Transformation of the Ugly Brown Building

RWDI

Pedestrian Level Wind Desk-Based Assessment

September 2017

FINAL REPORT



TRANSFORMATION OF THE UGLY BROWN BUILDING

LONDON, UK

PEDESTRIAN LEVEL WIND DESK-BASED ASSESSMENT RWDI #1603405 - REV E SEPTEMBER 13TH 2017

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1. EXECUTIVE SUMMARY

This is a qualitative assessment of the likely wind conditions around the Transformation of The Ugly Brown Building (referred to as the 'Proposed Development') in King's Cross, London Borough of Camden. The Proposed Development consists of 6 new buildings, with the tallest element being up to 12 storeys in height.

The report outlines the overall methodology and the use of the Lawson Comfort Criteria to describe the expected on-site wind conditions. The assessment is based upon analysis of meteorological conditions for London, adjusted to the Site, and a review of the scheme drawings in the context of the meteorological data.

The Site description is used mainly to identify building massing and features that are pertinent to the wind microclimate on site. The expected main flow interactions around the Site are then described and categorised in terms of the Lawson Comfort Criteria, used for around thirty years throughout the UK in assessments of this kind.

The meteorological data for the site indicates prevailing winds from the south-west throughout the year, with colder north-easterly winds in spring months.

For the existing site, the wind microclimate at ground level is expected to be acceptable for the required use during the windiest season.

Wind conditions along the Regent's Canal Tow Path and Regent's Canal are anticipated to be suitable for standing during the windiest season; and sitting during the summer season in the existing scenario (Configuration 1).

There are no occurrences of strong winds (winds speeds in in excess of 15 m/s) anticipated within and around the Site throughout the year in the existing scenario (Configuration 1).

All thoroughfare locations at ground level wind for the Proposed Development are expected to have conditions ranging from acceptable for sitting use through to strolling use; which are suitable conditions for intended pedestrian (thoroughfare) use during the windiest season.

All main entrances are expected to experience the desired standing or calmer wind conditions during the windiest season, which are suitable for the intended entrance use during the windiest season. and would not require mitigation.

However, strolling conditions are anticipated at the entrances located near the south-east corners of Buildings B1 and C1 and the north-west corner of Building C3 during the windiest season, where secondary retail entrances are proposed. As these secondary entrances will only be used as and when conditions permit, no mitigation measures are therefore required at these locations.

All ground-level amenity spaces of the Proposed Development (including the central public space on Plot C and the retail 'street' located between Buildings C1 and C2) are expected to have suitable sitting conditions during the summer season; and no mitigation measures are required in this area of the site.

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The terraces of the Proposed Development are expected to have sitting to strolling conditions during the summer season. Sitting conditions are suitable for the intended amenity use at these spaces, and do not require any mitigation. However, standing and strolling conditions at Level 2 of Plot C4 Pavilion, Levels 2, 5 and 6 of Buildings C2 and C3 and Level 8 of Building B are one and two categories windier than desired for the intended use.

Depending on use, commercial tenants should fit out of terraces to include mitigation measures in order to target sitting conditions during the summer season.

As with the terrace locations, most balconies of the Proposed Development are likely to have sitting and standing conditions during the summer season. Sitting conditions are suitable for the intended amenity space usage during the summer season and do not require mitigation measures. However, standing conditions are one category windier than desired for the intended use and would require mitigation measures to achieve appropriate comfort levels at these locations.

Furthermore, strolling conditions (which are two categories windier than desired for the intended use during the summer months) will also require mitigation measures to achieve a suitable wind environment at these locations. these conditions would necessitate the application of mitigation measures, as required by the occupant (to provide shelter to these areas and target desirable (sitting) conditions).

It is understood that the implementation of mitigation measures for these balcony locations would likely seriously impact the architectural intent for this scheme.

As such, although mitigation measures are able to provide a calm environment, they are expected to have negative impacts on other considerations for the scheme; and therefore to date have not been incorporated. This will be elaborated further in the Design and Access Statement.

There are no occurrences of strong winds (winds speeds in in excess of 15 m/s) anticipated within and around the Site throughout the year in the proposed scenario (Configuration 2).

As in the baseline scenario (Configuration 1), wind conditions along the Regent's Canal Tow Path and Regent's Canal are expected to be suitable for standing during the windiest season; and sitting during the summer season in the proposed scenario (Configuration 2). We would therefore conclude that the presence of the Proposed Development would not have a significant effect on the amenity of the tow path; and the subsequent navigation of the canal boats along Regent's Canal throughout the year.

Overall, with the suggested mitigation measures in-situ, the wind microclimate within and around the Proposed Development is expected to be acceptable for its intended use.

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2. INTRODUCTION

RWDI was retained by Reef Estates Limited to conduct a desk-based assessment for the Transformation of The Ugly Brown Building (hereafter referred to as the 'Proposed Development'), in King's Cross, London Borough of Camden. This report presents the background, objectives, results and recommendations from RWDI's assessment. A summary of the overall recommendations from the study are presented in Section 7, "Mitigation Measures".

3. SITE DESCRIPTION

3.1 Site and Surroundings

Ted Baker are in the centre of Plot B. Plot A is partly vacant office and Plot C is a Verizon data centre.

The Ordnance Survey Landranger reference for the Site is TQ296837. The Site is located in King's Cross, within the London Borough of Camden, and is bounded by Granary Street to the south, St Pancras Way to the west and Regent's Canal the east.

The immediate surrounding area consists of a mixture of low to mid-rise suburban residential and commercial developments.

Generally, wind conditions surrounding the site are expected to be gusty in nature due to the surrounding developments.

However, winds travelling over open land typically have higher mean wind speeds and less gusty conditions, therefore the open land/parks (in this instance, Regent's Park, for example), particularly in the prevailing south-west direction, may impact the wind microclimate around the Proposed Development.

Figure 1 below, shows an aerial view of the Site and surroundings.

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Figure 1: Aerial Photograph of the Existing site (Approximate extent of the Site highlighted)

3.2 The Proposed Development

The Proposed Development, as shown on Figures 5-11, will be mixed-use, with five buildings and a 2-storey pavilion across three plots (Plots A -C) and comprise the following:

- Plot A, located to the north of the Site, will be a mixed-use building (Building A1), 7 storeys in height.
- Plot B, which occupies the central part of the Site, new global headquarters building for Ted Baker including a hotel; and be 9 storeys in height.
- Plot C, situated to the south of the Site will have three mixed use buildings with a variety of office / workspace, residential and retail (Buildings C1-C3, from east to west), with the tallest element (Building C2) up to 12 storeys in height. Furthermore, a 2-storey pavilion (Building C4) with an open rooftop terrace is proposed to the north-west of Plot C, and adjacent to St Pancras Way.

Ground-level amenity spaces are considered to the east of Buildings B1 and C1, along the canal front, whilst elevated terraces and balconies which have the potential to comprise seating areas, are proposed on Levels 2-6 of Plots A and C, and Levels 7-9 for Plot C.

Main entrances to the Proposed Development will be located off the central public space on Plot C and along St Pancras Way. Entrance to retail units and Building C1 office are located off the east - west thoroughfare between Buildings C1 and C2.

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4. METHODOLOGY AND ASSESSMENT CRITERIA

Knowledge of the prevailing wind direction focuses attention on the likely impact of these winds on the Site except where the proposed building massing / layout indicates that winds from other directions are likely to be important.

4.1 General Meteorological Data

Combined meteorological data derived from the meteorological stations of the major London airports (Heathrow, Gatwick and Stansted) have been corrected to standard conditions of 10m above open flat level country terrain. The meteorological station data is then adjusted to the Site conditions using the methodology implemented in the BREVe3.2 software package.

Approximately 30 years of meteorological data for London was used in this report and is presented in as wind roses by season in Figure 2. The assessment presented in this report focusses on winter, the windiest season, representing a 'worst-case' season for windy conditions between December and February and a summer season (representing a time of the year when amenity spaces are expected to be usable between June and August). Wind roses graphically depict the distribution of wind frequency and directionality for the four seasons. The combination of meteorological data, Site altitude and velocity ratios permits the percentage of time that wind speeds are exceeded at ground level on the Site to be evaluated. The locations can then be assessed using 'comfort criteria', as described below.



Figure 2: Seasonal wind roses for London (combined) (in Beaufort Force) (Radial axis indicates the hours for which the stated Beaufort Range is exceeded)

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The meteorological data indicate that the prevailing wind direction throughout the year is from the southwest. This is typical for many areas of southern England. There is a secondary peak from north-easterly winds, especially during the spring, and these tend to be cold winds.

4.2 Terrain Roughness

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Another consideration is the terrain roughness in each wind direction because wide, open spaces permit the wind to blow down to ground level generating conditions similar to those of open countryside even within a built-up area. An assessment of the terrain roughness for the Site was conducted using the BREVe3 software.

Table 1 presents the 'mean factors' for the Site where the mean factor represents the ratio of wind speed on site, at the stated reference height, as a fraction of the wind speed in open, flat countryside at a height of 2m and 10m. The table shows that the terrain is fairly consistent across all directions in relation to its effect on wind speed.

Wind Direction (N°)	0	30	60	90	120	150	180	210	240	270	300	330
Mean Factor at 2m	0.42	0.42	0.43	0.44	0.42	0.41	0.43	0.57	0.56	0.56	0.42	0.42
Mean Factor at 10m	0.79	0.80	0.80	0.81	0.77	0.77	0.79	0.88	0.87	0.86	0.77	0.77

Table 1: BREVe3 mean factors at 2m and 10m above ground level

4.3 Comfort Criteria

The assessment of the wind conditions requires a standard against which the measurements can be compared. This report uses the Lawson Comfort Criteria, which have been established for over thirty years. The Criteria, which seek to define the reaction of an average pedestrian to the wind, are described in Table 2.

If the measured wind conditions exceed the threshold wind speed for more than 5% of the time, then they are unacceptable for the stated pedestrian activity and the expectation is that there may be complaints of nuisance or people will not use the area for its intended purpose.

The Criteria set out five pedestrian activities and reflect the fact that less active pursuits require more benign wind conditions. The five categories are sitting, standing, strolling, walking and uncomfortable, in ascending order of activity level. In other words, the wind conditions in an area for sitting need to be calmer than a location that people merely walk past.

The distinction between strolling and walking is that in the strolling scenario pedestrians are more likely to take on a more leisurely pace, with the intention of taking time to move through the area, whereas in the walking scenario pedestrians are intending to move through the area quickly and are therefore expected to be more tolerant of windier conditions.

The Criteria are derived for open air conditions and assume that pedestrians will be suitably dressed for the season. Thermal comfort is discussed with reference to acceptable wind environments but not evaluated as part of the assessment.

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The coloured key in Table 2 corresponds to the presentation of wind tunnel test results described later in this report.

Table 2: Lawson Comfort Criteria

Кеу	Comfort Category	Threshold	Description
	Sitting	0-4 m/s	Light breezes desired for outdoor restaurants and seating areas where one can read a paper or comfortably sit for long periods
	Standing	4-6 m/s	Gentle breezes acceptable for main building entrances, pick-up/drop-off points and bus stops
•	Strolling	6-8 m/s	Moderate breezes that would be appropriate for window shopping and strolling along a city/town centre street, plaza or park
•	Walking	8-10 m/s	Relatively high speeds that can be tolerated if one's objective is to walk, run or cycle without lingering
•	Uncomfortable	>10 m/s	Winds of this magnitude are considered a nuisance for most activities, and wind mitigation is typically recommended



The Lawson Criteria set out six pedestrian activities and reflect the fact that less active pursuits require calmer wind conditions. In ascending order of activity level, the categories are:

• Sitting;

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- Standing or entering/leaving a building¹;
- Strolling;
- Walking; and
- Uncomfortable.

Generally, the target conditions are:

Strolling use during the windiest season on pedestrian thoroughfares (with walking conditions potentially being tolerated in areas where pedestrians would not linger);

Standing use conditions at entrances, drop off areas or taxi ranks, and bus stops throughout the year; and

Sitting use conditions at outdoor seating and amenity areas during the summer season when these areas are more likely to be frequently used by pedestrians. It is noted that in large mixed use amenity spaces a mixture of sitting use and standing use can be considered acceptable as users can choose to sit in 'calmer' areas, with 'windier' areas acceptable for more active pursuits.

The wind conditions in an area for sitting need to be calmer than a location that people merely walk past and this is reflected in the Comfort Criteria. The Criteria are derived for open air conditions and assume that pedestrians will be suitably dressed for the season. The criteria address the force of the wind on a person, or activity, they do not take account of thermal factors.

4.4 Strong Winds

Lawson² also specified a lower limit strong wind threshold when winds exceed 15m/s for more than 2 hours of the year. Exceedance of this threshold may indicate a need for remedial measures or a careful assessment of the expected use of that location; e.g. is it reasonable to expect elderly or very young pedestrians to be present at the location on the windiest day of the year? Wind Speeds that exceed 20m/s for more than 2 hours of the year represent safety issue for all members of the population, which would require mitigation to provide an appropriate wind environment.

Strong winds are generally associated with areas which would be classified as acceptable for walking or as uncomfortable. In a mixed-use urban development scheme, walking and uncomfortable conditions would not usually form part of the 'target' wind environment and would usually require mitigation due to pedestrian comfort considerations. This mitigation would also reduce the frequency of, or even eliminate, any strong winds.

¹ Note that the standing and entrance classifications have the same benchmark wind condition and are combined in the discussion that follows.

² Lawson T.V. (April 2001), Building Aerodynamics, Imperial College Press

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5. BASELINE CONDITIONS

Often a new Development will alter the pedestrian activity (i.e. intended use) on site. Occasionally, although wind conditions may not change after the Proposed Development is completed (e.g. stay at strolling level), mitigation would still be required if on the new Development the location of interest is intended for a critical activity (e.g. a main entrance) for which the wind condition would be unsuitable. Assessment in terms of the desired pedestrian activity on or around a site takes into consideration any change of use and this is where the comfort criteria are particularly helpful.

5.1 Pedestrian Comfort

Based on the terrain roughness analysis presented in section 3.2, the baseline conditions at 2m above ground level at the Site are acceptable for standing use in the windiest season and sitting use in summer. Baseline conditions at 10m above ground level for the summer season are classified as acceptable for standing use.

5.1.1 Thoroughfares

As shown in Figure 3, wind conditions along thoroughfares around the existing Site at ground level are expected to range from acceptable for sitting use through to acceptable for strolling use during the windiest season. Localised strolling conditions are expected at the south-east corner of the existing Ugly Brown Building during the windiest season (Figure 3).

During the summer season, conditions along all thoroughfares (as shown in Figure 4) are expected to be one category calmer than the windiest season, and therefore would be suitable for sitting and standing uses throughout the Site.

5.1.2 The Regent's Canal Tow Path and Regent's Canal

Regent's Canal Tow Path

The Regent's Canal Tow Path, which runs along the other side of Regent's Canal in regards to the Proposed Development, is a thoroughfare and an amenity space through Camden and King's Cross, where several canal boats are moored.

The tow path is expected to have conditions suitable for standing use during the windiest season (Figure 3). Standing conditions are suitable and one category calmer than desired for the intended thoroughfare use along the tow path.

Conditions along this area are expected to be suitable for the sitting use during the summer season (Figure 4). Sitting conditions are acceptable for the intended amenity space usage as well as other activities in relation to the use of the canal boats in the area.

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Regent's Canal

Regent's Canal is a 13.8km long canal across an area just north of central London which empties into the River Thames.

Wind conditions along Regent's Canal are expected to be suitable for standing use the windiest season (Figure 3) and sitting use during the summer season (Figure 4). Sitting use conditions are the lowest category within the Lawson Comfort Criteria

5.2 Strong Winds

There are no occurrences of strong winds (winds speeds in excess of 15 m/s) anticipated within and around the Site throughout the year in the existing scenario (Configuration 1).

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6. WIND CONDITIONS AROUND THE PROPOSED DEVELOPMENT

Wind conditions suitable for strolling use or calmer are desirable on main thoroughfares during the windiest season, for a mixed use Development in an urban area. Standing use wind conditions or calmer are generally required at entrances throughout the year. Wind conditions acceptable for sitting in the summer season are desirable for public amenity spaces.

Occurrences of strong winds in excess of 15m/s are expected to be limited when wind conditions are suitable for pedestrian comfort, meeting the above criteria.

The assessment made below is based on a worst-case assessment of the expected wind conditions at the Site. This worst-case assessment assumes no landscaping to be present.

6.1 Pedestrian Comfort

Lawson comfort plots are appended to the end of this report. The expected comfort levels, for the windiest season (i.e. winter) at ground level are shown in Figure 5. Figures 6 to 11 show the expected comfort levels for the summer season (at ground and elevated levels) when wind comfort levels are generally one category calmer than the windiest season. The expected wind microclimate is discussed below.

6.1.1 Thoroughfares

As shown in Figure 5, wind conditions along thoroughfares within and around the Proposed Development at ground level are expected to range from acceptable for sitting use through to acceptable for strolling use during the windiest season.

Localised strolling conditions are expected at the south-east corner of Building A1, the north-east and southeast corners of Building B1, the north-east and south-east corners of Building C1, the south-east corner of Building C2, the north-east corner of Building C3 and the north-east corner of the Building C4 pavilion (Figure 5).

These 'windier' conditions are likely due to the wind flow acceleration from the prevailing wind direction occurring at these locations of the Site. All other locations around the Proposed Development are expected to have conditions ranging from suitable for sitting to standing use during the windiest season due to the Site being sheltered by the Proposed Development itself.

During the summer season, conditions along all thoroughfares (as shown in Figure 6) are expected to be one category calmer than the windiest season, and therefore would be suitable for sitting and standing uses.

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6.1.2 Entrances

The main entrances to the Proposed Development are located off the central public space on Plot C and along St Pancras Way. Entrance to retail units and Building C1 office are located off the east - west thoroughfare between Buildings C1 and C2 (Figure 5).

Conditions at most of the entrances to the Proposed Development are expected to be suitable for standing use or calmer during the windiest season (Figure 5). These conditions are appropriate for the intended entrance use at these locations. Consequently, no mitigation measures are required at these locations.

However, localised strolling conditions are expected at the south-east corners of Buildings B1 and C1 and the north-west corner of Building C3; where entrances are considered.

These conditions are one category windier than desired for the intended entrance use at these locations, and would generally require mitigation.

It is noted, however, that secondary retail entrances (which may be closed at certain times of the year, as opposed to the main entrances of the Proposed Development) are proposed in those localised areas of strolling conditions, and that these will be usable at the discretion of each individual retail unit; as and when conditions permit. As such, mitigation measures are not required at these locations.

6.1.3 Ground-level Amenity Spaces

Ground-level amenity spaces include the central public space on Plot C (which is the primary amenity space of the Site) as well as the seating areas proposed along the canal front; to the east of Plots B and C. Conditions at most seating areas within this region of the Proposed Development are anticipated to be suitable for sitting use during the summer season (Figure 6).

Furthermore, the retail 'street', located between Buildings C1 and C2 is key amenity street likely to have seasonal outdoor seating depending on retail occupants; and an area where pedestrians are expected to linger longer periods of time than usual. This particular region of the Site is anticipated to have conditions suitable for sitting use during the summer season (Figure 6).

As these conditions are suitable for the intended amenity space usage during the summer months, no mitigation measures are required.

6.1.4 Plot C4 Pavilion

Ground-level and elevated seating is proposed for the Plot C4, located to the north-west of Plot C.

Conditions in this area of the Proposed Development at ground level are anticipated to be suitable for sitting use during the summer season (Figure 8). As these conditions are suitable for the indented amenity space usage during the summer months, no mitigation measures are required.

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However, conditions at the rooftop terrace level (Level 2) of the pavilion are expected to be suitable for standing use during the summer (Figure 7).

Standing conditions are one category windier than desired for the intended amenity space usage during the summer and would require mitigation to achieve the appropriate comfort levels in these areas.

6.1.5 Terraces

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Amenity space terraces at Levels 2-6 of Plots A and C, and Levels 7-9 for Plot C only, are proposed. However, for ease of reporting, anticipated wind conditions at Levels 2, 5-6 and 8-9 of the Proposed Development are discussed.

Wind conditions at these locations of the Proposed Development are anticipated to range from suitable for sitting use to strolling use during the summer season (Figures 7-11).

Terrace with sitting use conditions (i.e.: terraces of Buildings A1 and C3 at Level 2 – Figure 9, and the terrace of Building B at Level 8 – Figure 10) are suitable for the indented amenity space usage during the summer months; and no mitigation measures are required.

Standing conditions at amenity space terraces (i.e.: terrace locations of Buildings C1, C2 and C3 at Level 5 – Figure 8; and terrace locations of Buildings C2 and C3 at Level 6 – Figure 9) are one category windier than desired for the intended amenity space usage during the summer season.

As these conditions are expected to be (one category) windier than desired for the intended amenity space usage during the summer season, mitigation would be required at these locations to achieve acceptable comfort (sitting) levels of comfort during the summer season.

As with standing use conditions, strolling use conditions (anticipated at the Level 6 terraces of Building A1 and the Level 8 terrace of Building C3 – Figures 9 and 10 respectively) are windier than desired (by two categories) for the intended amenity space usage at these locations during the summer months. Consequently, mitigation measures will also be required at these areas to achieve an appropriate wind environment for amenity use,

Examples of mitigation recommendations for these locations are discussed in Section 7 of this report.

6.1.6 Balconies

Balconies within the Proposed Development are proposed on the north, east, south and west-facing corners of the southern half of Building C1, from Level 2 to Level 9. Anticipated wind conditions at these locations of the Proposed Development are presented for Levels 2, 5-6 and 8-9 (Figures 7-11 respectively).

Conditions are expected to be suitable for the intended amenity space usage at all levels to the north-west corner balconies - along the southern half of Building C1, with sitting conditions during the summer season (Figures 7-11).

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The north-east corner balcony, on the southern half of Building C1, is also anticipated to have suitable sitting conditions at Levels 2, 5 and 6 of the Proposed Development only. These conditions are suitable for the intended amenity space usage and do not require mitigation.

However, standing to strolling use conditions are anticipated at several all remaining locations across the north-east, south-east and south-west corner of the building, from Level 2 to Level 9, during the summer season (Figures 7-11).

It should be noted that, although standing conditions are expected to be windier than desired for the intended amenity space usage during the summer season, these balconies would again be used on a 'weather permitting' basis instead of being in constant use; and as these balcony locations are also elevated above ground (where there is an expectation of slightly windier conditions, due to their exposure to the prevailing winds), then these conditions would therefore be considered acceptable for their intended use during the summer months. Consequently, no mitigation measures are required.

However, balcony locations with strolling use conditions (two categories windier than desired for the intended amenity space usage during the summer season) would, however, require mitigation regardless of the nature of use for these spaces.

As with the terrace locations of the Proposed Development, mitigation measures to achieve suitable conditions for the intended amenity space usage at these locations in the summer, are discussed within Section 7 of this report.

6.1.7 The Regent's Canal Tow Path and Regent's Canal

Regent's Canal Tow Path

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Wind conditions along the Regent's Canal Tow Path are expected to be suitable for sitting use during the summer season once the Proposed Development is built (Figure 6).

These conditions are similar to those anticipated in the baseline scenario (Configuration 1), and it can be determined that the Proposed Development is unlikely to have any significant adverse on the local wind conditions on the tow path.

Regent's Canal

The wind conditions across Regent's Canal are expected to be suitable for standing use during the windiest season (Figure 5) and sitting use during the summer season (Figure 6) following the presence of the Proposed Development (Figure 6).

These conditions remain the same as those anticipated as part of the existing scenario (Configuration 1).

The presence of the Proposed Development is not expected to have a significant effect on the amenity of the tow path or navigation of the canal boats along Regent's Canal throughout the year.

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6.2 Strong Winds

There are no occurrences of strong winds (winds speeds in excess of 15 m/s) anticipated within and around the Site throughout the year in the proposed scenario (Configuration 2).

7. MITIGATION MEASURES

Although the wind microclimate throughout the majority of the Proposed Development would be acceptable for its intended use, localised occurrences of windy conditions will require mitigation in order to provide comfortable conditions for the respective intended uses.

The following measures are expected to mitigate the undesirable conditions and improve the wind microclimate to a comfortable category.

7.1 Terraces

The terrace locations proposed at Level 2 of the Plot C4 Pavilion and at Levels 2, 5 and 6 of Buildings C1, C2 and C3 – Figures 7, 8 and 9 respectively) within the Proposed Development are expected to have standing conditions during the summer season.

Strolling use conditions (two categories windier than desired for amenity space usage) are also anticipated at the Level 6 terraces of Building A1 and the Level 8 terrace of Building C3 (Figures 9 and 10 respectively).

For the commercial tenants, depending on use, the fit out of terraces should include mitigation measures such as a solid screens and dense soft landscaping to target the desired (sitting use) conditions during the summer season. Such measures would create turbulence and diffuse oncoming winds from the prevailing wind directions, resulting in calmer conditions in areas of the terraces with standing and strolling conditions.

It should be noted that the absence of such measures would result in conditions windier than desired for the intended (sitting) use at these terrace locations during the summer season.

7.2 Balconies

As with the terraces, the balconies at all levels of the Proposed Development are expected to have conditions ranging from suitable for sitting to strolling use during the summer months.

When considering the use of the balcony locations, sitting conditions are suitable for the intended amenity use, and no mitigation are required at these locations.

However, wind conditions at the balconies that are suitable for standing use can be improved by installing mitigation measures (such as temporary screens and soft landscaping) which would provide sufficient shelter to improve the conditions of the balconies to the desired (sitting) category.

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Furthermore, balconies with strolling conditions during the summer season (I.e., the south-east and southwest balconies of Building C1 at Level 9 – Figure 11) would require applied mitigation measures, as required by the occupant, to provide shelter and make the balustrade act less porous. This would contribute towards achieving a suitable wind environment for the intended amenity space usage at residential balconies.

It should be noted that the absence of such measures would result in conditions windier than desired for the intended (sitting) use at these balcony locations during the summer season.

It is understood that the implementation of the mitigation measures (as recommended in Section 7 of this report) for these balcony locations would likely seriously impact the architectural intent for this scheme.

As such, although the aforementioned mitigation measures are able to provide a calm environment, they are expected to have negative impacts on other considerations for the scheme; and therefore to date have not been incorporated. This will be elaborated further in the Design and Access Statement.

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8. CONCLUDING REMARKS

In conclusion:

- 1. The meteorological data for the site indicates prevailing winds from the south-west throughout the year, with colder north-easterly winds in spring months.
- 2. For the existing site, the wind microclimate at ground level is expected to be acceptable for the required use during the windiest season.
- 3. Wind conditions along the Regent's Canal Tow Path and Regent's Canal are anticipated to be suitable for standing during the windiest season; and sitting during the summer season in the existing scenario (Configuration 1).
- 4. There are no occurrences of strong winds (winds speeds in in excess of 15 m/s) anticipated within and around the Site throughout the year in the existing scenario (Configuration 1).
- 5. All thoroughfare locations at ground level wind for the Proposed Development are expected to have conditions ranging from acceptable for sitting use through to strolling use; which are suitable conditions for intended pedestrian (thoroughfare) use during the windiest season.
- 6. All main entrances are expected to experience the desired standing or calmer wind conditions during the windiest season, which are suitable for the intended entrance use during the windiest season. and would not require mitigation.
- 7. However, strolling conditions are anticipated near the south-east corners of Buildings B1 and C1 and the north-west corner of Building C3 during the windiest season, where secondary retail entrances are proposed. As these entrances will be usable at the discretion of each individual retail unit, when conditions permit, no mitigation measures are therefore required at these locations.
- All ground-level amenity spaces of the Proposed Development (including the central public space on Plot C and the retail 'street' located between Buildings C1 and C2) are expected to have suitable sitting conditions during the summer season; and no mitigation measures are required in this area of the site.
- 9. The terraces of the Proposed Development are expected to have sitting to strolling conditions during the summer season. Sitting conditions are suitable for the intended amenity use at these spaces, and do not require any mitigation. However, standing and strolling conditions at Level 2 of the Plot C4 Pavilion and at Levels 2, 5 and 6 of Buildings C2 and C3 are one and two categories windier than desired for the intended use. Mitigation measures are required at these locations to alleviate conditions in these areas. Although mitigation measures are required, these will be part of the tenants' fit out
- 10. As with the terrace locations, most balconies of the Proposed Development are likely to have sitting and standing conditions during the summer season, sitting conditions are suitable for the intended amenity use during the summer. However, standing conditions are one category windier than desired for the intended amenity space usage during the summer season and would require mitigation measure to target desirable (sitting) conditions.
- 11. Strolling conditions, however, are two categories windier than desired for the intended use during the summer months, and will require mitigation measures to achieve a suitable wind environment at these locations.
- 12. With regard to mitigation measures; we understand that there are other considerations in addition to wind that will inform the final design of the balcony/terrace spaces, and that these will be explored in the Design and Access Statement.

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- 13. There are no occurrences of strong winds (winds speeds in in excess of 15 m/s) anticipated within and around the Site throughout the year in the proposed scenario (Configuration 2).
- 14. As in the baseline scenario (Configuration 1), wind conditions along the Regent's Canal Tow Path and Regent's Canal are expected to be suitable for standing during the windiest season; and sitting during the summer season in the proposed scenario (Configuration 2).
- 15. We would therefore conclude that the presence of the Proposed Development would not have a significant effect on the amenity of the tow path; and the subsequent navigation of the canal boats along Regent's Canal throughout the year.
- 16. Overall, with the suggested mitigation measures in-situ, the wind microclimate within and around the Proposed Development is expected to be acceptable for its intended use.

9. REFERENCES

1. Lawson T.V. (April 2001), Building Aerodynamics, Imperial College Press











LEGEND:	
LAWSON COMFORT CRITERIA:	
Sitting —	
Standing/Entrance	
Leisure Walking	-
Business Walking	-
Carpark/Roadway	-

Pedestrian Comfort Desk Study - Expected Wind Conditions - Balconies and Terraces Level 2 Proposed development with existing surrounding buildings

Summer Season





LEGEND:	
LAWSON COMFORT CRITERIA:	
Sitting —	
Standing/Entrance	
Leisure Walking	_
Business Walking	_
Carpark/Roadway	

Pedestrian Comfort Desk Study - Expected Wind Conditions - Balconies and Terraces Level 5 Proposed development with existing surrounding buildings

Summer Season









LEGEND:	
LAWSON COMFORT CRITERIA:	
Sitting —	
Standing/Entrance	
Leisure Walking	-
Business Walking	-
Carpark/Roadway ———	

Pedestrian Comfort Desk Study - Expected Wind Conditions - Balconies and Terraces Level 6 Proposed development with existing surrounding buildings

Summer Season





LEGEND:	
LAWSON COMFORT CRITERIA:	
Sitting —	
Standing/Entrance	
Leisure Walking	-
Business Walking	
Carpark/Roadway	

Pedestrian Comfort Desk Study - Expected Wind Conditions - Balconies and Terraces Level 8 Proposed development with existing surrounding buildings

Summer Season





LEGEND:	
LAWSON COMFORT CRITERIA:	
Sitting —	
Standing/Entrance	
Leisure Walking	-
Business Walking	_
Carpark/Roadway	

Pedestrian Comfort Desk Study - Expected Wind Conditions - Balconies and Terraces Level 9 Proposed development with existing surrounding buildings

Summer Season

