## Photography

4.0 All photography was carried out by a professional architectural photographer using the following equipment:

Camera: Arca-Swiss F-Compact 6x9 / Phase One P45+

The images were processed by the photographer to achieve results that best reflected the experience of each scene at the time of the photography.

4.1 Each scene was recorded using a survey marker to accurately identify the view location. A plumb line was used to ensure that the centre of the camera was directly over the surveyed viewing position at a height of 1.60 metres. A log was kept of the time and date that each photograph was taken so that lighting conditions could be recreated in the computer model.

4.2 There is no single definitive camera and lens format that is suitable for all planning photomontage work. Choices needs to be made with care and clearly explained through method statement / annotation. Townscape photography taken with a 40º lens (50mm lens / 35mm camera) is most often likely to be inadequate for purpose and is not recommended. To insist, as some do, that only 40º lenses should be used is unrealistic. If chosen appropriately, correctly annotated, and with professional understanding by those assessing, there is little to be lost by using wider angle lenses (up to 70º), as this can add peripheral information that more closely reflects our 'experience' of a scene.

4.3 Very wide angle single lens views can minimise impact and as such this technique is also inappropriate. Through a careful choice of lenses that allow wider fields of view, townscape is able to be better assessed. The use of hybrid lenses/photographic solutions (ref. Multi-Lens section 7.3) ensure that distortion issues can be minimised for panoramic images.

4.4 Hayes Davidson recommends that all parties are mindful that Environmental Statement photomontage should be used as a complement to site based assessment.

*fig 1a the camera*

*fig 1b the camera in position*

*fig 2 example of processed image*

### Surveying

5.0 Hayes Davidson identified key static points such as building corners, garden features and fencing within each photograph. A chartered measured engineering surveying company surveyed the points as described below and the information was issued digitally. The surveyors identified 3 or 4 objects within the scene, which fell along the horizon line of each photograph. Numbered camera positions were surveyed using line of sight surveying and aligned to the local site grid in easting, northing and elevation supplied by the architect and to the Ordnance Survey National Grid (OSGB36) in easting and northing, and in elevation to the Ordnance Survey Datum (OSD) using the OSTN02 GPS transformation.

5.1 A line of sight, two station baseline is established, coordinated and levelled utilising GPS observations.

5.2 The survey control stations were observed by GPS observations and traversed from GPS-observed points. The Ordnance Survey OSNET active GPS correction service was used to transform the data to the Ordnance Survey National Grid and Datum and is accurate in both position and height. Relative height accuracies comparable to geodetic levelling can be achieved, without visiting any existing OS bench marks. Finally, these positions are transformed to the local grid and to a 'pseudo' OS grid which has a scale factor of 1.0.

5.3 A Total Station capable of measuring horizontal and vertical angle observations combined with an internal co-axial non contact distance measuring device accurately measured and stored the three dimensional coordinates of the key features from the control stations.

5.4 The required horizon line within the image is established using the horizontal collimation of the Total Station. The horizon line coordinates were surveyed and stored.

5.5 Surveying equipment used:

Trimble S6 electronic Total Station with a 3" angle measuring accuracy and 3mm + 2ppm distance measuring accuracy.

GPS – Trimble VRS R8 Receiver.

GPS – Trimble VRS R10 Receiver.

5.6 Processed Data Delivery:

Coordinate and level data in Excel file format DWG and JPG files detailing the observed points and the horizon line.


*fig 3a AutoCAD DWG showing marked up surveyed context points*

| HayesDavidson | Accurate Visual Representation - surveyed viewpoints | | | | |
|---|---|---|---|---|---|
| Project name: | Poplar Business Park | | | Date: | 02/05/2010 |
| Job reference: | WG001 | | | View reference: | View 3 |
| | | OS Grid co-ordinates | | | |
| | Reference | Easting | Northing | Elevation | Accuracy (A-D) |
| Camera Position | L3 | 538369.211 | 180363.220 | 5.434 | A |
| Surveyor viewpoint1 | SV1 | 538250.536 | 180431.204 | 23.796 | A |
| Surveyor viewpoint2 | SV2 | 538222.242 | 180497.941 | 18.624 | A |
| Surveyor viewpoint3 | SV3 | 538238.276 | 180497.432 | 23.822 | A |
| Surveyor viewpoint4 | SV4 | 537838.268 | 181044.153 | 62.131 | A |
| Surveyor viewpoint5 | SV5 | 537981.825 | 181023.878 | 55.818 | D |
| Surveyor viewpoint6 | SV6 | 538063.733 | 180940.239 | 54.953 | A |
| Surveyor viewpoint7 | SV7 | 538209.542 | 180728.334 | 27.670 | A |
| Surveyor viewpoint8 | SV8 | 538266.412 | 180672.075 | 73.630 | A |
| Surveyor viewpoint9 | SV9 | 538364.933 | 180372.964 | 5.325 | A |
| Surveyor viewpoint10 | SV10 | 538367.095 | 180393.236 | 5.435 | A |
| Surveyor viewpoint11 | SV11 | 538395.996 | 180510.867 | 12.527 | A |
| Surveyor viewpoint12 | SV12 | 538374.180 | 180380.060 | 5.576 | A |
| Surveyor viewpoint13 | SV13 | 537852.072 | 181047.347 | 62.174 | A |
| Surveyor viewpoint14 | SV14 | 538253.487 | 180648.421 | 76.588 | A |
| Surveyor viewpoint15 | SV15 | 538269.285 | 180650.934 | 76.602 | A |
| Surveyor viewpoint16 | SV16 | 538266.358 | 180672.066 | 48.239 | A |
| Surveyor viewpoint17 | SV17 | 538263.602 | 180701.649 | 47.244 | A |

*fig 3b Survey coordinates supplied as an Excel file*


*fig 3c Trimble 5600 Reflectorless Total Station*

### Digital Images and Colour Correction

6.0 The digital images supplied by the photographer were saved as Photoshop PSD/TIFF/JPG files for use in the verification process.

6.1 Using the surveyed horizon points as a guide, each image is checked and rotated, if necessary, to ensure that the horizon line on the photograph is level, based upon the information received from the surveying team.

6.2 Any incorrect colour ‘casts’ are adjusted to match the original processed image. Similarly the brightness/contrast ratios of the image are corrected to match the original image (fig. 4b).

6.3 In professional architectural photography, having the camera pointing ‘horizontally’ (parallel with the ground) is desirable to ensure that vertical elements of the photographed scene remain perpendicular to the horizon. In reality the eye and brain compensate for non-perpendicular verticals and it is desirable to replicate this with photography. The tripods used by professional architectural photographers have built-in spirit level ‘bubbles’ to assist the photographer in keeping the vertical building elements ‘vertical’.

6.4 Following from 6.3 above, the cameras used by professional architectural photographers have the ability to ‘shift’ the camera back upwards which removes the ‘static’ nature of having the horizon midway along the vertical dimension of the photograph (as opposed to a standard 35mm camera) and allows for the inclusion of more sky over immediate foreground. This is standard practice within architectural photography and more realistically reflects the viewers experience on site.

6.5 The ‘virtual’ cameras in proprietary 3D software typically do not have this ‘shift-negative’ feature and so their horizon line will always bisect the vertical dimension of the view when the virtual camera’s view cone is positioned parallel to the ground plane. Consequently the digital image is further resized to ensure that the surveyed horizon line bisects the background image in the vertical dimension. (fig 4b).

*fig 4a High resolution image as supplied before colour correction*

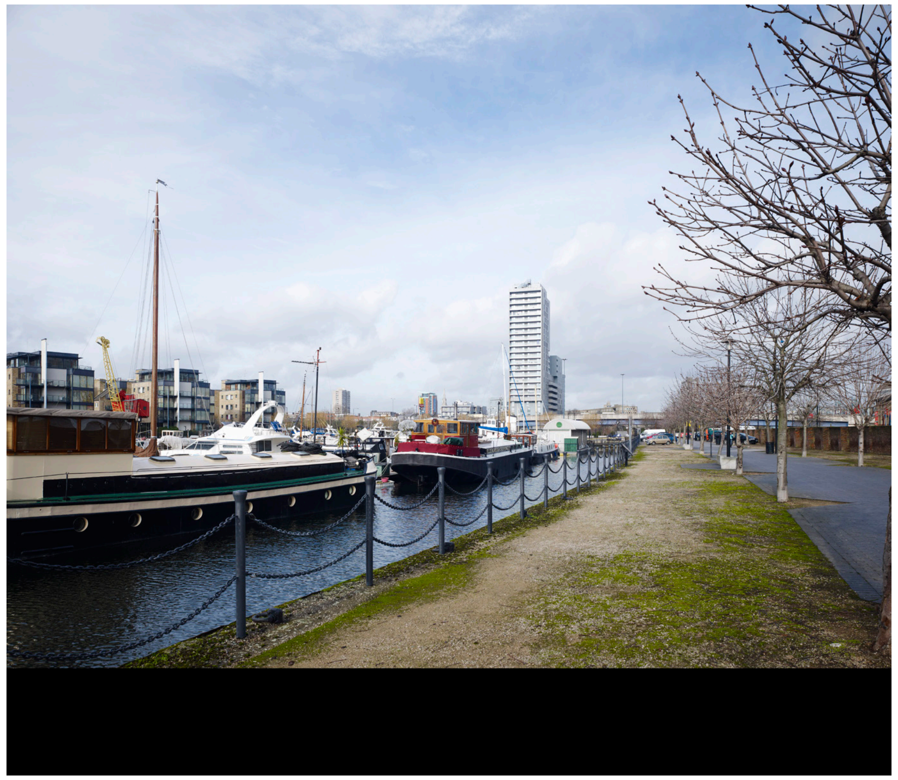

*fig 4b High resolution image after colour correction. The image has been rotated and resized to ensure that the surveyed horizon line is level and bisects the vertical dimension equally*