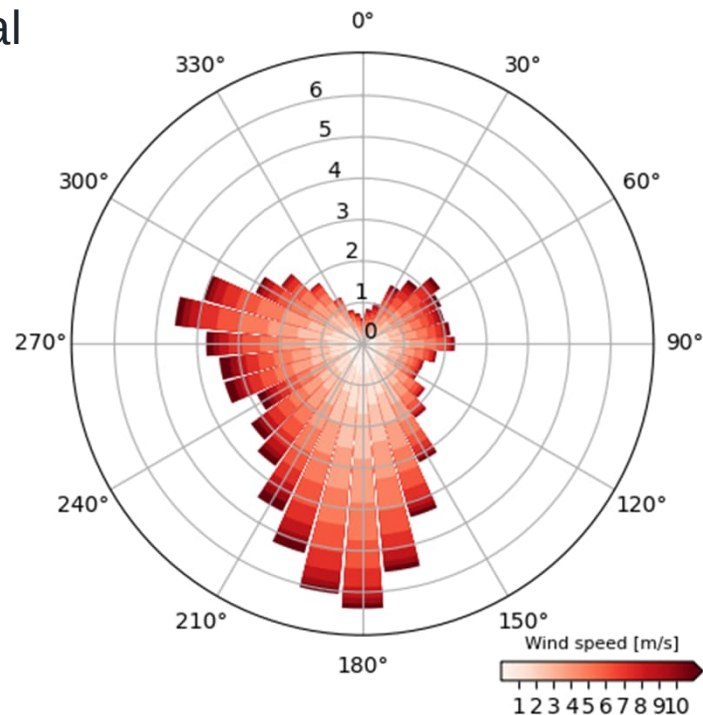


WIND CLIMATE ANALYSIS

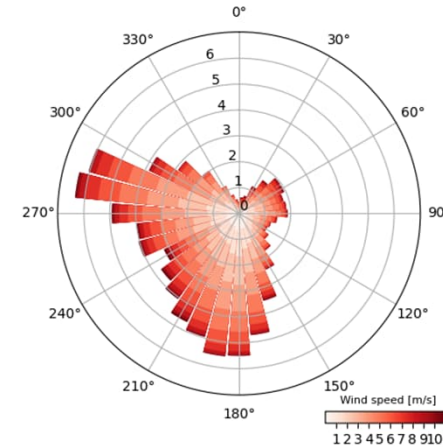
Data collected from Manchester Airport

- 'Open country' wind roses showing the frequency and magnitude of mean-hourly wind speeds
- Wind direction shown on the angular axes, percentage of hours on the radial axes

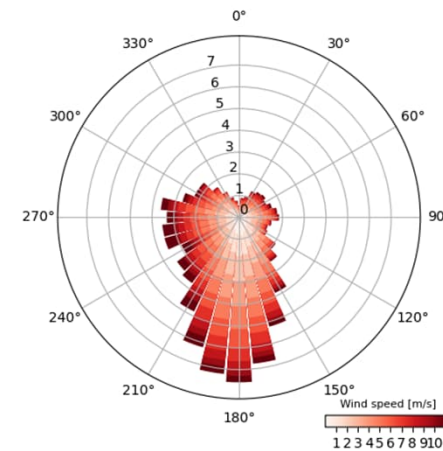
Annual



Summer



Winter



ASSESSMENT CRITERIA

Lawson LDDC criteria

These criteria relate a threshold wind speed and threshold frequency to the suitability of an activity.

- Frequency threshold for comfort criteria is 5% or about 3 weeks per year
- For season-specific results, the criteria are based on 5% of hours across the months in that season.
- The distress/safety criteria have been defined based on ~2.2 hours' exceedance per year

Safety

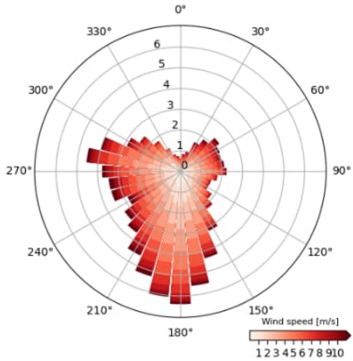
Category	Mean wind speed (~2hrs/year) [m/s]	Suitability
S15	15	Unsuitable for frail persons, cyclists etc
S20	20	Unsuitable for all pedestrians

Comfort

Category	Mean wind speed (5% exceedance) [m/s]	Suitability
Pedestrian sitting	4	Outdoor seating and areas one can occupy comfortably for long periods
Pedestrian standing	6	Main building entrances, pickup/drop-off points
Pedestrian walking	8	Appropriate for strolling
Business walking	10	Can be tolerated if one's objective is to walk, run or cycle without lingering
Unsuitable	>10	Nuisance for most pedestrian activities

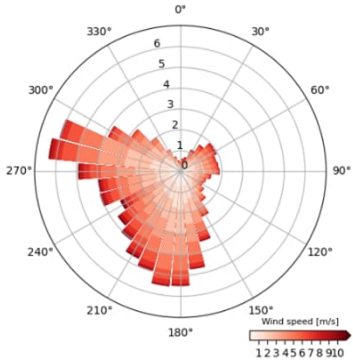
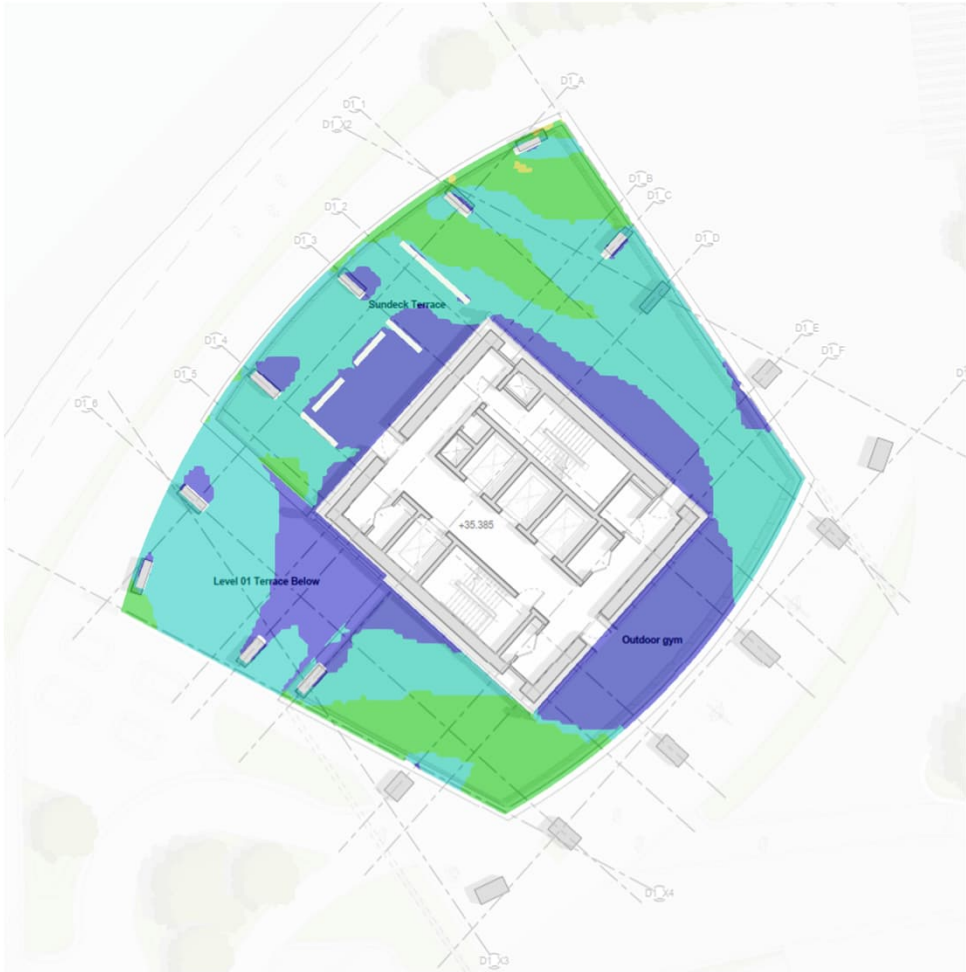
RESULTS – SAFETY

Annual



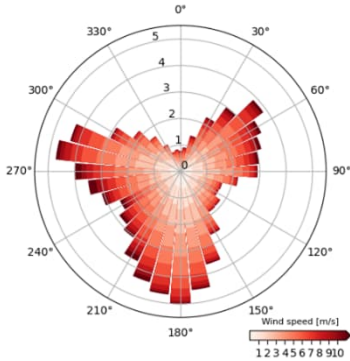
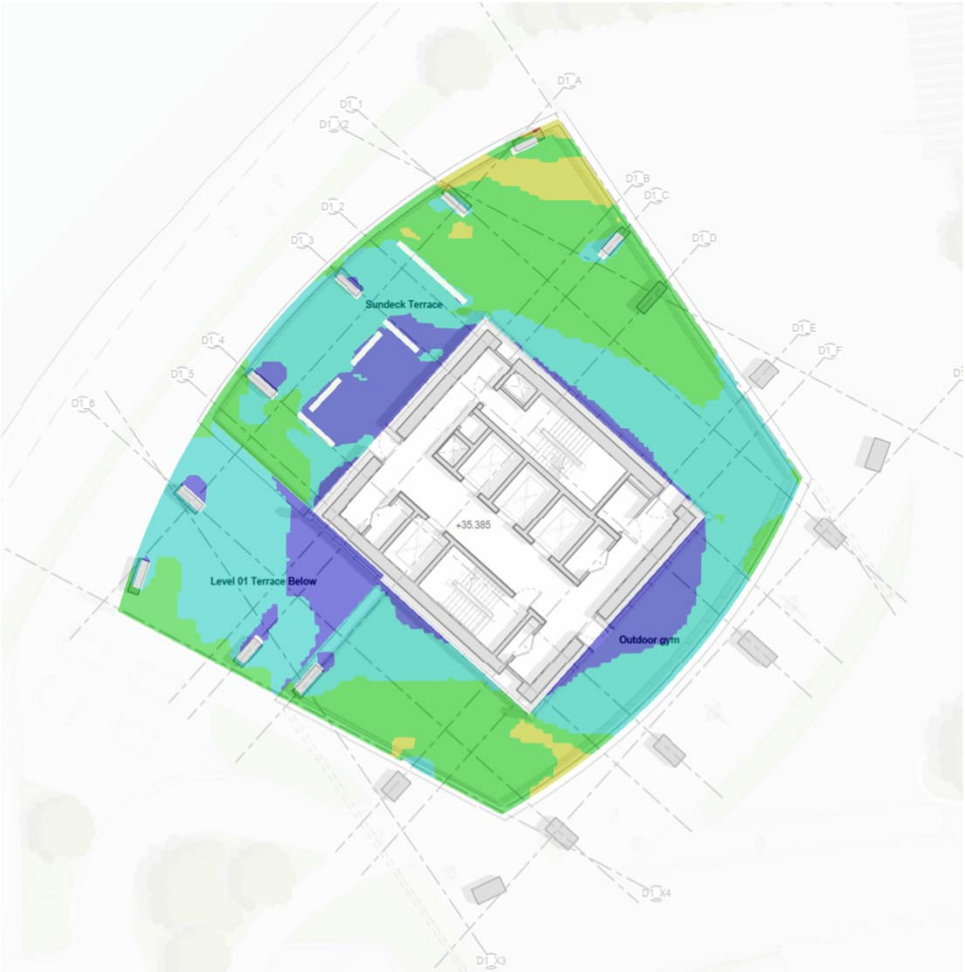
RESULTS – COMFORT

Summer



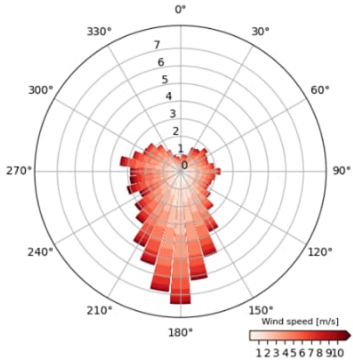
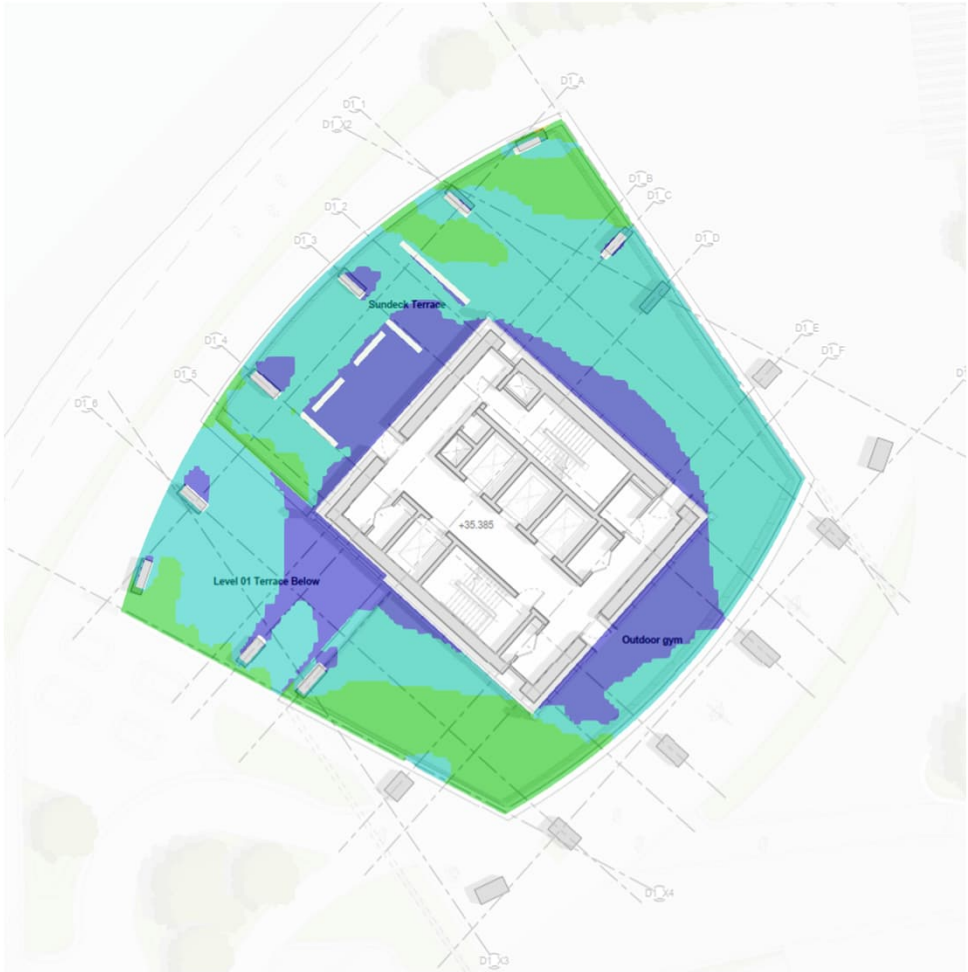
RESULTS – COMFORT

Spring



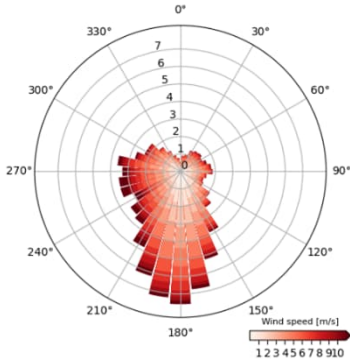
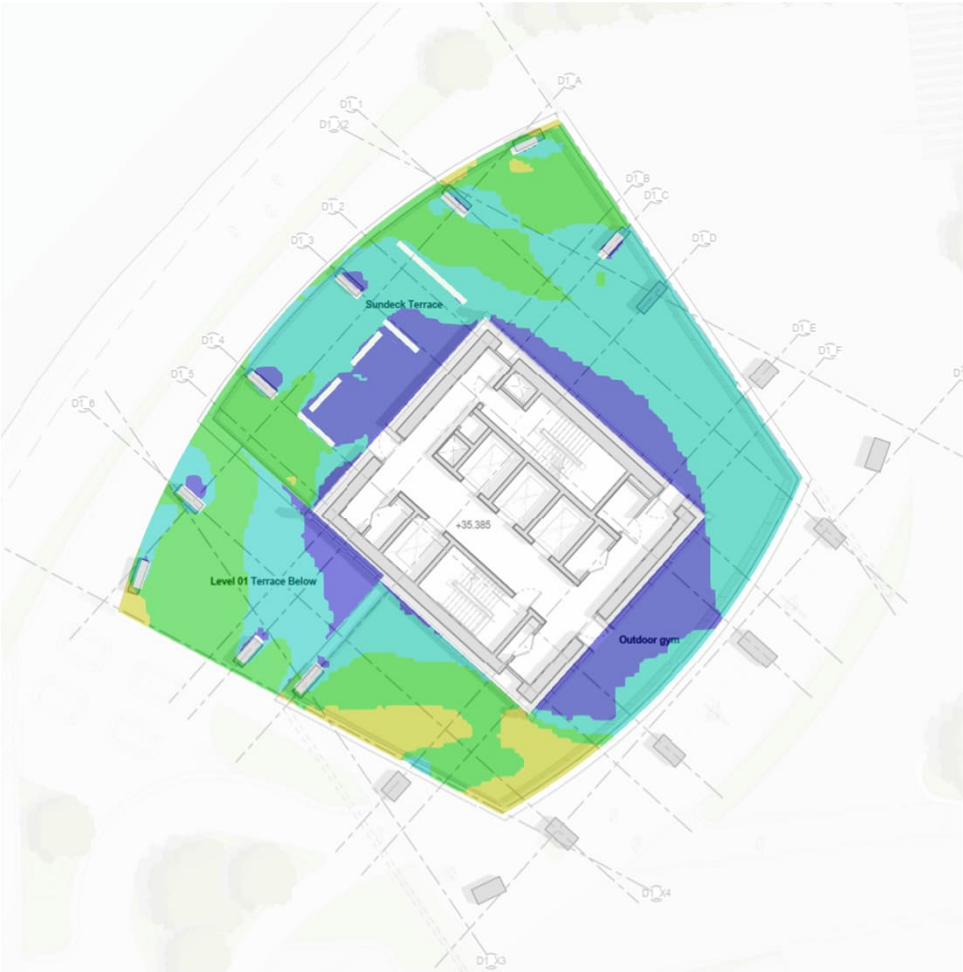
RESULTS – COMFORT

Autumn



RESULTS – COMFORT

Winter



CONCLUSIONS

Conclusions:

- Calmer conditions towards the core in general.
- Windier conditions near south/west edges.

Recommendations:

- Screening at specified areas (1.5m+ and porous would be most effective).
- Relocation of seating areas to less windy spots.
- More localised screening within the landscaping plan would be beneficial.

