

8.5 DAYLIGHT, SUNLIGHT AND OVERSHADOWING

GIA has considered the potential for **daylight and sunlight** availability within the proposed habitable rooms making up the two lowest residential floors (14th and 15th) of the NDP Hotel scheme prepared by F3 Architects. These habitable rooms have been technically assessed for spatial Daylight Autonomy (sDA) and sunlight exposure. In addition, the proposed outdoor areas of public or communal amenity have been tested for overshadowing through the Sun Hours on Ground metric.

Conclusions on Daylight

In order to ascertain the levels of daylight within the residential element of the proposed development, all habitable rooms on the two lowest residential floors (14th and 15th) within the scheme have been technically assessed for daylight using the illuminance method. As such, climate-based daylight simulation has been carried out and the results are compiled by means of the Spatial Daylight Autonomy (sDA) metric.

The detailed assessment results are provided in Section 7 of GIA report and show that all of the 24 habitable rooms assessed will achieve the minimum levels of spatial Daylight Autonomy (sDA) recommended within the UK National Annex for residential buildings. This means that the corresponding rooms on the subsequent floors will also meet their minimum sDA target given the uniformity of floor-plates and improved access to skylight as you move up the building.

Overall, the proposed scheme is considered to offer excellent levels of daylight compliance within the proposed habitable rooms.

Conclusions on Sunlight

In relation to sunlight, eight dwellings have been assessed on the 14th and 15th floors and all of these would meet or exceed BRE's recommendation of one room or more seeing at least one and a half hours of sunlight on the equinox. All of these achieve the recommended sunlight exposure within the main living space, which is considered preferable by the BRE.

Overall, the proposed scheme is considered to offer excellent levels of sunlight compliance within the proposed residential units.

Overshadowing

BRE recommends that for an open amenity space to be well sunlit throughout the year, at least 50% of its area should see two or more hours of sunlight on the equinox. An overshadowing assessment has therefore been undertaken for the areas of communal amenity provided within the scheme. The results of the overshadowing assessment are shown in Section 8 of GIA report and show that well in excess of 50% of all proposed outdoor open spaces will receive two or more hours of sunlight on 21st March, providing great level of sunlight amenity to the public and future residents.

In order to provide a more comprehensive sunlight appraisal, sun exposure diagrams are provided which show the actual levels of sunlight on 21st March, as well as on the summer solstice (21st June).

The sun exposure diagrams demonstrate that the sunlight availability during both March and summer period is overall very good.

KEY

SUN HOURS ON GROUND
BRE TEST - 21ST MARCH



SUN EXPOSURE
TOTAL HOURS

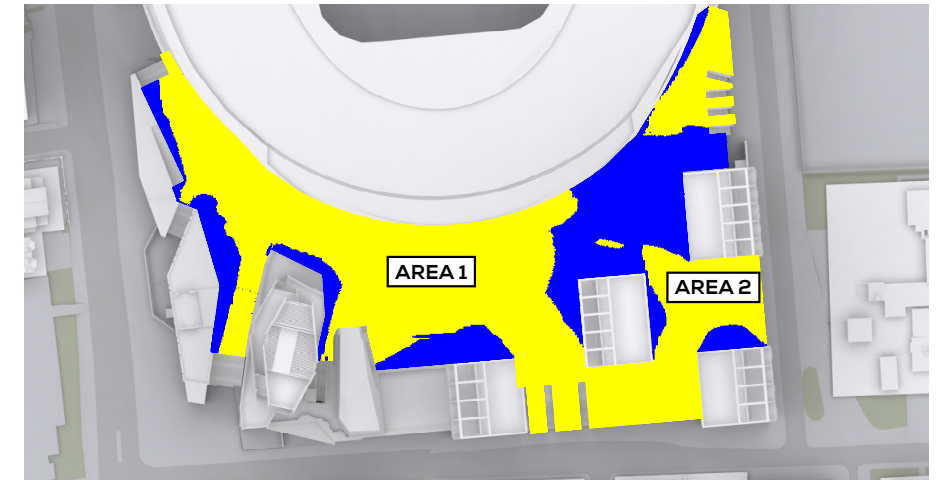


FIGURE 342. Sun Hours on Ground BRE Test

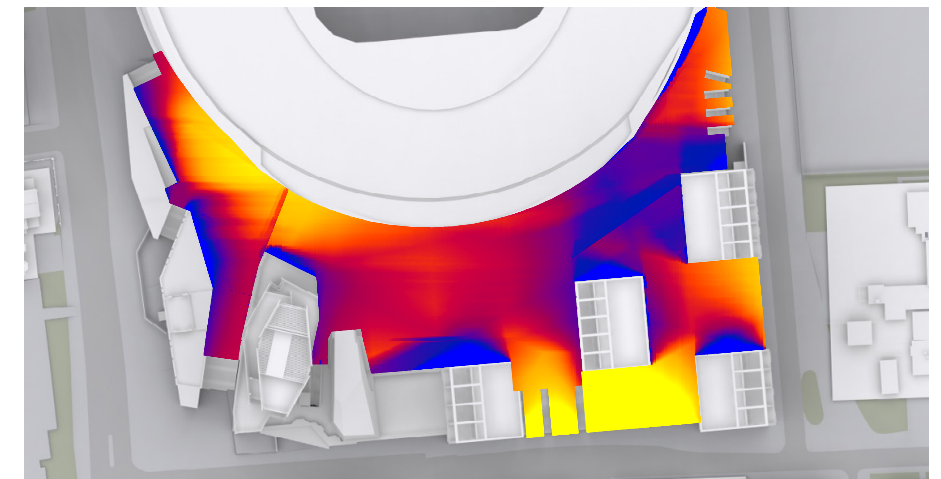


FIGURE 343. Sun Exposure on Ground - Spring Equinox

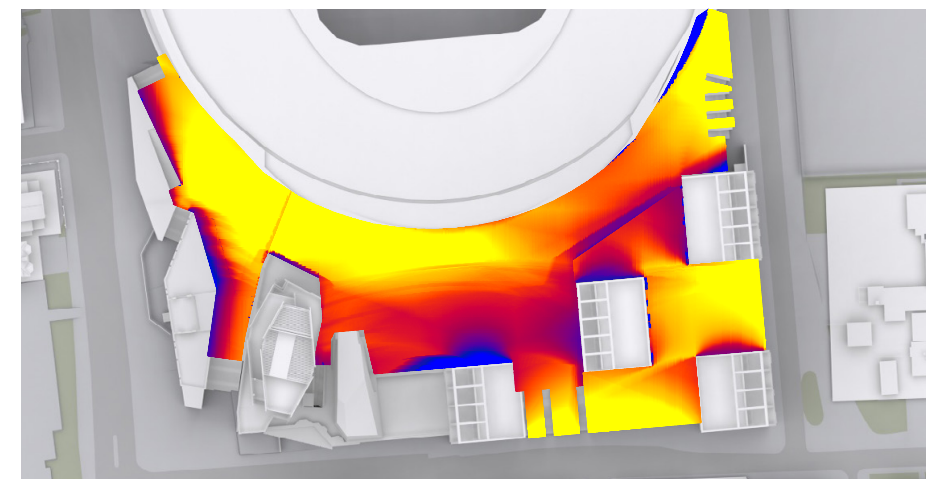


FIGURE 341. Sun Exposure on Ground - Summer Solstice

8.6 STRUCTURE

The following executive summary in relation to the **structure** has been developed with input from Buro Happold:-

The new structure is 29 storeys high, with two further storeys below podium. The building massing generally steps inwards at a number of locations up the height of the structure, with terraced 'sub-roof levels' formed at step changes. Significant changes in building footprint occur at levels L01, L14 and L27.

The building is sited on the footprint of a hotel building that was designed in 2017, of which the piles, substructure and podium were constructed. The broad strategy that has been followed by the design team is to attempt to retain as much of the constructed basement and podium as possible. Part of the constructed basement and podium has been retained in the new design. All constructed pile caps and piles are retained and utilised in the new design. Additional RC caps and piles will be installed to allow for the changes in building footprint, height and main lines of load path.

The structure is typically of an insitu concrete form of construction. Superstructure slabs are insitu post-tensioned (PT) concrete flat slabs of various thicknesses.

Columns are insitu reinforced concrete (RC) of various sizes and profiles (to best fit the room layouts at any given level). Transitions between column profiles are enabled by inclusion of concrete drop-heads. Vertical load bearing structure is typically continuous throughout the changes in massing over the building height, however some limited transfer structure is required periodically throughout the frame.

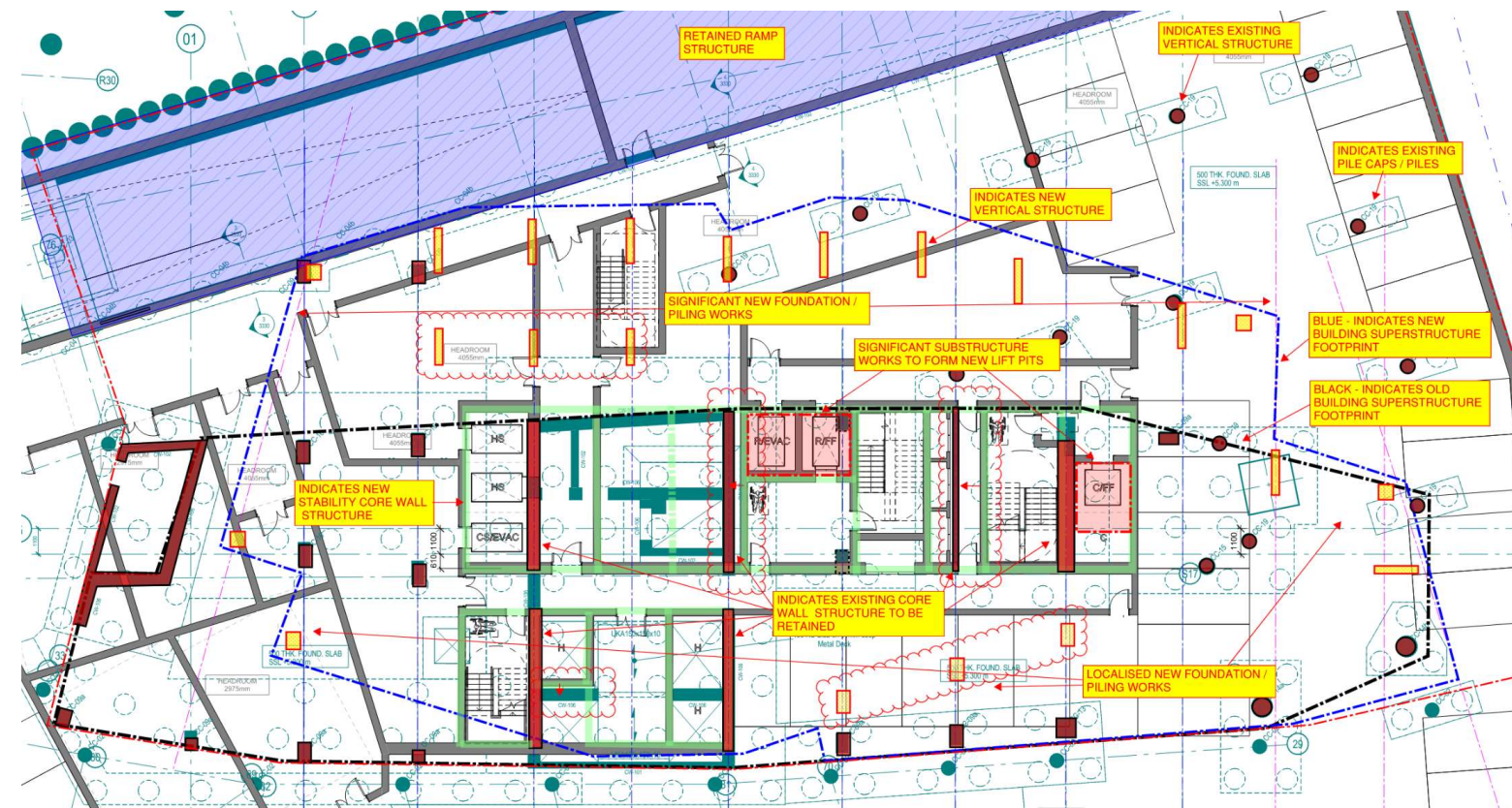


FIGURE 344. Structural overlay plan diagram: existing and proposed showing reuse of existing structure

KEY

- Existing vertical structure
- New vertical structure
- New stability core wall structure
- Footprint of existing building superstructure
- Footprint of new building superstructure

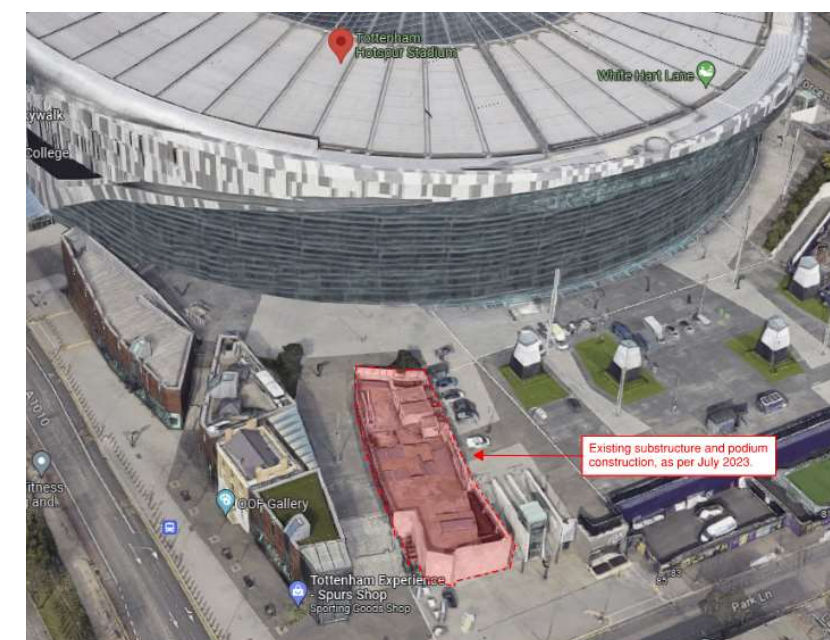


FIGURE 345. Existing structure up to podium Level 1

8.6 STRUCTURE (CONTINUED)

Structural lateral stability is provided by RC walls of various thickness that form stair core and lift shafts and services risers.

Typically transfer structure is designed out of the building frame, with columns running full height of the building without interruption. However, transfer structure has been identified in some isolated locations and typically takes the form of deep, wide downstand RC beams.

A number of steel frame structural features are also included, e.g. lower podium canopies, upper floor balconies of steel frame construction and roof top plant enclosure framing. Façade elements flanking the sides of upper balconies will require secondary steel framing to provide wind restraint.

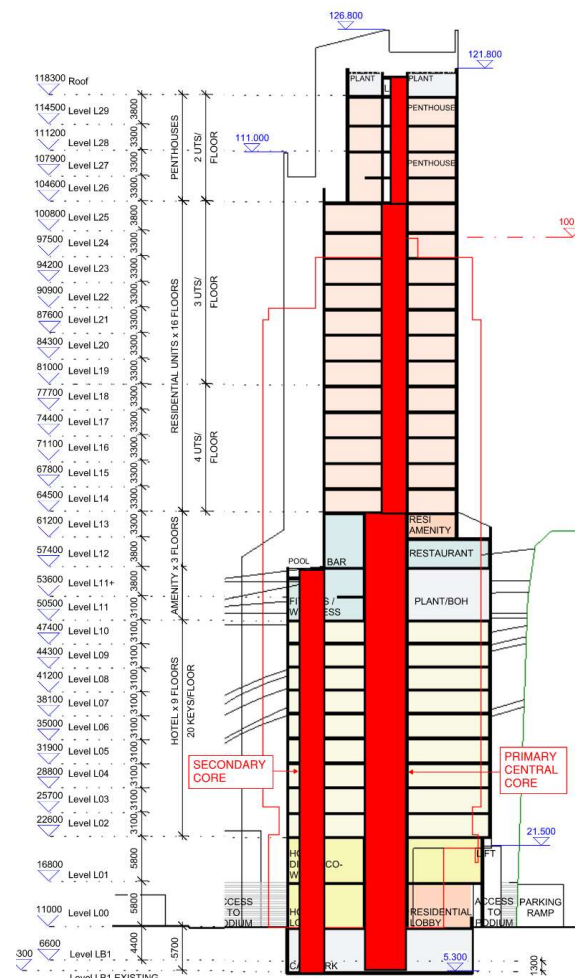


FIGURE 346. Diagrammatic sketch of core extents over building heights

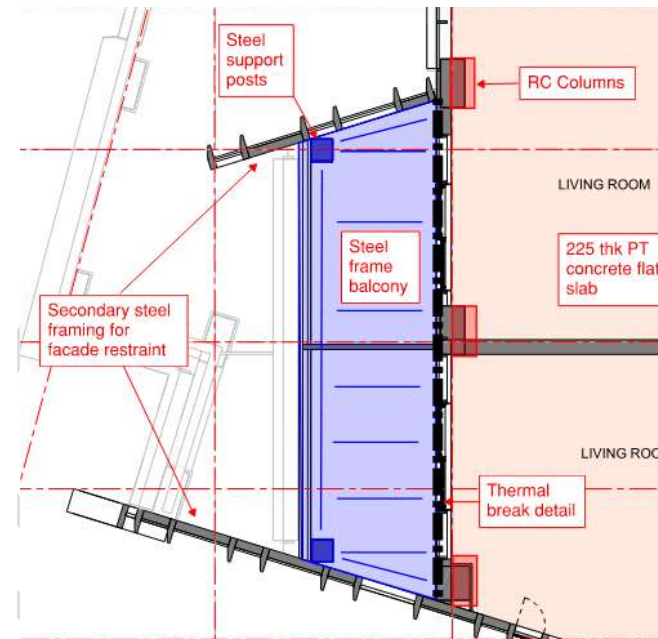


FIGURE 347. Typical balcony arrangement

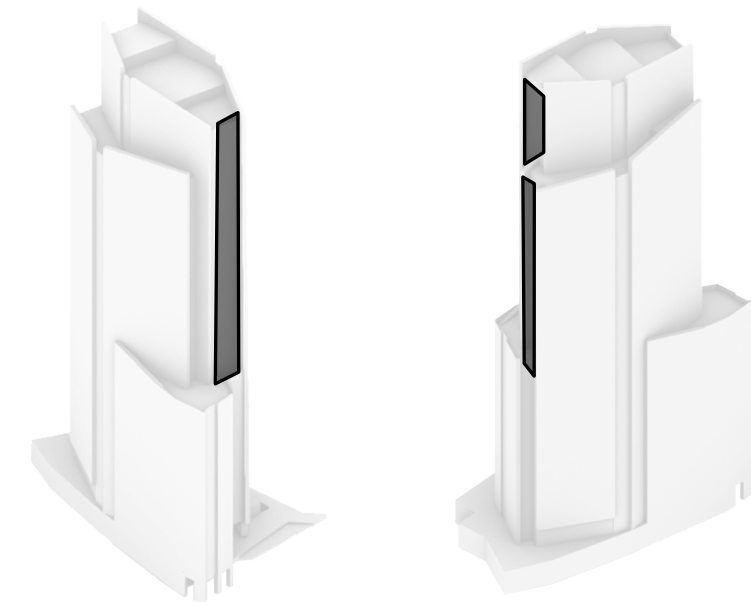


FIGURE 348. Axonometric view highlighting residential balconies

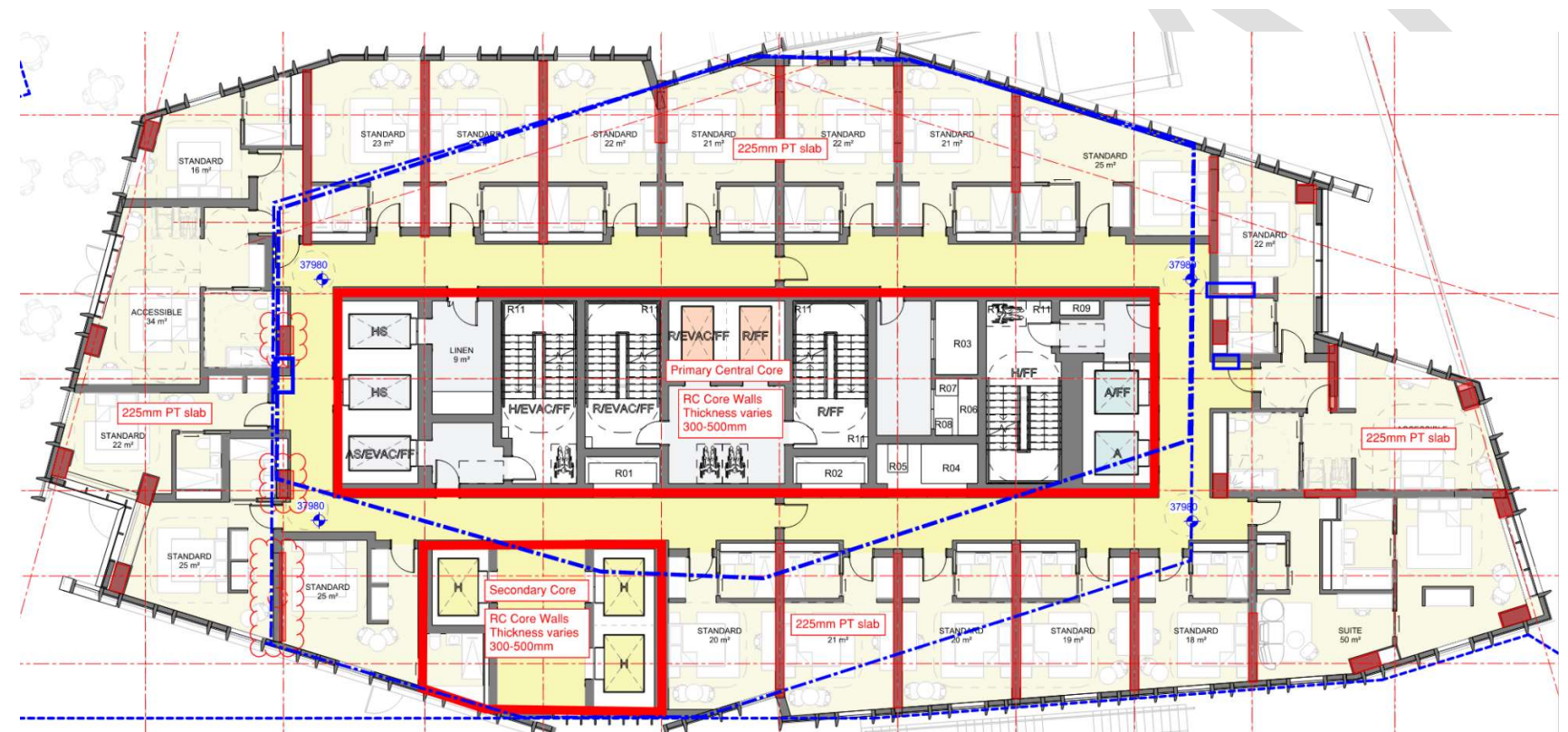


FIGURE 349. Primary and secondary core zones

8.7 WIND AND MICROCLIMATE

The following executive summary in relation to **wind and microclimate** has been developed with input from Arcaero:-

- All safety criteria are met throughout the Plot 3 Hotel and adjacent areas
- Recreational areas at podium and elevated levels are generally suitable for summertime uses.
- Outdoor seating at podium level feature areas suitable for restaurant / bar / poolside seating in summer, as do the Level 12 and 13 terraces featuring the outdoor swimming pool terrace.
- Level 26 & 27 terraces are suitable for short term standing / sitting, appropriate for private residences.
- With Plot 3 Hotel in place, conditions to south of stadium are typically improved relative to the existing baseline
- Mitigation includes:
 - Regions of tailored planting
 - Raised terrace edge parapets
 - Dividing privacy screens between residential properties
 - Moveable wind break for the swimming pool terrace

KEY

- A** Existing baseline
- B** Completed development
- C** Completed development and cumulative scheme
- D** Completed development and cumulative schemes including Lendlease HRW

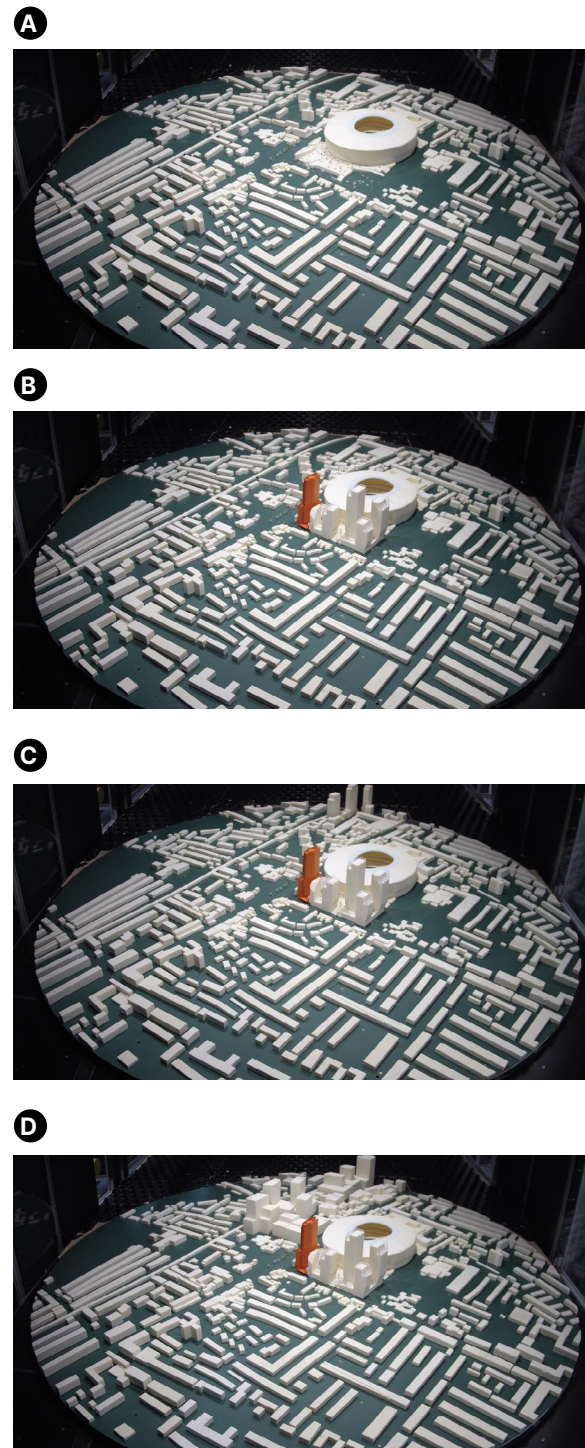


FIGURE 350. Wind Tunnel Test Scenarios

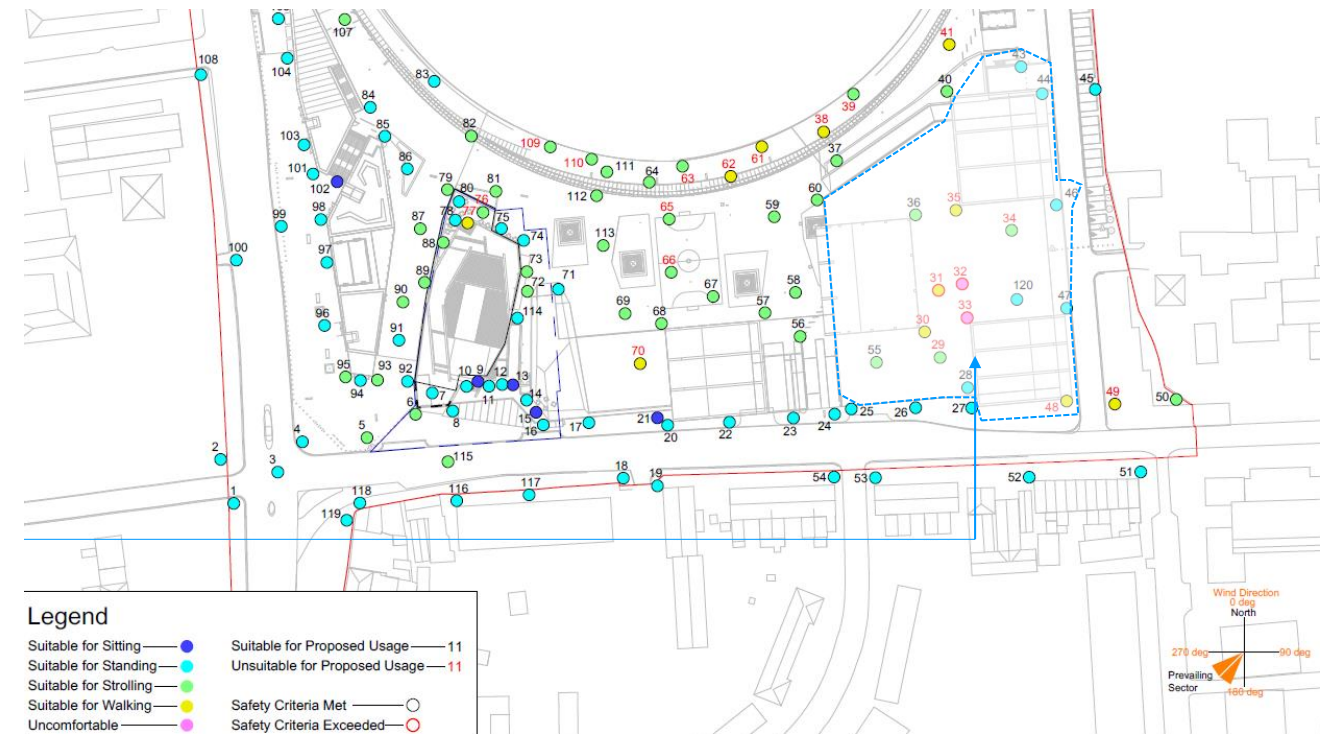


FIGURE 351. Worst Seasonal Results, Mitigation Included

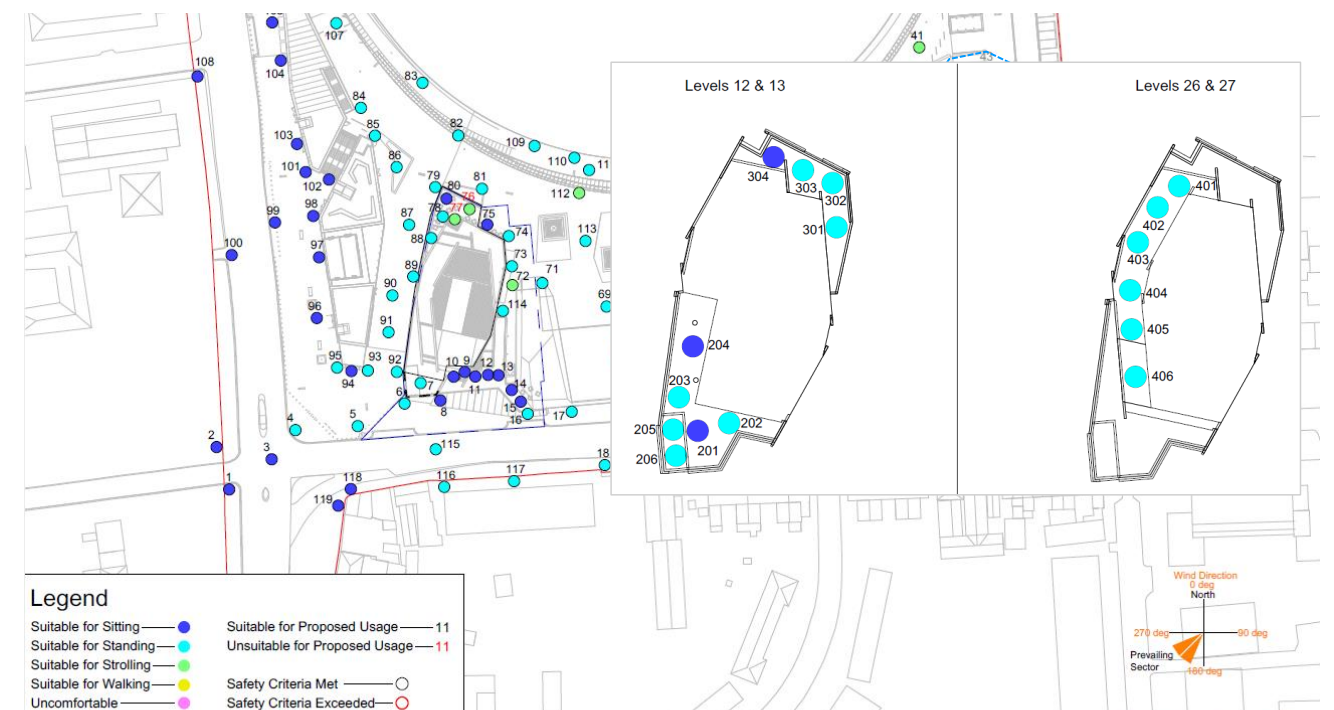


FIGURE 352. Summer Results, Mitigation Included