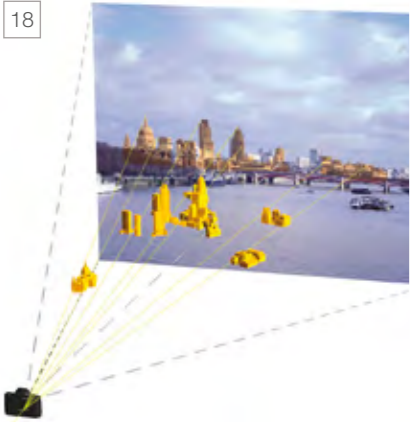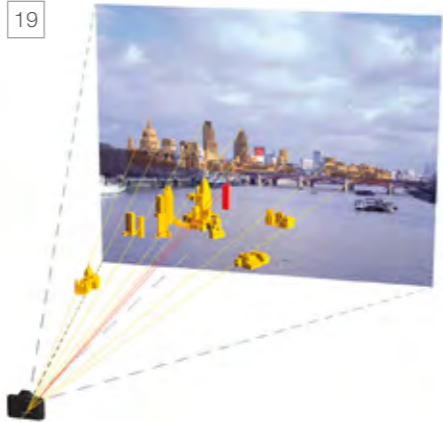17

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6.0 RENDERING

6.1 Rendering
Rendering is a technical term referring to the process of creating a two-dimensional output image from the 3D model.

6.2 Texturing
In order to assist a more qualitative assessment of the proposals, the output image needs to be a photo-realistic reflection of what the proposed scheme would look like once constructed. The process of transforming the wireframe 3D scheme model (see Section 7) into one that can be used to create a photo-realistic image is called texturing[8]

Prior to rendering, Cityscape requires details from the architect regarding the proposed materials (e.g. type of glass, steel, aluminium etc.) to be utilised. Cityscape also use high resolution photographic imagery of real world material samples, supplied by the client or the manufacturer, to create accurate photorealistic textures for use in all our images. This information is used to produce the appearance and qualities in the image that most closely relates to the real materials to be used (as shown in Figures 24 and 25).

6.3 Lighting and sun direction
The next stage is to light the model. Cityscape utilises High Dynamic Range (HDR) Imaging[9] for all its environmental lighting. The date (including the year) and time of the photograph and the latitude and longitude of the city are input (see Figure 23) into the unbiased physically accurate render engine. Cityscape selects a 'sky' (e.g. clear blue, grey, overcast, varying cloud density, varying weather conditions) from the hundreds of 'skies' held within the HDR database to resemble as closely as possible the sky in the background plate. The 3D model of the proposed scheme is placed within the selected sky (see Figure 27) and using the material properties also entered, the computer calculates the effects of the sky conditions (including the sun) on the appearance of the proposed scheme.

An image of the proposed scheme is produced showing the effect of light and sun (as shown in Figure 26). The selection of the matching sky is the only subjective input at this stage.

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[8] Texturing is often referred to as part of the rendering process, however, in the industry, it is a process that occurs prior to the rendering process.
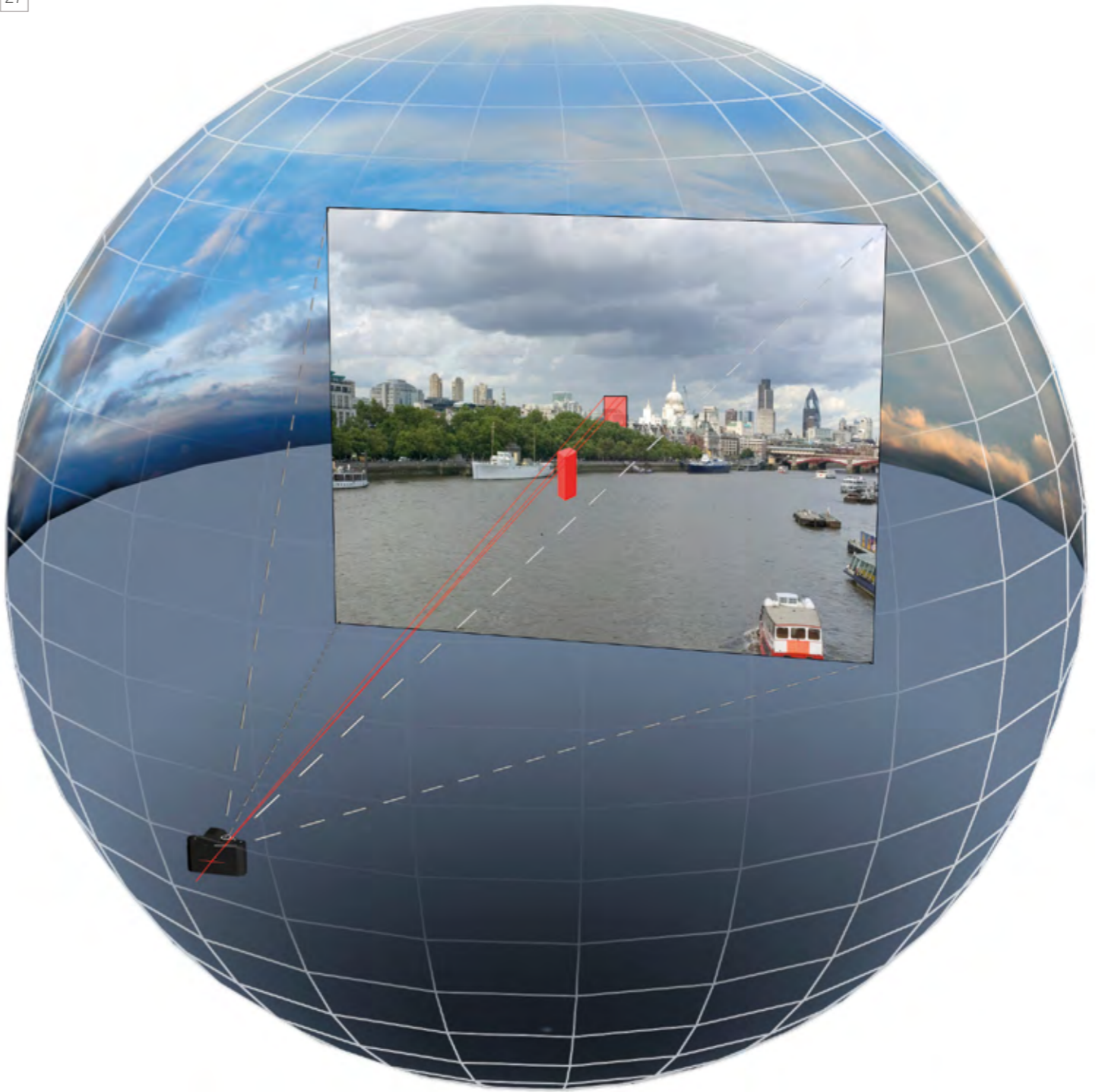
[9] An industry standard technique for rendering images with a high dynamic range (HDR); e.g. sky images. HDR images capture a greater exposure latitude than standard images. Using HDR, alight probe image can record the colour and brightness of every light source.
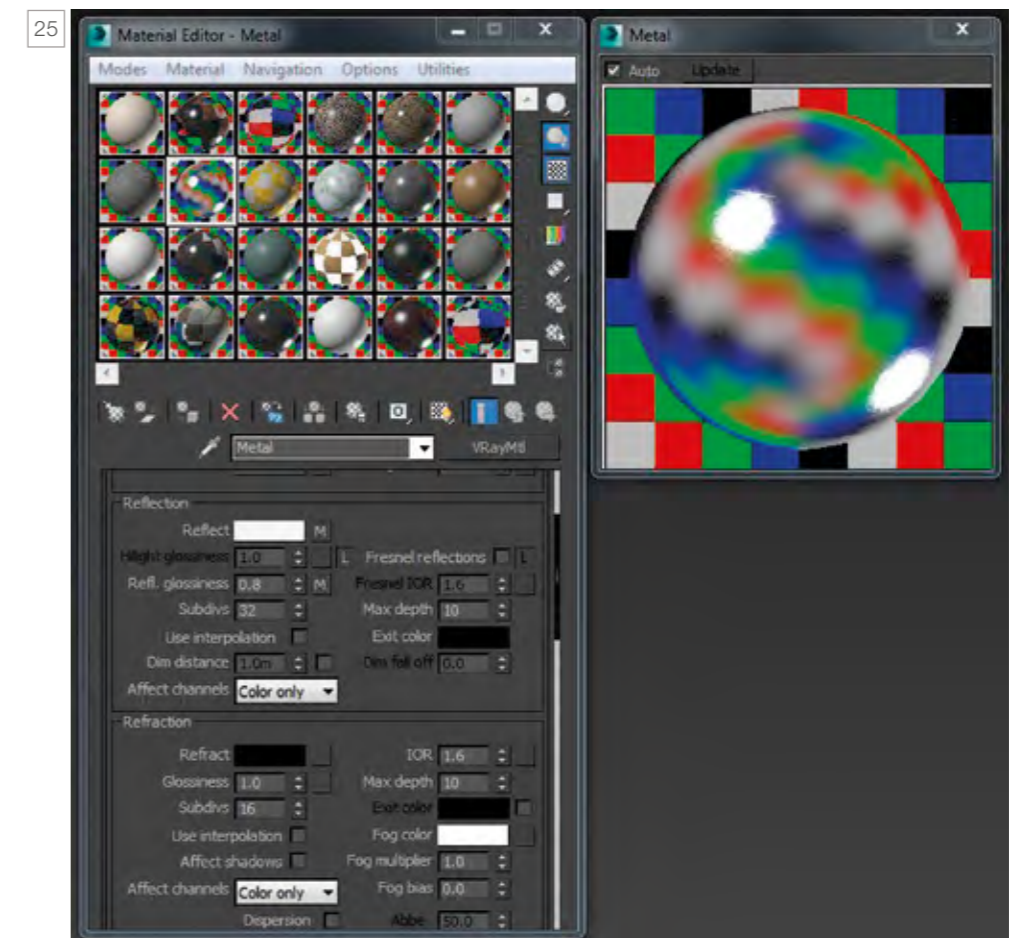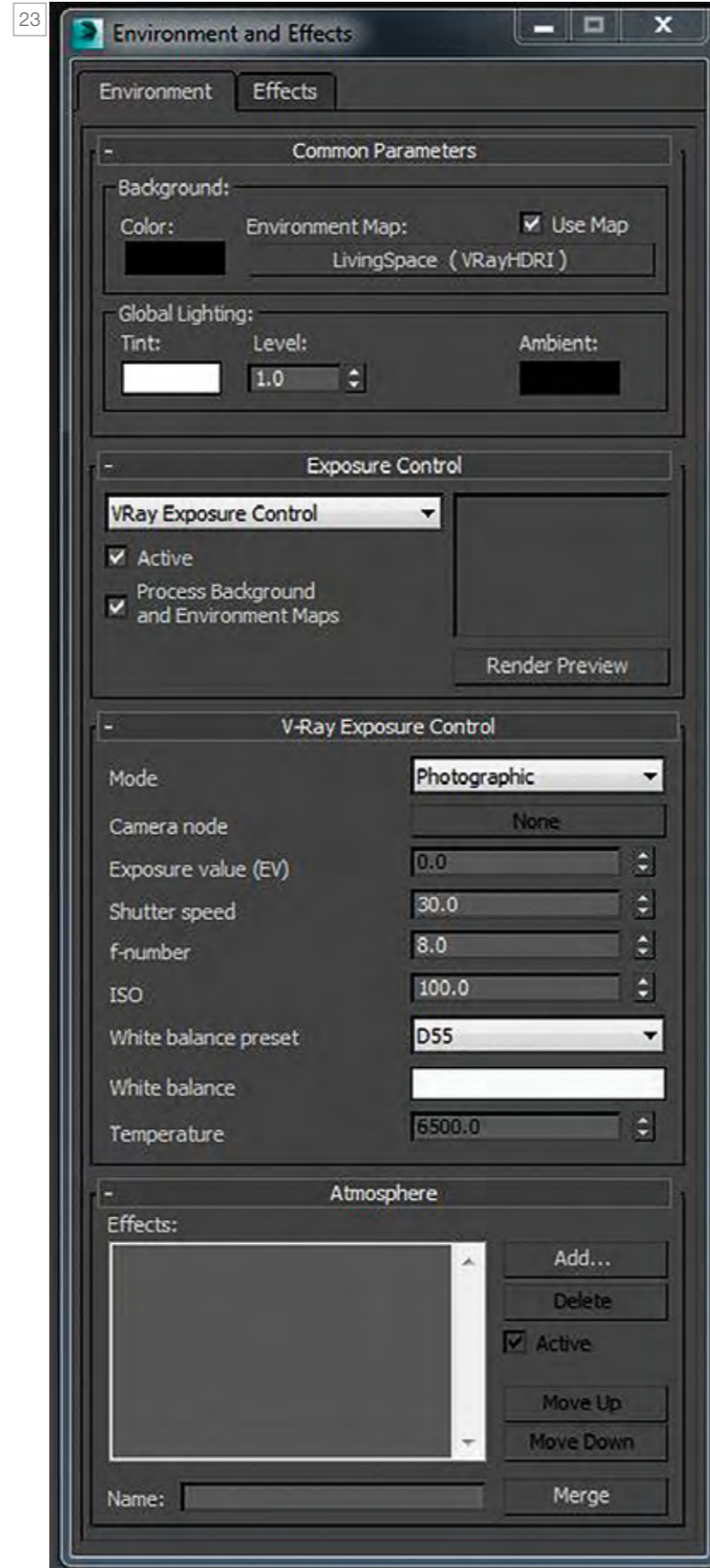
23 Screenshot of environment information (time, date and year) entered to locate the sun correctly (see section 7.3)

24 Screenshot of some materials in the 3D rendering package

25 Screenshot of material and surface properties

26 Example of rendered scheme using High Dynamic Range Imaging

27 Example of a proposed scheme highlighted in red within the selected sky and rendered onto the background plate

7.0 POST PRODUCTION

7.1 Post production

Finally the rendered image of the scheme model is inserted and positioned against the camera matched background plate. Once in position the rendered images are edited using Adobe Photoshop®. Masks are created in Photoshop where the line of sight to the rendered image of the proposed scheme is interrupted by foreground buildings (as shown in Figure 29).

The result is a verified image or view of the proposed scheme (as shown in Figure 30).

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28   Background plate

29   Process Red area highlights the Photoshop mask that hides the unseen portion of the render

30   Shows a photo-realistic verified image

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