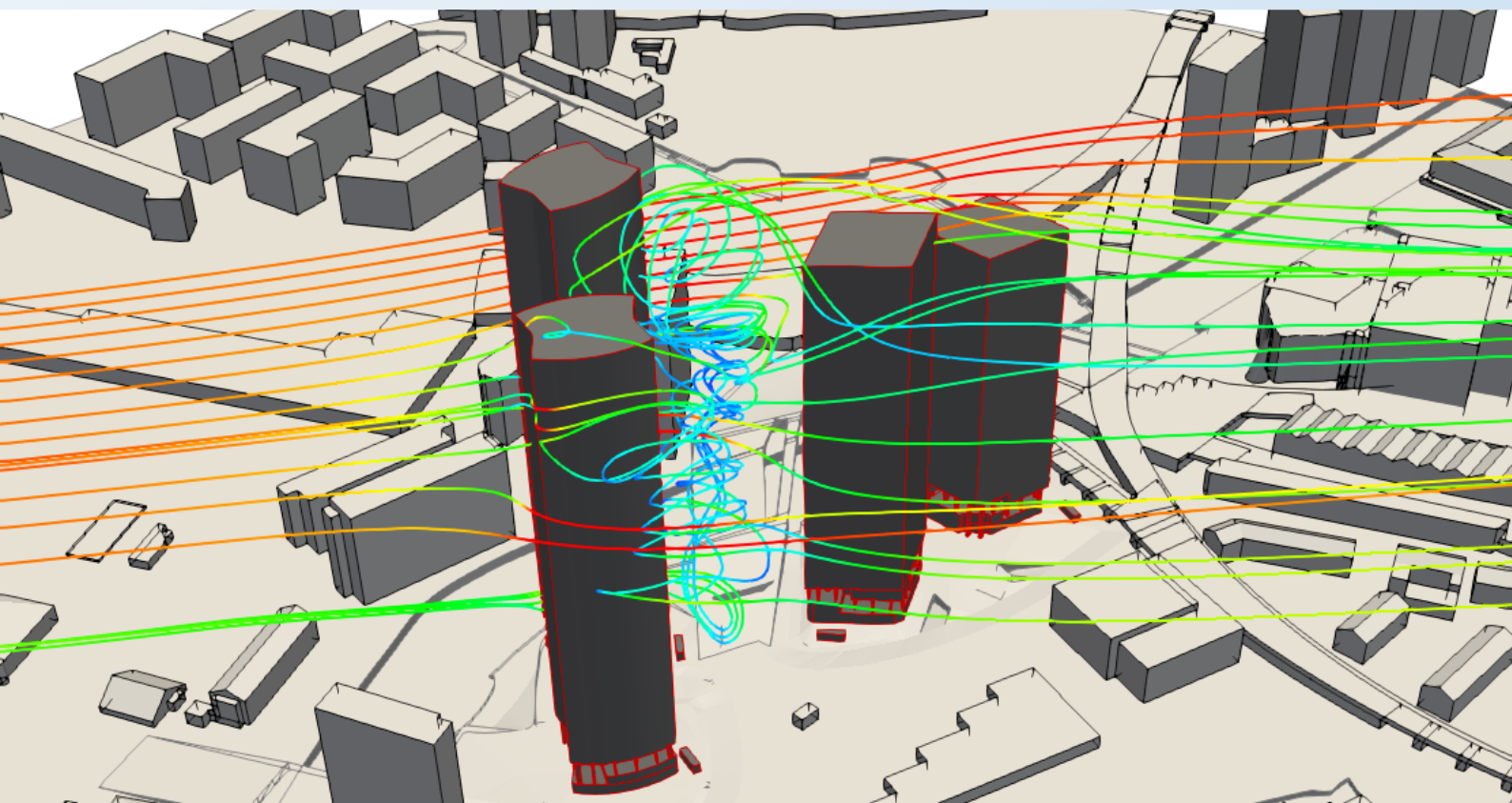




Renaker Build Ltd.

TRINITY ISLANDS

Addendum to ES Chapter 17 – Wind Microclimate





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TYPE OF DOCUMENT (VERSION) PUBLIC

PROJECT NO. 70082598

DATE: JANUARY 2023

WSP

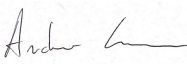
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QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	P01	Updated to confirm validity of the ES Addendum		
Date	6 th May 2022	27 th January 2023		
Prepared by	Aidan McLoughlin	Aidan McLoughlin		
Signature		p.p. 	Camera, Andrea (UKAXC093) 2023.01.27 17:41:50	
Checked by	Elvin Hii	Elvin Hii		
Signature		 Digitally signed by Hii, Elvin (UKELH005) Date: 2023.01.27 17:43:28		
Authorised by	Stefano Cammelli	Stefano Cammelli		
Signature		 Digitally signed by Cammelli, Stefano (UKSXC085) DN: cn=Cammelli, Stefano (UKSXC085), ou=Active, email=Stefano.Cammelli@wsp.com Date: 2023.01.27 17:45:37		
Project number	70082598	70082598		
Report number	1	1		
File reference	Trinity Islands - ES Addendum - Wind Microclimate_WSP	Trinity Islands - ES Addendum - Wind Microclimate_WSP		

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EXECUTIVE SUMMARY

A wind microclimate study has been performed for the proposed Trinity Islands development in Manchester. This study constitutes an addendum to “ES Chapter 17 – Wind Microclimate” (PA 132429/FO/2021) and provides additional information on updated phasing scenarios of the Proposed Development. A total of four configurations were studied. All assessments included the proposed landscaping for the site, excluding the terraces at the bottom of the buildings.

The analyses used computational fluid dynamics (CFD) simulations to determine the aerodynamic effect that the proposed buildings have on the wind patterns around the site. This was combined with long-term wind speed data to provide a statistical representation of the wind conditions, which were then compared against pedestrian comfort and distress criteria.

Results show that, at ground level, wind conditions rate as safe for all users across all scenarios, provided that the proposed landscaping scheme is implemented. At the elevated levels, some terraces rate as unsafe for pedestrians across all scenarios. The developer is currently working with WSP to either introduce bespoke wind mitigation in the form of baffles, or to restrict access to these spaces when windy conditions are forecast.

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1 INTRODUCTION

- 1.1.1. WSP had initially reviewed the Wind Microclimate findings based on the initial proposed amended phasing sequence (i.e. with D1 followed by D2 coming first), as presented in this ES addendum. As a result of the modelling, there has been a minor amendment to the landscaping plans on Site D, which comprise:
- the original 50% porous screen to the north of D1 has been extended to the edge of the upper ground level. It is now ~3.35m wide;
 - an additional 1m tall planter + 1m tall hedge (total height = 2m) has been added to the south of D1; and
 - one straight 3m tall, 50% porous screen has been replaced by a curved 3m tall, 50% porous screen along the edge of the turning circle to the north of 'Building D2'.

The newly proposed phasing sequence (i.e. with D2 followed by D1 coming forward first) was shared with WSP to determine whether any changes would be required to this ES Addendum and conclusions listed above. WSP confirm that there would be no changes and that overall, the wind microclimate for the proposals remains appropriate for the respective sites. Once the proposed development is complete the impacts are the same as that assessed under the original phasing. Therefore, the proposals do not have an impact on the conclusions of the ES chapter.

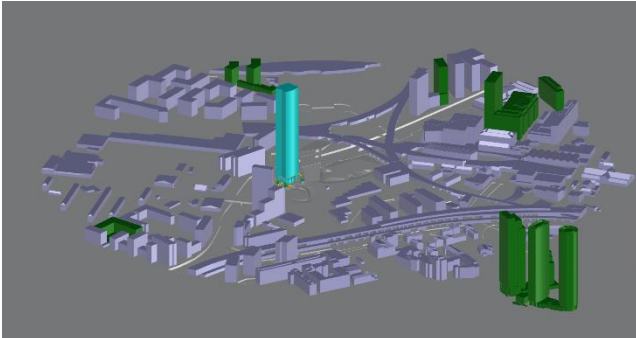
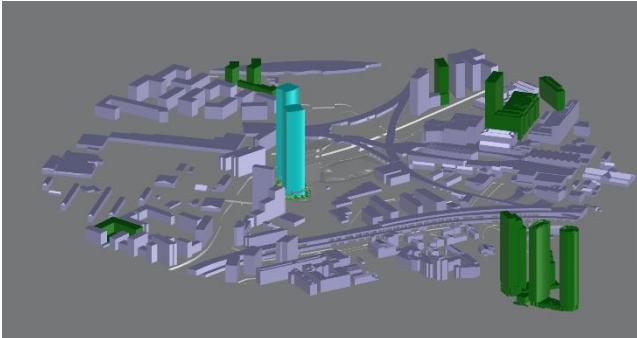
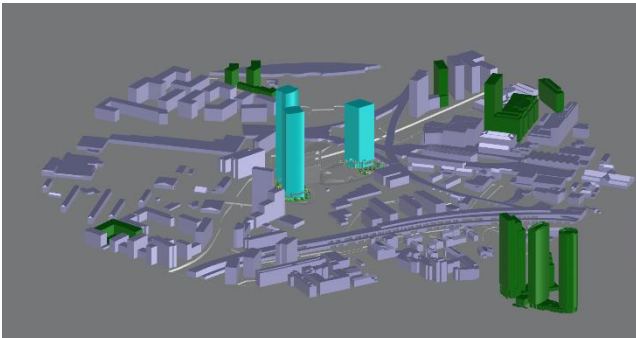
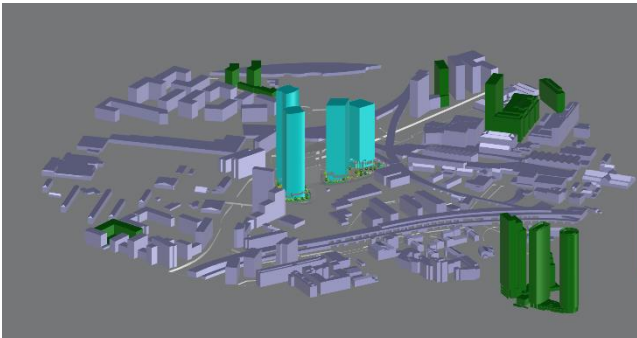
- 1.1.2. This technical report should be read in conjunction with the “ES Chapter 17 – Wind Microclimate” (PA 132429/FO/2021) and provides additional information on updated phasing scenarios of the Proposed Development.

2 METHODOLOGY

2.1 PHASING

- 2.1.1. CFD has been used to compute the aerodynamic effect for four new phasing scenarios of the Proposed Development (see Table 2-1 for further details).

Table 2-1 - Scenarios simulated as part of the wind microclimate studies.

Scenario 1: D1 in existing surrounds 	Scenario 2: D1+D2 in existing surrounds 
Scenario 3: D1+D2+C1 in existing surrounds 	Scenario 4: D1+D2+C1+C2 in existing surrounds 

- 2.1.2. The updated phasing scenarios of the Proposed Development have been studied only in the context of the existing surrounds. The effects of cumulative buildings have been previously assessed in the “ES Chapter 17 – Wind Microclimate” (PA 132429/FO/2021). The existing surrounds scenarios were identified to be the ‘worst-case’ and therefore negate the need to re-evaluate the impact of the cumulative schemes (refer to paragraphs 17.71 to 17.91 under the “Cumulative Effects” section of the “ES Chapter 17 – Wind Microclimate” document).

2.2 INPUTS

- 2.2.1. The assessment methodology, criteria, wind climate analysis and simulation details remain as per the “ES Chapter 17 – Wind Microclimate” (PA 132429/FO/2021).

2.3 MITIGATION MEASURES

- 2.3.1. The landscaping plan, which was informed by a series of wind mitigation workshops previously conducted between WSP, Renaker, SimpsonHaugh and TPM Landscaping, remains largely as per the “ES Chapter 17 – Wind Microclimate” (PA 132429/FO/2021). The filenames of the plans used to

inform the positioning of the landscaping were *ZC-TPM-G710-PL-XX-3852.pdf* and *ZD-TPM-G710-PL-XX-3852.pdf* for 'Site C' and 'Site D' respectively.

2.3.2. The following localised amendments have been made to the landscaping scheme as a result of the updated phasing scenarios of the Proposed Development (see also Figure 2-1).

1. The original 50% porous screen to the north of D1 has been extended to the edge of the upper ground level. It is now ~3.35m wide.
2. An additional 1m tall planter + 1m tall hedge (total height = 2m) has been added to the south of D1.
3. One straight 3m tall, 50% porous screen has been replaced by a curved 3m tall, 50% porous screen along the edge of the turning circle to the north of 'Building D2'.

It is understood these amendments will be integrated within the design of the Proposed Development.



Figure 2-1 - Image showing the amendments to the landscaping as a result of the resequencing scenarios

3 RESULTS

3.1 SCENARIO 1

This section analyses the results of 'Building D1' within the existing surrounds, its associated landscaping and a construction hoarding along the boundary of the vacant site of 'Building D2'.

SAFETY CRITERIA ANALYSIS

- 3.1.1. Figure 3-1 shows that for 'Building D1' within the context of the existing surrounds, the local ground level wind conditions are rated as safe for all users.



Figure 3-1 - Contours of safety criteria for “Scenario 1”.



Figure 3-2 - Contours of safety criteria on elevated levels for “Scenario 1”.

- 3.1.2. Figure 3-2 indicates that elevated levels rate as safe for all users except for some localised areas. It should be noted that no landscaping was modelled across the terraces.

COMFORT CRITERIA ANALYSIS

- 3.1.3. Figure 3-3 and Figure 3-4 show contours of comfort criteria on a plane 1.5m above the local ground for the worst season (winter) and summer respectively for “Scenario 1”.

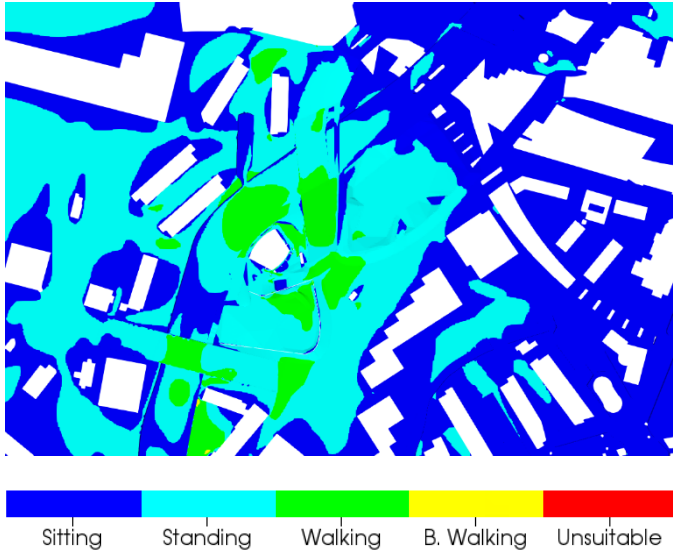


Figure 3-3 - Contours of comfort criteria for winter for “Scenario 1”.

- 3.1.4. Figure 3-3 shows that wind conditions within and around ‘Building D1’ rate as suitable for walking, standing and sitting during winter.

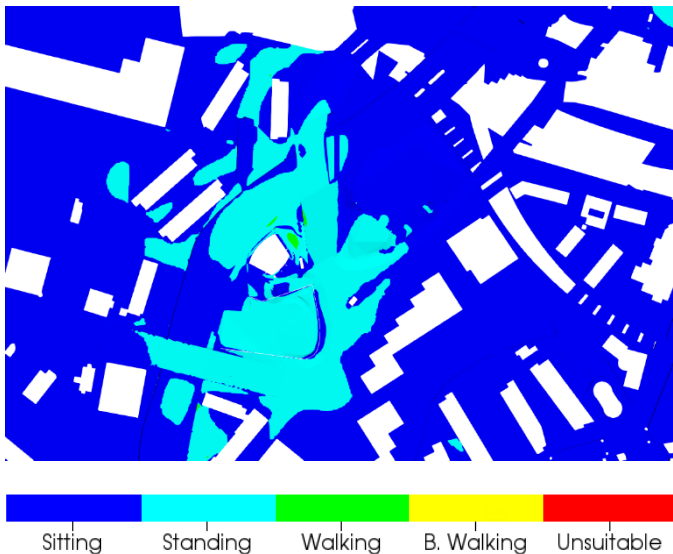


Figure 3-4 - Contours of comfort criteria for summer for “Scenario 1”.

- 3.1.5. Figure 3-4 shows that wind conditions within and around ‘Building D1’ rate as generally suitable for standing and sitting during summer.

- 3.1.6. Figure 3-5 shows contours of comfort criteria on a plane 1.5m above the elevated levels for the summer season for “Scenario 1”.

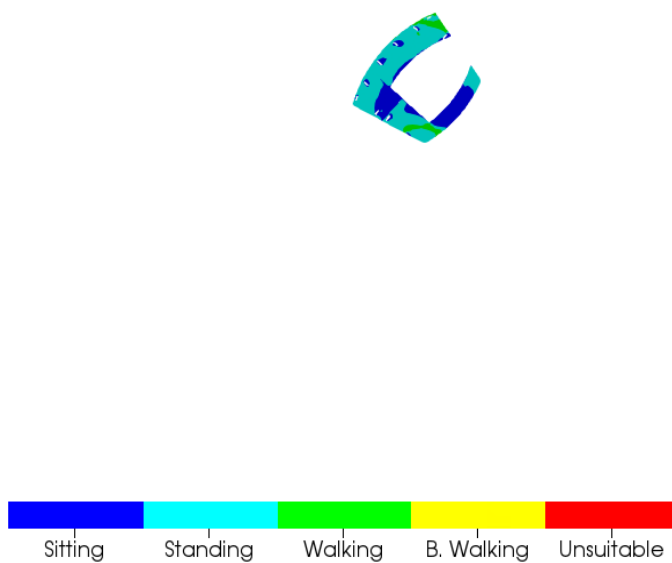


Figure 3-5 - Contours of comfort criteria on elevated levels in summer for “Scenario 1”.

- 3.1.7. Figure 3-5 indicates that during summer, most areas rate as suitable for standing. It should be noted that no landscaping was modelled across the terraces.

3.2 SCENARIO 2

This section analyses the results of 'Building D1' and 'Building D2' within the existing surrounds and its associated landscaping.

SAFETY CRITERIA ANALYSIS

- 3.2.1. Figure 3-6 shows that for 'Building D1' and 'Building D2' within the context of the existing surrounds, ground level wind conditions are rated as safe for all users.



Figure 3-6 - Contours of safety criteria for "Scenario 2".

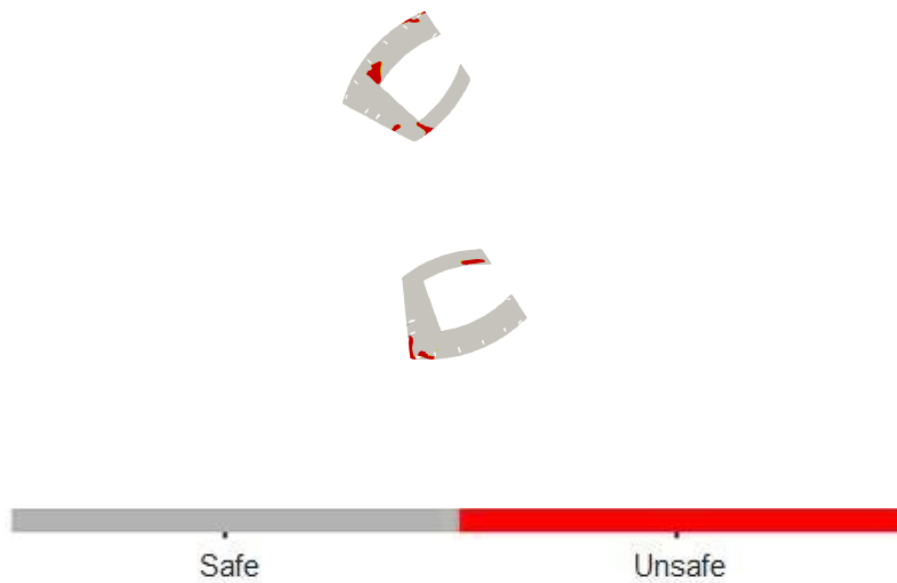


Figure 3-7 - Contours of safety criteria on elevated levels for “Scenario 2”.

- 3.2.2. Figure 3-7 indicates that elevated levels rate as safe for all users except for some localised areas. It should be noted that no landscaping was modelled across the terraces.

COMFORT CRITERIA ANALYSIS

- 3.2.3. Figure 3-8 and Figure 3-9 show contours of comfort criteria on a plane 1.5m above the local ground for the worst season (winter) and summer respectively for “Scenario 2”.

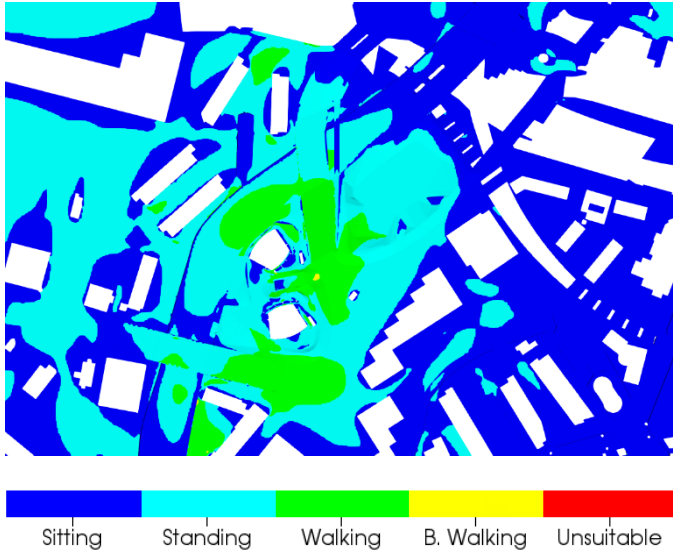


Figure 3-8 - Contours of comfort criteria for winter for “Scenario 2”.

- 3.2.4. Figure 3-8 shows that wind conditions within and around ‘Building D1’ and ‘Building D2’ generally rate as suitable for walking, standing and sitting during winter.

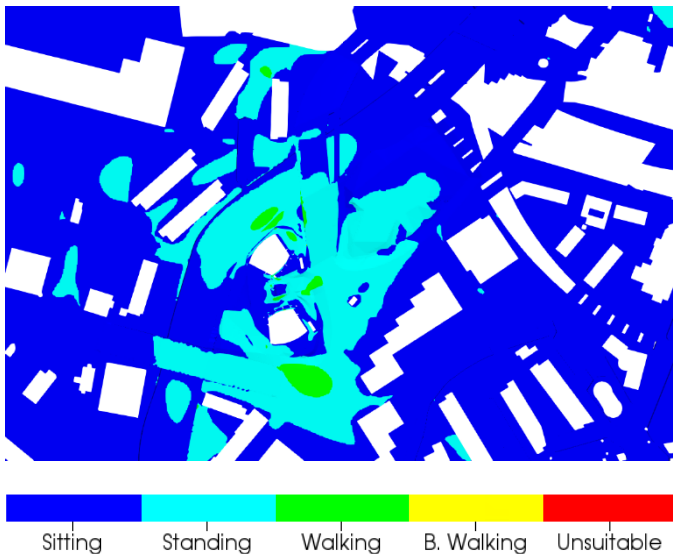


Figure 3-9 - Contours of comfort criteria for summer for “Scenario 2”.

- 3.2.5. Figure 3-9 shows that wind conditions within and around ‘Building D1’ and ‘Building D2’ rate as suitable for walking, standing and sitting during summer.

- 3.2.6. Figure 3-10 shows contours of comfort criteria on a plane 1.5m above the elevated levels for the summer season for “Scenario 2”.

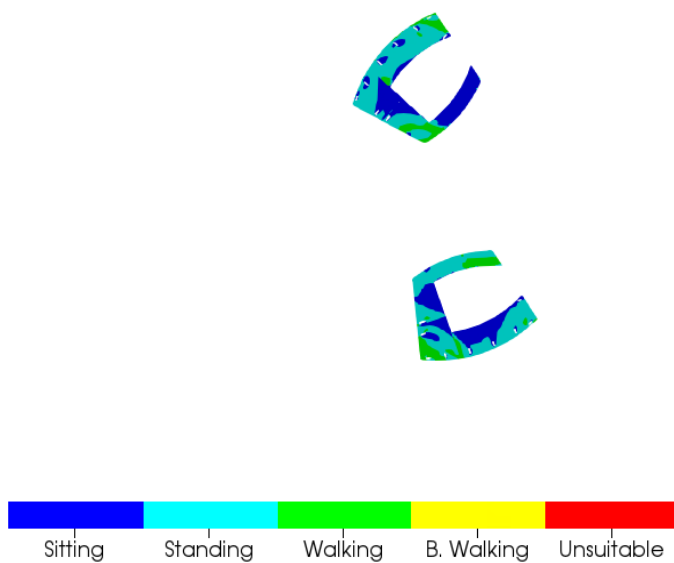


Figure 3-10 - Contours of comfort criteria on elevated levels in summer for “Scenario 2”.

- 3.2.7. Figure 3-10 indicates that during summer, most areas rate as suitable for standing. It should be noted that no proposed landscaping was modelled across the terraces.

3.3 SCENARIO 3

This section analyses the results of 'Building D1', 'Building D2' and 'Building C1' within the existing surrounds and its associated landscaping.

SAFETY CRITERIA ANALYSIS

- 3.3.1. Figure 3-11 shows that for 'Building D1', 'Building D2' and 'Building C1' within the context of the existing surrounds, ground level wind conditions are rated as safe for all users.



Figure 3-11 - Contours of safety criteria for "Scenario 3".

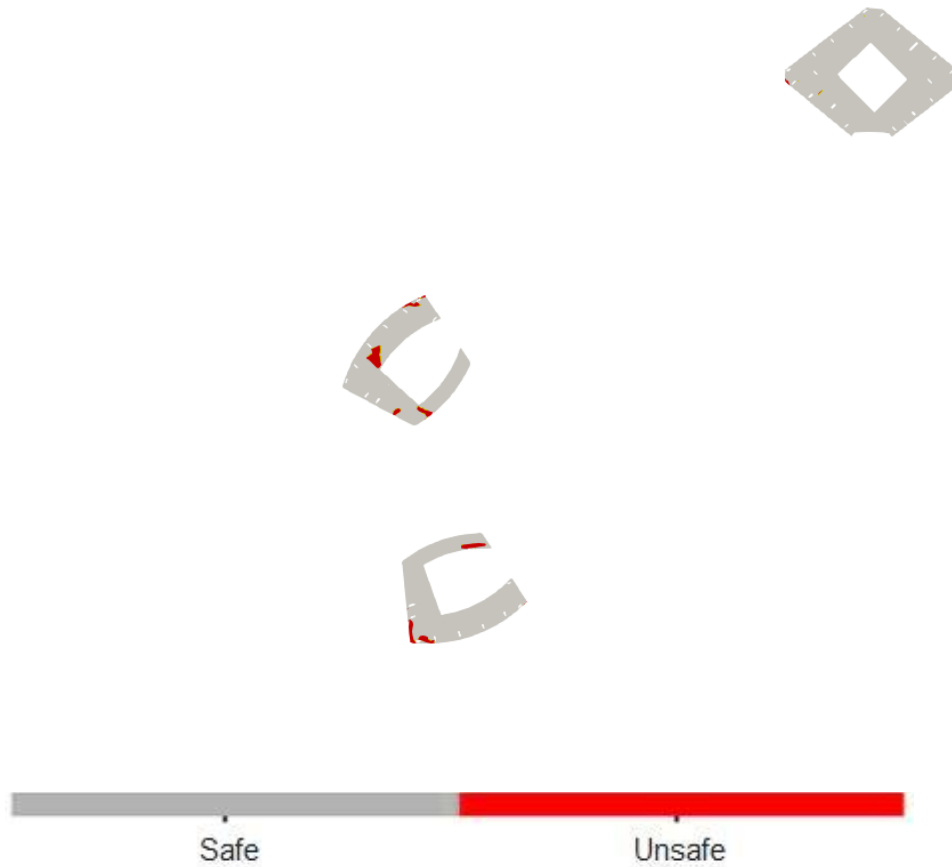


Figure 3-12 - Contours of safety criteria on elevated levels for “Scenario 3”.

- 3.3.2. Figure 3-12 indicates that elevated levels rate as safe for all users except for some localised areas on ‘Building D1’ and ‘Building D2’. It should be noted that no landscaping was modelled across the terraces.

COMFORT CRITERIA ANALYSIS

- 3.3.3. Figure 3-13 and Figure 3-14 show contours of comfort criteria on a plane 1.5m above the local ground for the worst season (winter) and summer respectively for “Scenario 3”.

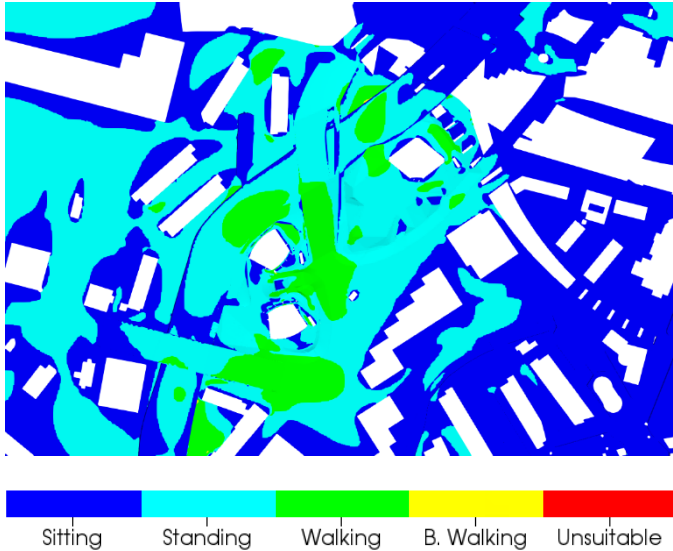


Figure 3-13 - Contours of comfort criteria for winter for “Scenario 3”.

- 3.3.4. Figure 3-13 shows that wind conditions within and around ‘Building D1’, ‘Building D2’ and ‘Building C1’ rate as suitable for walking, standing and sitting during winter.

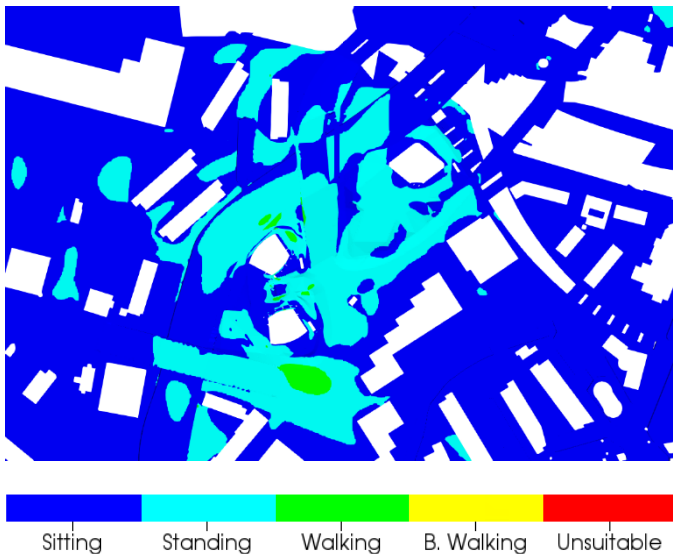


Figure 3-14 - Contours of comfort criteria for summer for “Scenario 3”.

- 3.3.5. Figure 3-14 shows that wind conditions within and around ‘Building D1’ and ‘Building D2’ rate as suitable for walking, standing and sitting during summer. Around ‘Building C1’, wind conditions are suitable for walking and standing.

- 3.3.6. Figure 3-15 shows contours of comfort criteria on a plane 1.5m above the elevated levels for the summer season for “Scenario 3”.

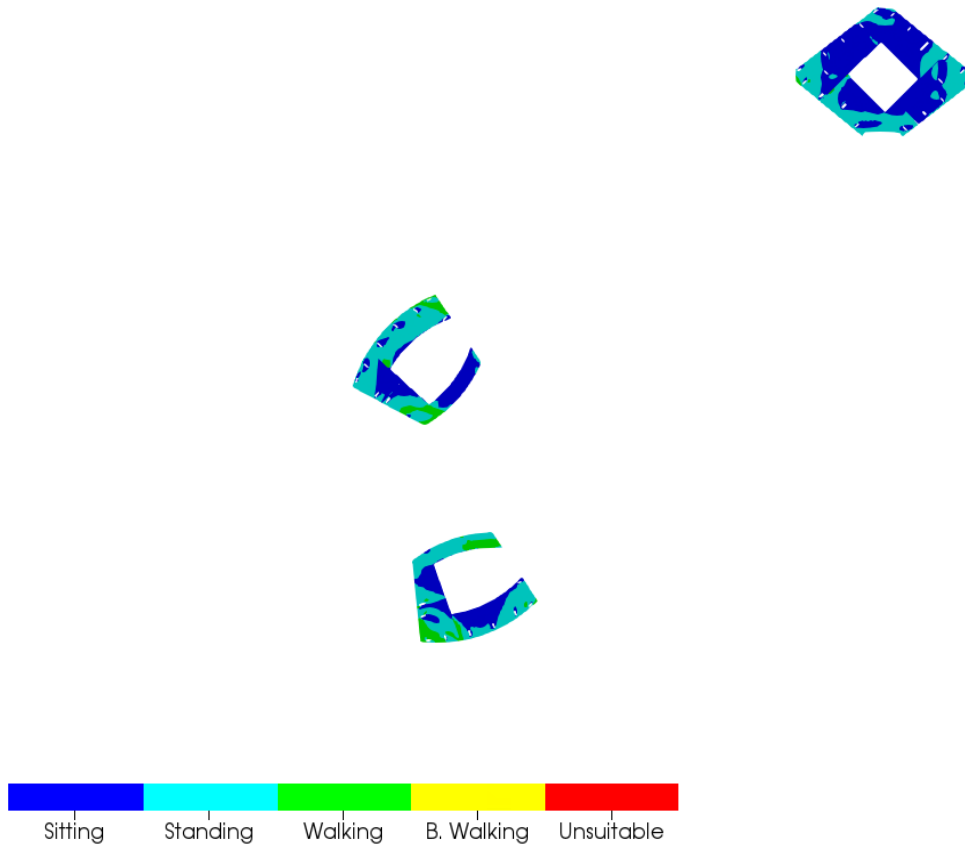


Figure 3-15 - Contours of comfort criteria on elevated levels in summer for “Scenario 3”.

- 3.3.7. Figure 3-15 indicates that during summer, most areas rate as suitable for standing on ‘Building D1’ and ‘Building D2’. On ‘Building C1’, most areas rate as suitable for sitting, with some areas suitable for standing. It should be noted that no proposed landscaping was modelled across the terraces.

3.4 SCENARIO 4

This section analyses the results of all four buildings within the existing surrounds and its associated landscaping.

SAFETY CRITERIA ANALYSIS

- 3.4.1. Figure 3-16 shows that for all four buildings within the context of the existing surrounds ground level, wind conditions are rated as safe for all users.



Figure 3-16 - Contours of safety criteria for “Scenario 4”.

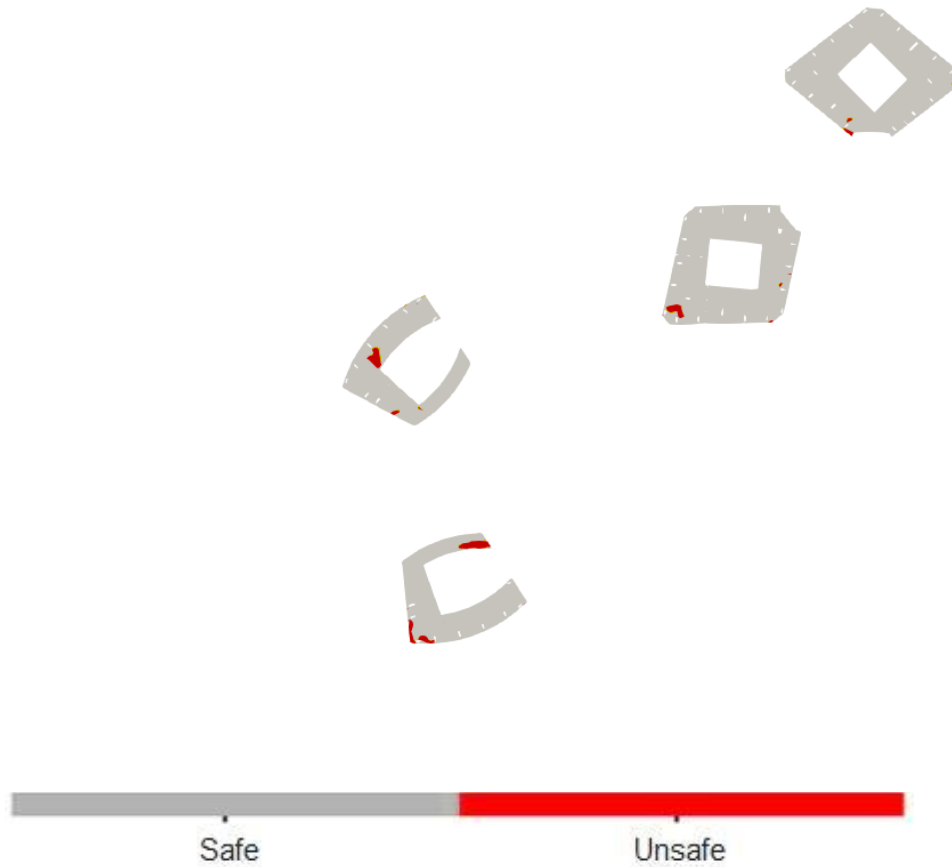


Figure 3-17 - Contours of safety criteria on elevated levels for “Scenario 4”.

- 3.4.2. Figure 3-17 indicates that elevated levels rate as safe for all users except for some localised areas of the four buildings. It should be noted that no landscaping was modelled across the terraces.

COMFORT CRITERIA ANALYSIS

- 3.4.3. Figure 3-18 and Figure 3-19 show contours of comfort criteria on a plane 1.5m above the local ground for the worst season (winter) and summer respectively for “Scenario 4”.

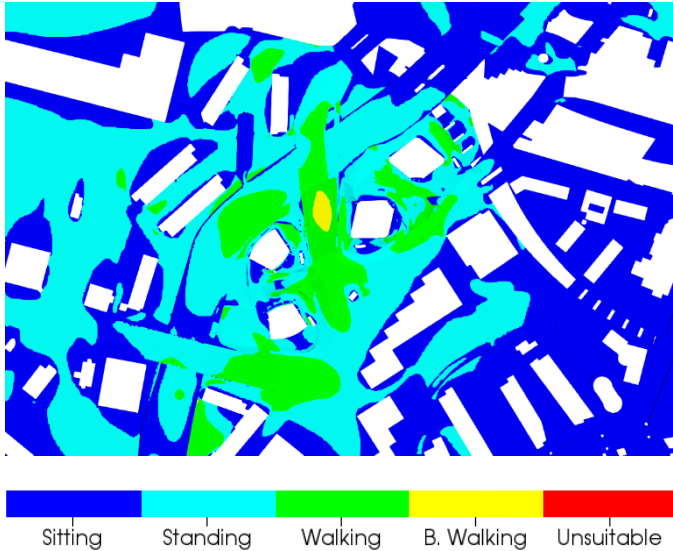


Figure 3-18 - Contours of comfort criteria for winter for “Scenario 4”.

- 3.4.4. Figure 3-18 shows that wind conditions within and around the four buildings generally rate as suitable for walking, standing and sitting during winter. There is an area only suitable for business walking on the bridge between the two sites.

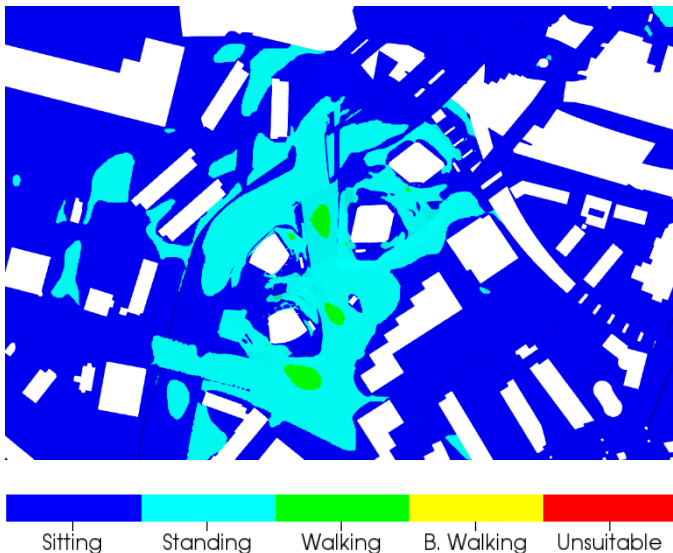


Figure 3-19 - Contours of comfort criteria for summer for “Scenario 4”.

- 3.4.5. Figure 3-19 shows that wind conditions within and around the four buildings rate generally as suitable for standing and sitting during summer.

- 3.4.6. Figure 3-20 shows contours of comfort criteria on a plane 1.5m above the elevated levels for the summer season for “Scenario 4”.

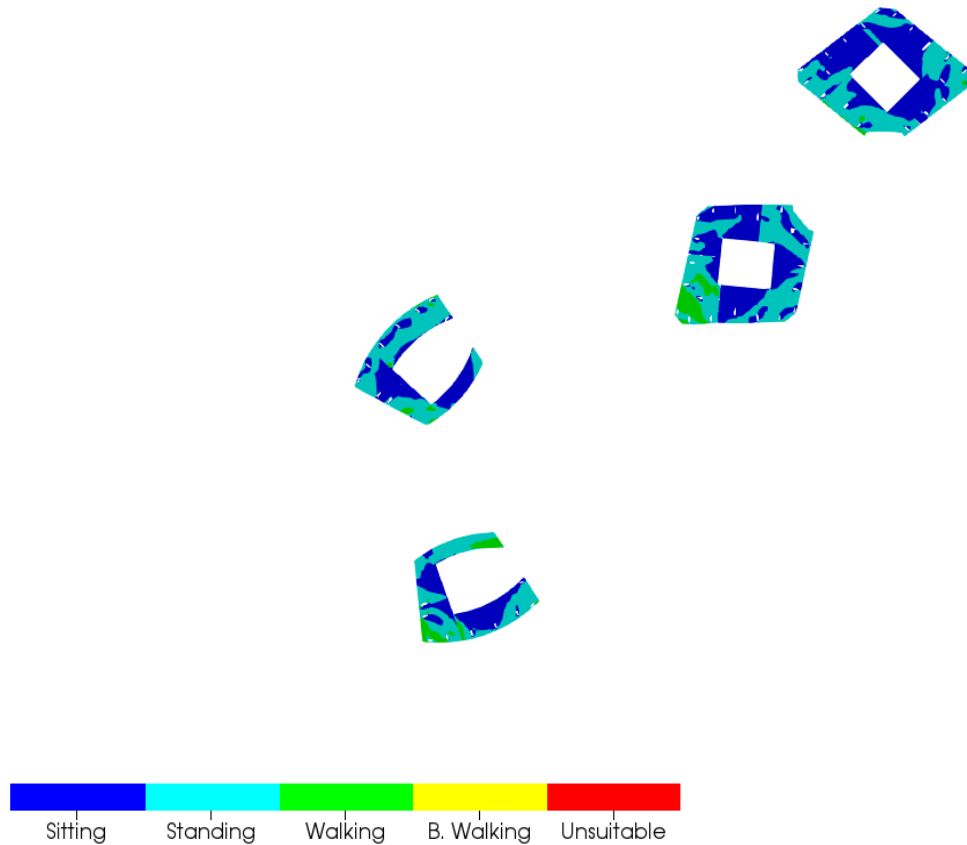


Figure 3-20 - Contours of comfort criteria on elevated levels in summer for “Scenario 4”.

- 3.4.7. Figure 3-20 indicates that during summer, most areas rate as suitable for standing. It should be noted that no proposed landscaping was modelled across the terraces.

4 IDENTIFICATION OF SIGNIFICANT EFFECTS

4.1 BASELINE

- 4.1.1. This addendum document is intended to address the wind microclimate assessment in relation to the updates in phasing scenarios for the Proposed Development. As such, the assessment of significant effects for the baseline condition as presented in paragraphs 17.40 to 17.44 of “ES Chapter 17 – Wind Microclimate” (PA 132429/FO/2021) is not affected and remains valid.

4.2 SCENARIO 1

PEDESTRIAN SAFETY ASSESSMENT

- 4.2.1. With the introduction of ‘Building D1’ as part of the Proposed Development, there are no exceedances of the pedestrian safety criteria at street level within the boundary of the Site. The nature and scale of the effects are **Negligible** and are therefore considered **Not Significant**.
- 4.2.2. Wind conditions across the four (4) terraces under ‘Building D1’ are rated as safe for the general public except receptor ‘J’ (northwest-facing ‘lounge’) and receptor ‘K’ (southwest-facing ‘gym terrace’). The nature and scale of the effects for these receptors are **Major Adverse** and are therefore considered **Significant**. Bespoke wind mitigation measures will need to be introduced across these spaces to mitigate the adverse wind conditions. Alternatively, access to these spaces should be restricted when windy conditions are forecasted in the area.

PEDESTRIAN COMFORT ASSESSMENT

- 4.2.3. With the introduction of ‘Building D1’ as part of the Proposed Development, wind conditions across the recreational spaces / sitting areas of both ‘Site C’ and ‘Site D’ are suitable - at worst - for ‘standing / short period of sitting’ during the summer months. The nature and scale of the effects are therefore **Negligible** and considered **Not Significant**.
- 4.2.4. Wind conditions across the four (4) terraces under ‘Building D1’ are suitable - at worst - for ‘standing / short period of sitting’ during the summer months except for receptor ‘J’ (northwest-facing ‘lounge’) and receptor ‘K’ (southwest-facing ‘gym’), which - in parts - only rate as suitable for ‘walking’ in summer. The nature and scale of the effects for these receptors are **Moderate Adverse** and are therefore considered **Significant**. Bespoke wind mitigation measures will need to be introduced across this space in order to promote the local wind microclimate conditions to be suitable for - at least - ‘standing / short period of sitting’ during the summer months.
- 4.2.5. Within the areas surrounding the Site, with the introduction of ‘Building D1’, the exceedances of the pedestrian comfort criteria at receptors ‘51’ and ‘56’ (bus stops along Regent Road) and at receptor ‘55’ (riverside location within the ‘One Regent’ development) persist: the nature and scale of the effects for these receptors are **Negligible** and are therefore considered **Not Significant**. Wind conditions at receptor ‘24’ (pavement along the Ring Road), receptors ‘27’ and ‘28’ (pedestrian crossings along Water Street), receptors ‘29’ and ‘30’ (pedestrian crossings along the Ring Road), receptor ‘32’ (pavement along Water Street) and receptor ‘33’ (car park north of New Elm Road) deteriorate by one comfort category during the winter months but remain suitable for their intended use. The nature and scale of the effects for these receptors are **Moderate Adverse** and are therefore considered **Not Significant**.

4.3 SCENARIO 2

PEDESTRIAN SAFETY ASSESSMENT

- 4.3.1. With the introduction of 'Building D1' and 'Building D2' as part of the Proposed Development, there are no exceedances of the pedestrian safety criteria at street level within the boundary of the Site. The nature and scale of the effects are **Negligible** and are therefore considered **Not Significant**.
- 4.3.2. Wind conditions across the four (4) terraces under 'Building D1' are rated as safe for the general public except receptor 'J' (northwest-facing 'lounge') and receptor 'K' (southwest-facing 'gym terrace'). Wind conditions across the four (4) terraces under 'Building D2' are rated as safe for the general public except for receptor 'L' (southwest-facing roof terrace) and for receptor 'M' (north-facing external terrace). The nature and scale of the effects for these receptors are **Major Adverse** and are therefore considered **Significant**. Bespoke wind mitigation measures will need to be introduced across these spaces to mitigate the adverse wind conditions. Alternatively, access to these spaces should be restricted when windy conditions are forecasted in the area.

PEDESTRIAN COMFORT ASSESSMENT

- 4.3.3. With the introduction of 'Building D1' and 'Building D2' as part of the Proposed Development, wind conditions across the recreational spaces / sitting areas of both 'Site C' and 'Site D' are suitable - at worst - for 'standing / short period of sitting' during the summer months. The nature and scale of the effects are therefore **Negligible** and considered **Not Significant**.
- 4.3.4. Wind conditions across the four (4) terraces under 'Building D1' are suitable - at worst - for 'standing / short period of sitting' during the summer months except for receptor 'J' (northwest-facing 'lounge') and receptor 'K' (southwest-facing 'gym'), which - in parts - only rate as suitable for 'walking' in summer. Also, wind conditions across the four (4) terraces under 'Building D2' are suitable - at worst - for 'standing / short period of sitting' during the summer months except for receptor 'L' (southwest-facing roof terrace) and for receptor 'M' (north-facing external terrace) which - in parts - only rate as suitable for 'walking' in summer. The nature and scale of the effects for these receptors are **Moderate Adverse** and are therefore considered **Significant**. Bespoke wind mitigation measures will need to be introduced across this space in order to promote the local wind microclimate conditions to be suitable for - at least - 'standing / short period of sitting' during the summer months.
- 4.3.5. Within the areas surrounding the Site, with the introduction of 'Building D1' and 'Building D2', the exceedance of the pedestrian comfort criteria at receptor '56' (bus stops along Regent Road) disappears: the nature and scale of the effects for this receptor are **Moderate Beneficial** and are therefore considered **Not Significant**. The exceedances of the pedestrian comfort criteria at receptor '51' (bus stops along Regent Road) and at receptor '55' (riverside location within the 'One Regent' development) persist: the nature and scale of the effects for these receptors are **Negligible** and are therefore considered **Not Significant**. Also, wind conditions at receptors '26', '29' and '30' (pedestrian crossings along the Ring Road), receptors '27' and '28' (pedestrian crossings along Water Street), receptor '32' (pavement along Water Street), receptor '33' (car park north of New Elm Road), receptors '48', '49' and '50' (pedestrian crossings along Regent Road), and receptor '59' (Hotel Campanile car park) deteriorate by one comfort category during the winter months but remain suitable for their intended use: the nature and scale of the effects for these receptors are **Moderate Adverse** and are therefore considered **Not Significant**.

4.4 SCENARIO 3

PEDESTRIAN SAFETY ASSESSMENT

- 4.4.1. With the introduction of 'Building D1', 'Building D2' and 'Building C1' as part of the Proposed Development, there are no exceedances of the pedestrian safety criteria at street level within the boundary of the Site. The nature and scale of the effects are **Negligible** and are therefore considered **Not Significant**.
- 4.4.2. Wind conditions across the four (4) terraces under 'Building C1' are rated as safe for the general public except for receptor 'A' (west-facing 'wellness terrace'). Wind conditions across the four (4) terraces under 'Building D1' are rated as safe for the general public except for receptor 'I' (west-facing 'lounge'), receptor 'J' (northwest-facing 'lounge') and receptor 'K' (southwest-facing 'gym terrace'). Also, wind conditions across the four (4) terraces under 'Building D2' are rated as safe for the general public except for receptor 'L' (southwest-facing roof terrace) and for receptor 'M' (north-facing external terrace). The nature and scale of the effects for these receptors are **Major Adverse** and are therefore considered **Significant**. Bespoke wind mitigation measures will need to be introduced across these spaces to mitigate the adverse wind conditions. Alternatively, access to these spaces should be restricted when windy conditions are forecasted in the area.

PEDESTRIAN COMFORT ASSESSMENT

- 4.4.3. With the introduction of 'Building D1', 'Building D2' and 'Building C1' as part of the Proposed Development, wind conditions across the recreational spaces / sitting areas of both 'Site C' and 'Site D' are suitable - at worst - for 'standing / short period of sitting' during the summer months. The nature and scale of the effects are therefore **Negligible** and considered **Not Significant**.
- 4.4.4. Wind conditions across the four (4) terraces under 'Building C1' are suitable - at worst - for 'standing / short period of sitting' during the summer months. Wind conditions across the four (4) terraces under 'Building D1' are suitable - at worst - for 'standing / short period of sitting' during the summer months except for receptor 'J' (northwest-facing 'lounge') and receptor 'K' (southwest-facing 'gym') which - in parts - only rate as suitable for 'walking' in summer. Also, wind conditions across the four (4) terraces under 'Building D2' are suitable - at worst - for 'standing / short period of sitting' during the summer months except for receptor 'L' (southwest-facing roof terrace) and for receptor 'M' (north-facing external terrace) which - in parts - only rate as suitable for 'walking' in summer. The nature and scale of the effects for these receptors are **Moderate Adverse** and are therefore considered **Significant**. Bespoke wind mitigation measures will need to be introduced across this space in order to promote the local wind microclimate conditions to be suitable for - at least - 'standing / short period of sitting' during the summer months.
- 4.4.5. Within the areas surrounding the Site, with the introduction of 'Building D1', 'Building D2' and 'Building C1', the exceedance of the pedestrian comfort criteria at receptor '56' (bus stops along Regent Road) disappears: the nature and scale of the effects for this receptor are **Moderate Beneficial** and are therefore considered **Not Significant**. The exceedances of the pedestrian comfort criteria at receptor '51' (bus stops along Regent Road) and at receptor '55' (riverside location within the 'One Regent' development) persist: the nature and scale of the effects for these receptors are **Negligible** and are therefore considered **Not Significant**. Also, wind conditions at receptors '26', '29' and '30' (pedestrian crossings along the Ring Road), receptors '27' and '28' (pedestrian crossings along Water Street), receptor '32' (pavement along Water Street), receptor '33'

(car park north of New Elm Road), receptors '48', '49' and '50' (pedestrian crossings along Regent Road), receptor '59' (Hotel Campanile car park) and receptors '72', '73' and '77' (pavement locations along Water Street) deteriorate by one comfort category during the winter months but remain suitable for their intended use: the nature and scale of the effects for these receptors are **Moderate Adverse** and are therefore considered **Not Significant**.

4.5 SCENARIO 4

PEDESTRIAN SAFETY ASSESSMENT

- 4.5.1. With the introduction of 'Building D1', 'Building D2', 'Building C1' and 'Building C2' as part of the Proposed Development, there are no exceedances of the pedestrian safety criteria at street level within the boundary of the Site. The nature and scale of the effects are **Negligible** and are therefore considered **Not Significant**
- 4.5.2. Wind conditions across the four (4) terraces under 'Building C1' are rated as safe for the general public except for receptor 'D' (southwest-facing 'gym terrace'). Wind conditions across the four (4) terraces under 'Building C2' are rated as safe for the general public except for receptor 'G' (southwest-facing 'gym terrace'). Wind conditions across the four (4) terraces under 'Building D1' are rated as safe for the general public except for receptor 'J' (northwest-facing 'lounge') and for receptor 'K' (southwest-facing 'gym'). Also, wind conditions across the four (4) terraces under 'Building D2' are rated as safe for the general public except for receptor 'L' (southwest-facing roof terrace) and for receptor 'M' (north-facing external terrace). The nature and scale of the effects for these receptors are **Major Adverse** and are therefore considered **Significant**. Bespoke wind mitigation measures will need to be introduced across these spaces to mitigate the adverse wind conditions. Alternatively, access to these spaces should be restricted when windy conditions are forecasted in the area

PEDESTRIAN COMFORT ASSESSMENT

- 4.5.3. With the introduction of 'Building D1', 'Building D2', 'Building C1' and 'Building C2' as part of the Proposed Development, wind conditions across the recreational spaces / sitting areas of both 'Site C' and 'Site D' are suitable - at worst - for 'standing / short period of sitting' during the summer months. The nature and scale of the effects are therefore **Negligible** and considered **Not Significant**.
- 4.5.4. Wind conditions across the four (4) terraces under 'Building C1' are suitable - at worst - for 'standing / short period of sitting' during the summer months. Wind conditions across the four (4) terraces under 'Building C2' are suitable - at worst - for 'standing / short period of sitting' during the summer months except for receptor 'G' (southwest-facing 'gym terrace') which - in parts - only rate as suitable for 'walking' in summer. Wind conditions across the four (4) terraces under 'Building D1' are suitable - at worst - for 'standing / short period of sitting' during the summer months except for receptor 'K' (southwest-facing 'gym terrace') which - in parts - only rate as suitable for 'walking' in summer. Also, wind conditions across the four (4) terraces under 'Building D2' are suitable - at worst - for 'standing / short period of sitting' during the summer months except for receptor 'L' (southwest-facing roof terrace) and for receptor 'M' (north-facing external terrace) which - in parts - only rate as suitable for 'walking' in summer. The nature and scale of the effects for these receptors are **Moderate Adverse** and are therefore considered **Significant**. Bespoke wind mitigation measures

will need to be introduced across this space in order to promote the local wind microclimate conditions to be suitable for - at least - 'standing / short period of sitting' during the summer months.

- 4.5.5. Within the areas surrounding the Site, with the introduction of 'Building D1', 'Building D2', 'Building C1' and 'Building C2', the exceedance of the pedestrian comfort criteria at receptor '56' (bus stops along Regent Road) disappears: the nature and scale of the effects for this receptor are **Moderate Beneficial** and are therefore considered **Not Significant**. The exceedances of the pedestrian comfort criteria at receptor '51' (bus stops along Regent Road) and at receptor '55' (riverside location within the 'One Regent' development) persist: the nature and scale of the effects for these receptors are **Negligible** and are therefore considered **Not Significant**. Also, wind conditions at receptors '26', '29' and '30' (pedestrian crossings along the Ring Road), receptors '27' and '28' (pedestrian crossings along Water Street), receptor '32' (pavement along Water Street), receptor '33' (car park north of New Elm Road), receptors '48', '49' and '50' (pedestrian crossings along Regent Road), receptor '59' (Hotel Campanile car park) and receptors '72', '73' and '77' (pavement locations along Water Street) deteriorate by one comfort category during the winter months but remain suitable for their intended use: the nature and scale of the effects for these receptors are **Moderate Adverse** and are therefore considered **Not Significant**.

5 RESIDUAL EFFECTS

- 5.1.1. The completed Proposed Development (“Scenario 1”) in the context of the existing surrounds - with the inclusion of the proposed landscaping strategy / wind mitigation measures - results in residual effects primarily ranging between **Moderate Beneficial** and **Negligible** - which are **Not Significant**. The only exceptions are: the northwest-facing 'lounge' and the southwest-facing 'gym' part of Building D1 for which the residual effects are **Major Adverse** - which are **Significant**; the northwest-facing 'lounge' and southwest-facing 'gym terrace' part of Building D1 for which the residual effects are **Moderate Adverse** - which are **Significant**.
- 5.1.2. The completed Proposed Development (“Scenario 2”) in the context of the existing surrounds - with the inclusion of the proposed landscaping strategy / wind mitigation measures - results in residual effects primarily ranging between **Moderate Beneficial** and **Negligible** - which are **Not Significant**. The only exceptions are: the northwest-facing 'lounge' and the southwest-facing 'gym' part of Building D1, as well as the southwest-facing roof terrace and the north-facing external terrace part of Building D2 for which the residual effects are **Major Adverse** - which are **Significant**; the northwest-facing 'lounge' and southwest-facing 'gym terrace' part of Building D1, the southwest-facing roof terrace and the north-facing external terrace part of Building D2 for which the residual effects are **Moderate Adverse** - which are **Significant**.
- 5.1.3. The completed Proposed Development (“Scenario 3”) in the context of the existing surrounds - with the inclusion of the proposed landscaping strategy / wind mitigation measures - results in residual effects primarily ranging between **Moderate Beneficial** and **Negligible** - which are **Not Significant**. The only exceptions are: the northwest-facing 'lounge' and the southwest-facing 'gym' part of Building D1 and the southwest-facing roof terrace and the north-facing external terrace part of Building D2 for which the residual effects are **Major Adverse** - which are **Significant**; the west-facing 'wellness terrace' part of Building C1, the southwest-facing 'gym terrace' part of Building D1, the southwest-facing roof terrace and the north-facing external terrace part of Building D2 for which the residual effects are **Moderate Adverse** - which are **Significant**.
- 5.1.4. The completed Proposed Development (“Scenario 4”) in the context of the existing surrounds - with the inclusion of the proposed landscaping strategy / wind mitigation measures - results in residual effects primarily ranging between **Moderate Beneficial** and **Negligible** - which are **Not Significant**. The only exceptions are: the southwest-facing 'gym terrace' part of Building C1, the southwest-facing 'gym terrace' part of Building C2, the northwest-facing 'lounge' and the southwest-facing 'gym' part of Building D1 and the southwest-facing roof terrace and the north-facing external terrace part of Building D2 for which the residual effects are **Major Adverse** - which are **Significant**; the southwest-facing 'gym terrace' part of Building C2, the southwest-facing 'gym terrace' part of Building D1, the southwest-facing roof terrace and the north-facing external terrace part of Building D2 for which the residual effects are **Moderate Adverse** - which are **Significant**.

6 CONCLUSIONS

An analysis of the wind conditions around the proposed Trinity Islands development in Manchester has been performed. This study is an addendum to “ES Chapter 17 – Wind Microclimate” (PA 132429/FO/2021) and provides additional information on a new phasing scenario. The study consisted of CFD simulations over a range of wind directions which were combined with long-term wind statistics to provide a statistical representation of the expected wind conditions. A total of four configurations were studied. All assessments included the proposed landscaping for the site, excluding the terraces at the bottom of the buildings. The conclusions are as follows:

- With the implementation of the proposed landscaping scheme, all ground-level areas around the proposed development rate as safe for pedestrians in all scenarios.
- At elevated levels, some areas rate as unsafe for pedestrians in all scenarios. It should be noted that no landscaping was modelled on any terraces. The developer is currently working with WSP to either introduce bespoke wind mitigation in the form of baffles, or to restrict access to these spaces when windy conditions are forecast.



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