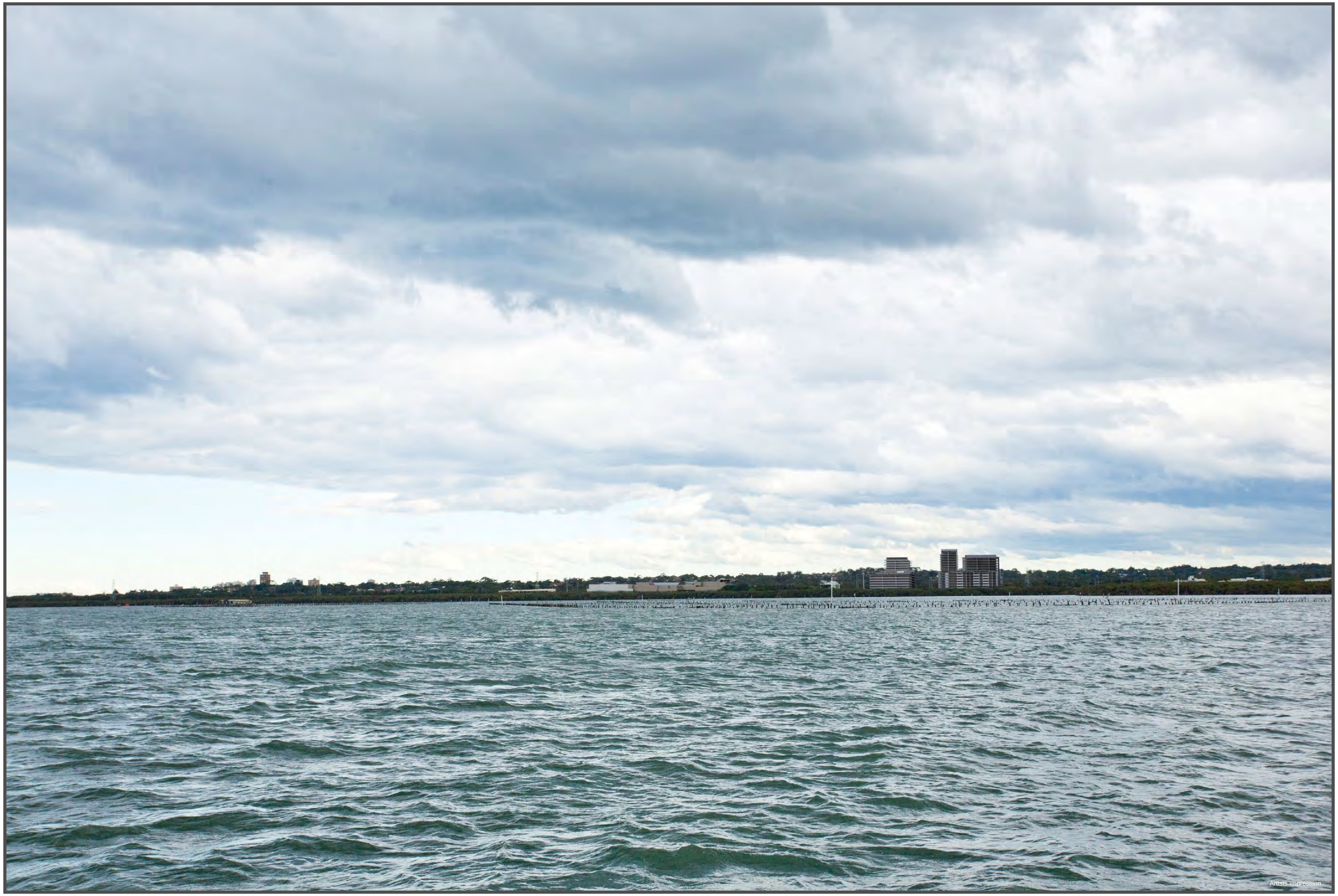

Photomontage showing future development

Original photo

Image showing alignment of the camera to the photograph with the 3D suvey lines shown in red.

Photographic data

Location:	Location that site could be viewed from Towra Point
Camera R.L.	2.0 m
Lens:	40mm
Dimensions:	4368 x 2912
Date:	04/07/2011 1:43 PM
Camera:	Canon EOS 5D

Rationale for lens selection

The rationale for using a 40mm lens was to show as much of the development as possible from this far location, without appearing like an unnaturally zoomed in view.

Photomontage showing future development

Original photo

For this image we relied on the GPS coordinates and angle as there was no surveyed points in the image to align to.

Photographic data

Location:	Location close to beach at Towra point reserve
Camera R.L.	2.0 m
Lens:	40mm
Dimensions:	4368 x 2912
Date:	04/07/2011 1:36 PM
Camera:	Canon EOS 5D

Rationale for lens selection

The rationale for using a 40mm lens was to show as much of the development as possible from this far location, without appearing like an unnaturally zoomed in view.

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Image showing outline of proposed development behind the tree line.

Original photo

Image showing alignment of the camera to the photograph with the 3D suvey lines shown in red.

Photographic data

Location:	2nd level balcony of residence.
Camera R.L.	48.5 m
Lens:	40mm
Dimensions:	4368 x 2912
Date:	05/07/2011 10:16 AM
Camera:	Canon EOS 5D

Rationale for lens selection

The rationale for using a 40mm lens was to show as much of the development as possible from this far location, without appearing like an unnaturally zoomed in view.

Photomontage showing future development

Original photo

Image showing alignment of the camera to the photograph with the 3D suvey lines shown in red.

Photographic data

Location:	2nd level balcony of residence.
Camera R.L.	48.5 m
Lens:	17mm
Dimensions:	4368 x 2912
Date:	05/07/2011 10:16 AM
Camera:	Canon EOS 5D

Rationale for lens selection

The rationale for including the same location using a wider image was to show the impact of the development as a percentage of the total view.

Photomontage showing future development

APPENDIX A - DIGITAL CAMERA LENSES FOR PHOTOMONTAGES AND VISUAL IMPACT ASSESSMENTS

The intention of a photomontage rendering is to visually communicate how proposed built form sits in respect to its surroundings. To achieve this, a digitally rendered image from a digital 3D model is accurately superimposed into a digital photograph to provide an accurate representation in terms of light, material, scale, and form.
Camera lens selection also plays an important part in creating a photomontage that communicates visual impact. There are several things to consider with respect to lens selection.

Field of View of the Human Eye

This is a topic that varies depending on the source of information. In many cases the field of view of the eye is stated to be 17mm. Other sources of information on the web say that it is more like 22-24mm. Whichever the case it is clear that the human eye has quite a wide field of view and when we stand close to a subject (say a building) we have quite allot of vision towards the top, sides and bottom. In addition to this the human eye can change focus and target direction extremely quickly allowing us to view a large structure in a very short period of time, effectively making our perceived field of view even larger.

The Perspective of the human eye

It is difficult to accurately reproduce what the human eye sees by the means of a printed image. As the back of the human eye is curved and the sensors on cameras are flat the perspective of a photograph can look quite different to how we see things in the real world, especially with a larger field of view, or wider lens.
In digital photography circles it is commonly stated that using a longer lens (approx 50mm) reduces the amount of perspective in an image and therefore looks more like the human eye would see reality, but this is talking about perspective only, and does not consider the field of view of the eye. If you take a photo using a 50mm lens, print the photo, and hold the print out against the actual view in the same location the photo was taken from, it becomes very clear that the human eye can see much more of the surrounding information than what is shown on the print out.

Changing the FOV on a digital camera

The main difference in using a longer lens vs. a wider lens is the amount of information that is displayed at the edges of the subject. Changing the lens to a smaller FOV produces the same result as cropping in on the wide angle image, providing that the position and the angle of the camera remains constant while taking the photographs. In short, a lens with a wider FOV does not create an image that has incorrect perspective it simply means that the perspective is extended at the edges of the image showing more of the surrounds in the images.

What all of this means for visual assessment is that there is no one fits all solution for lens selection. If we follow the opinion that a longer lens produces images that are closer to the perspective of the human eye, we will inevitably be in the situation where we cannot show the entirety of our subject and enough of the surrounds that it resides in. Also if we strictly stick to a 17mm lens we will have situations where the subject is far away and looks very small in the image, again making it difficult to assess visual impact. For these reasons we have taken the view that we can never totally represent what the human eye will see on a piece of paper, and for visual impact photomontages we should select lenses that strike a balance between the two and can accurately display the built form in its surroundings.

The most effective way to accurately gauge visual impact and get a real world feeling for scale would be to take prints of the photomontages to the exact site photography locations and compare the prints with the scale of the existing built form.

Extract from the web site - The Physics Factbook - Concerning the Focal Length of a Human Eye

http://hypertextbook.com/facts/2002/JuliaKhutoretskaya.shtml

The human eye is the organ which gives us the sense of sight, allowing us to learn more about the surrounding world than we do with any of the other four senses. We use our eyes in almost every activity we perform, whether reading, working, watching television, and driving a car, among countless other ways.

And how exactly does the eye work? The eyeball is a spherical structure approximately 2.5 cm (about 1 in) in diameter with a pronounced bulge on its forward surface, the cornea. Just behind the cornea is the iris, a coloured area with a hole in the centre called the pupil. Circular muscle tissue in the iris allows it to open and close the pupil to regulate the amount of light that gets inside the eyeball. Just behind the iris and pupil is the lens. The cornea and the lens work together to focus images on the retina, which is the light-sensitive layer that lines the inside of the eyeball.

Light moves in straight lines. Whenever a light ray encounters a surface of a different transparent medium, however, it refracts. The amount of refraction depends on the refractive index of the substance, the angle at which the light hits it, and the colour of the light. On a curved surface such as a lens, parallel rays of light will hit the surface at different angles and will be refracted in different directions.
The eye focuses on an object by bending all of the light rays from a single point on the observed object toward a single point on the retina. In the eyeball, light rays passing through the cornea are bent by its curvature toward the pupil. The lens flexes to change its curvature and finish the focusing process. When an object is located at infinity, the focal length, or the distance from the cornea to the retina, of a normal relaxed eye is about 1.7 cm (17 mm).

Bibliographic Entry	Result (w/surrounding text)	Standardized Result
Serway, Raymond & Beichner, Robert. *Physics for Scientists and Engineers with Modern Physics, Fifth Edition.* Saunders College Publishing. 2000.	"For an object distance of infinity, the focal length of the eye is equal to the fixed distance between the lens and the retina, about 1.7 cm"	17 mm
Cameron, John R.; James G. Skofronick & Roderick M. Grant. *Physics of the Body. Second Edition.* Madison, WI: Medical Physics Publishing, 1999.	"The diameter of the central bright spot at the retina is the product of the effective aperture to retina distance (17 mm) … ."	17 mm
Alexander, David. Light and Color (PHYS 1230) Lecture 21. University of Colorado. 1997.	"The normal relaxed eye focuses rays from infinity onto the retina, with a focal length of about 1.7 cm or power of about +60 diopters."	17 mm
The Eye: The Wonder of Accommodation. The Physics Classroom and Mathsoft Education and Engineering, Inc. 2002.	"The distance from the cornea (where the light undergoes most of its refraction) to the central portion of the fovea on the retina is approximately 1.7 cm."	17 mm