

## File note

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### Solar Glare impact study – Richmond Hill

The existing pitch and stadium structure to Twickenham Stadium is oriented on angle 36 degrees west of north (longitudinal axis). The new East Stand development glazed façade (the primary zone of flat glazing) therefore faces roughly north-easterly, at an angle of 54 degrees (perpendicular to the existing east stand elevation).

Due to the westerly rotation of the stadium, the area of glazing which would potentially have the greatest glare impact on Richmond Hill would be that to the southern end of the new extension due to incident light reflection.

The following study reviews the potential impact of sunlight reflected from the southern glazing zone to the length of Richmond Hill from the junction of the A307 with Bridge Street to the north (receptor A), and Richmond Hill and Queen's Road to the south (receptor B).

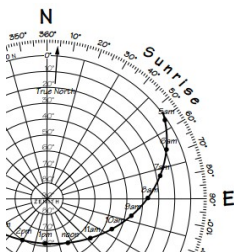
The line of sight from receptor A to the southern glazed area of the new east stand development is at an angle of 82 degrees east of north. The line of sight from receptor B to the southern glazed area of the new east stand development is at an angle of 102 degrees east of north.

Any resultant glare would therefore need to result from a source between 6 and 26 degrees east of north

Receptor A     54 degrees - (82-54) = 26 degrees east of north

Receptor B     54 degrees - (102-54) = 6 degrees east of north

Therefore; putting aside issues of line of sight (obscuration by other buildings/structures/trees) or inclination of the sun, to have any impact through reflection from the glazing to the new Twickenham Stadium development, would require the sun to be present (at any time of day) between 6 and 26 degrees east of north.



The furthest north that the sun rises is on 22<sup>nd</sup> of June when at 4.43am the sun rises at 52 degrees east of north.

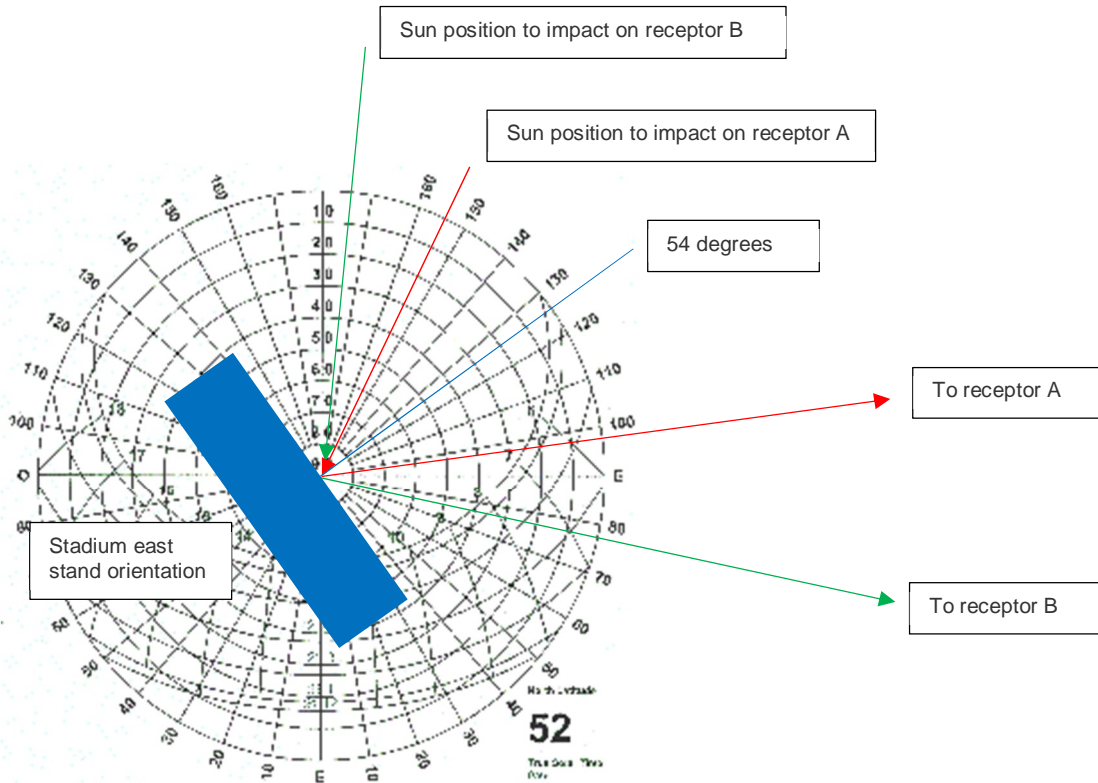
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In the UK, the sun path diagram at the latitude of 52 is as below.



It should also be noted that the physical distance between the stadium and the receptor of Richmond Hill is also circa 3km.

Therefore the sun will never be in a position where any incident solar reflection from the glazing will impact on Richmond Hill.

Illustration of sightlines from Richmond Hill to the new Twickenham Stadium east stand development

