

Albany Then & Now: matching stereo-views from 1858 with the modern day

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Abstract

“Albany Then & Now: Historical Panoramas of Menang Noongar Boodja” is an exhibition running at the Museum of the Great Southern in Albany, Western Australia over the period 12 December 2025 to 7 June 2026. As part of the exhibition, a series of stereoscopic images from 1858 were converted into stereo-cards for use by exhibition attendees. Maintaining the “Then & Now” theme, modern-day equivalents of the 1858 views were captured around modern Albany and printed on the reverse side of the 1858 stereo-cards. The paper will discuss the methods used to process and produce the stereo-cards.

Introduction and Background

The “Albany Then & Now: Historical Panoramas of Menang Noongar Boodja” exhibition (Figure 1) is centred upon an amazing selection of historical panoramic views in and around Albany, Western Australia dating as far back as 1832. The panoramas are used in the exhibition to tell the history of Albany in a range of innovative and interesting ways.

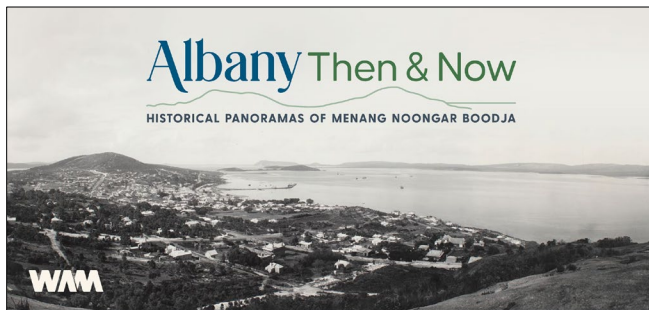


Figure 1. Promotional flyer for the exhibition. Base image: View of Albany from Mount Melville / Kardarup. Courtesy of State Library of Western Australia, 1495B.

Albany is a regional city on the south-coast of Western Australia – about five hours drive south of the state’s capital city Perth. Albany is the fourth largest population centre in Western Australia (after Perth, Bunbury and Geraldton). Evidence of Aboriginal people – the Menang Noongar people – living in the Albany area dates back more than 25,000 years. [1] This year is a significant year for Albany because it marks 200 years since the

townsite was established, that has turned into the city that we know today. Over the past 200 years the city has been a melting pot of different cultures and has evolved incredibly over that period, as illustrated by the large collection of more than 50 historical panoramic views that we discovered while performing the production work for this exhibition.

The most significant view in the exhibition is an expansive hand-coloured lithographic panorama depicting the 360° view from the top of Mount Clarence / Corndarup in 1832 (see Figure 2 top) [2]. The panorama shows the Albany townsite to the west, Princess Royal Harbour to the south, King George Sound to the east, and the Stirling Ranges to the north. The panorama is based upon a series of drawings sketched by lieutenant Robert Dale in 1832, and subsequently developed into a hand-coloured lithograph in London by artist Robert Havell in 1834.

One of the important features of the exhibition is that we geo-locate the original taking position of each panorama and capture a modern day equivalent of each panorama featured as illustrated in Figure 2 (top and bottom). This technique allows visitors to compare and contrast what has changed and what has remained the same over the period between the date of each historical panorama and the modern day. The exhibition includes 31 different historical panoramic views in and around Albany across 18 different locations. (see Figure 3)

The centre-piece of the exhibition is a large panoramic projection screen (Figure 4) similar to the Cylinder display at the Curtin University HIVE [3]. The screen in the exhibition is 2.7m tall, 180° field-of-view, and 7m in diameter. Three projectors are mounted above the audience and illuminate the projection surface with images which are warped and blended to provide a continuous panoramic view across the whole surface.

On the panoramic screen are shown a series of five panoramic short films for a total of 35 minutes of content. Each of the films are narrated by one or two local historians/experts who discuss various topics about the views as they slowly pan and zoom around the screen.

Another feature of the exhibition is a series of touch-screen kiosks which host a virtual tour around the 18 panorama locations, 31 historical panoramas and 18 modern day views. The touch-screens allow visitors to pan and zoom around the expansive images, fade between different years, and jump between different locations. (Figure 5).

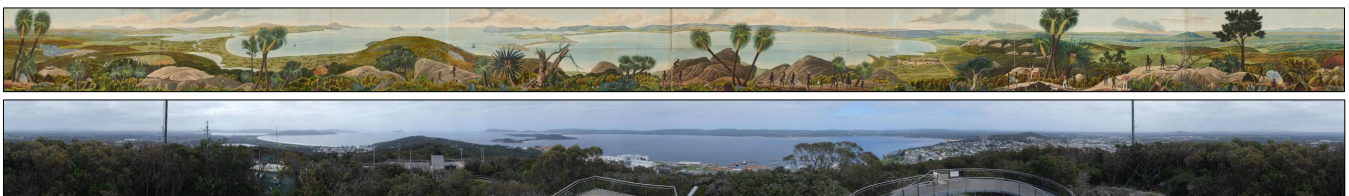


Figure 2. (Top) 360° panoramic lithograph of Albany from the top of Mount Clarence / Corndarup by Robert Dale and Robert Havell in 1832/1834. Image credit: Kerry Stokes Collection. (Bottom) Photographic panorama captured from the top of Mount Clarence in 2025 from the same viewpoint as the Dale panorama. Photo credit: Andrew Woods and Tom Szabo.



Figure 3. 1834 map of Albany with icons showing the location of 15 of the 18 panoramic view locations featured in the exhibition. Map credit: "Map of Albany and Environs", 1834 by W.K. Shenton from the survey by R. Clint. Source: State Records Office of Western Australia.



Figure 4. The panoramic projection screen in the exhibition in the process of showing one of the panoramic short films to the exhibition audience. Photo credit: Andrew Woods.

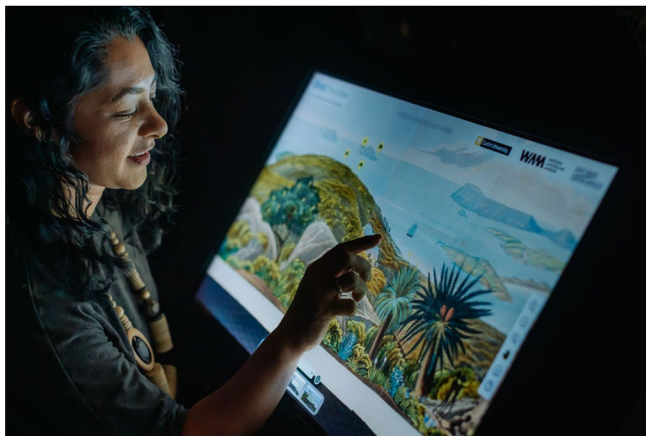


Figure 5. The touch-screen kiosks around the exhibition allow visitors to interactively explore the large selection of panoramic views of Albany. Photo credit: Krysta Guille.

Historical Stereoscopic Views

During the production work for the project, thanks to a tip, we became aware of a large album of historical images in the holdings of the Mitchell Library at the State Library of New South Wales containing seven stereoscopic image pairs captured in Albany in 1858 [4]. These images, photographic stereoscopic-pair prints were captured using a stereoscopic camera of unknown type. The images are believed to be the earliest stereoscopic views of Western Australia in existence. Unfortunately, the images were not well

aligned and their spacing and size as printed in the album is not compatible with any commonly available stereoscopic viewers. It was therefore decided to create a series of standard size stereo-cards from the images which could be viewed in the exhibition using standard stereo-viewers (stereoscopes).

One of the pages in the album, containing four of the stereoscopic image pairs from Albany is shown in Figure 6. A high-resolution scan of just one of the stereoscopic image pairs obtained from the Mitchell Library is shown in Figure 7.



Figure 6. A single page from the "MacArthur Album" containing four separate stereoscopic views of Albany in 1858 [4]. Image credit: State Library of New South Wales.



Figure 7. An individual high-resolution scan of one of the Albany stereoscopic image pairs [4]. The image shows the buildings at Strawberry Hill farm, now Strawberry Hill at Barmup. Image credit: State Library of New South Wales.

Then & Now Stereoscopic Images

Maintaining the "Then & Now" theme of the exhibition, we thought it would be a good idea to match the historical stereoscopic views with a matching modern-day view. On the front of the printed stereo-card would be the historical 1858 view, and on the reverse side would be the modern-day view.

Some of the locations were easy to identify and match, such as the buildings at Strawberry Hill (Figure 7), while others required more of a thematic match because of a range of factors – urban change including new buildings which block the location of the

original views and reclamation works that change the coastline, an inability to geo-locate the exact original location (due to a lack of identifiable landmarks), or in the case of the koornt (shelter) a recent construction of a koornt built by Larry Blight and Vernice Gillies was used since the original koornt would not have lasted 158 years.

Two of the stereopairs, featuring a distinctive granite rock outcrop (Figure 8), were particularly challenging to geo-locate but enlisting some local help via a local social media group yielded a solution. Albany has many granite rock formations protruding from the landscape around the city providing quite an iconic look. A helpful lead allowed us to pinpoint the rock formation of Figure 8 to Alicia Street in the Albany suburb of Mount Melville, hidden amongst houses. It wasn't possible to exactly match the original camera position due to housing blocking the original camera location, but it was possible to achieve a similar position.



Figure 8. The same 'mystery' rock formation in two different stereoscopic views [4] – single eye only shown here. Image credit: State Library of New South Wales.

The modern-day stereoscopic images were captured with either a Fujifilm W1 3D digital still camera, or a single Fujifilm X-T3 2D digital still camera using a cha-cha approach. [5]

All of the modern-day views are shown later in the paper.

Stereoscopic Image Processing – Alignment and Formatting

To correct stereoscopic misalignments in the stereoscopic image pairs and format the images suitable for compositing into a set of stereo-cards, a program called StereoPhoto Maker [6] was used. StereoPhoto Maker (SPM) is an incredibly powerful piece of free software for the purpose of editing stereoscopic images, alignment correction, format conversion, batch processing, and more.

The first step was to separate the scan of the side-by-side stereopair image (Figure 8) into two separate single left and right image files (Figure 9). We have found that this process works best if the separate images are not cropped too tightly around the active image area, leaving a buffer area around the image edge. This is similar to the concept of "bleed" in printing where the image goes beyond the edge of where the page is expected to be trimmed [7]. One complication of this process is that since the original stereopair has the left and right images stacked together very closely, this results in the "bleed" area containing a small strip of the other image. If that strip of the other eye image were left in, it would cause a strip of very strong false matches in the feature matching process which is used to calculate the alignment (mis-alignment) geometry. To avoid this it is necessary to manually blank that duplicated strip in each of the separate left and right images. In Figure 9 this is indicated by the strip of blue. The blue colour of the mask is used here just for illustrative purposes but in reality it would

be better to use a solid colour that more closely matches the border colour in order to avoid rich colours bleeding into adjacent areas.



Figure 9. The left and right images from the stereoscopic image pair separated into separate left and right files for processing in StereoPhoto Maker. The blue areas indicate masked areas. Image credit: State Library of New South Wales.

The second step is to import the left and right images into SPM and perform an image alignment: "Adjust" → "Auto Alignment" in the menu.

The third step is to adjust the desired Zero Parallax Distance (ZPD) to suit the 3D content of the image, or the type of stereoscopic viewer being used using the left and right arrow keys.

The fourth step is to crop the stereoscopic image to totally remove the border part of the stereoscopic image.

The sixth step is to export the image in stereo-card format using the "File" → "Print Stereo Card..." menu option in SPM. We used the "Classic stereo card (7 × 3.5 In)" format option in our case. Once the desired stereo card formatting options are chosen, the "Save as..." button can be clicked that the card saved in a non-lossy-compressed format such as PNG or TIFF.

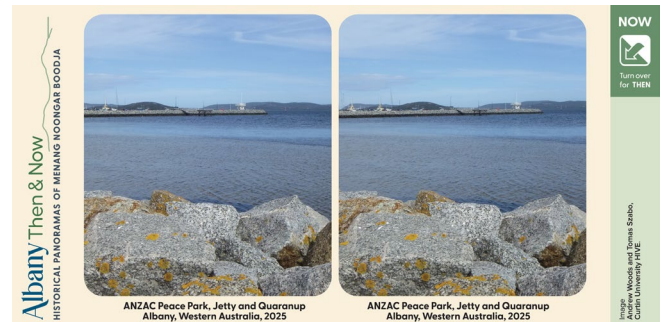
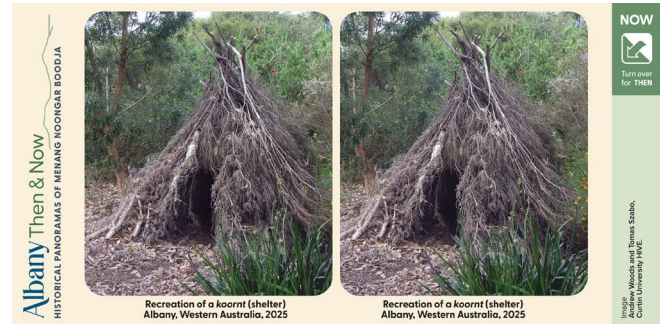
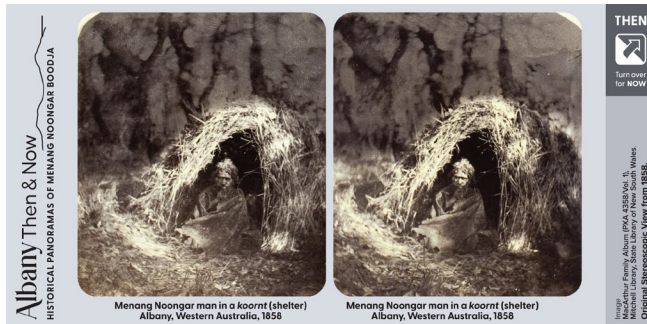
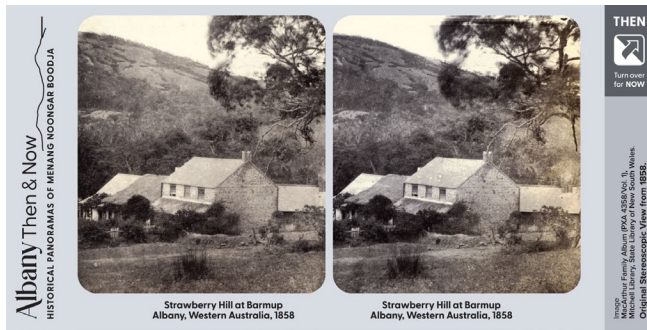
The last step was to import the Stereo Card image into a graphic design package to composite the stereoscopic image page with the desired graphic design for the stereo cards.

The graphic design for the stereo-cards was developed by Lowana Bibby from Insomnia Design and Andrew Woods. In addition to the actual stereo-pairs themselves, the elements of the stereo-cards include: the exhibition logo (left-hand side), credit information for each of the stereoscopic image pairs used (right-hand side), a text description of each image that appears underneath each image pair so that the text can be read in the stereoscope, and a graphic to indicate which view it is ("Then" or "Now") and an instruction to "Turn over" for the opposite view (top-right corner).

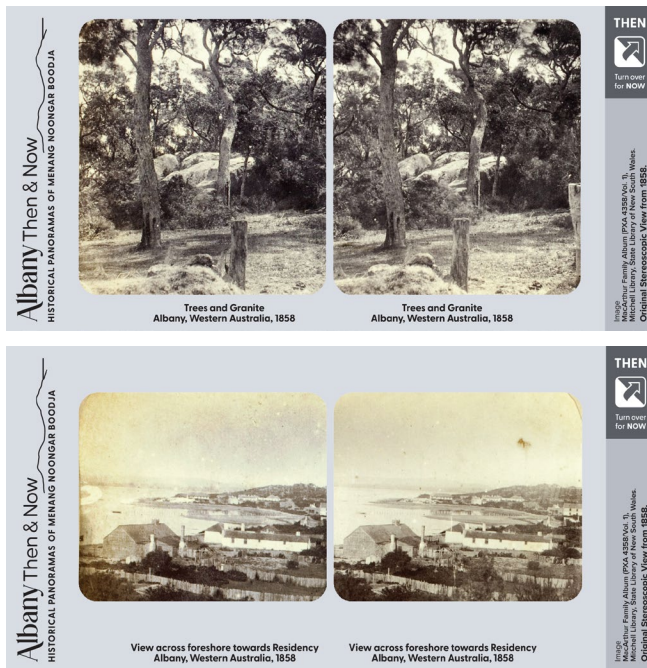
Stereo-cards in the Exhibition

A total of seven stereo-cards were developed for the exhibition, with the historical view on the front and an equivalent modern-day view on the back. The final cards are shown on the following pages (Figures 10-16). The actual stereo-cards used in the exhibition are printed at 7 × 3.5 inch (178×89 mm) however are shown in this paper at a slightly reduced size in order to easily fit on the page.

Two different types of stereoscope were available for visitors to view the stereo-cards in the exhibition: a traditional Holmes-style stereoscope [8] (Figure 17) and two newer design OWL stereoscopes [9] (Figure 18) from the London Stereoscopic Company. The OWL stereoscopes are better for people wearing glasses because the "hood" or "eye-shade" above the lenses of a traditional "Holmes-style" stereoscope often interferes with the prescription glasses that people might be wearing.



Figures 10-14. 'Then' and 'Now' sides of five of the exhibition stereo-cards.



Figures 15-16. 'Then' and 'Now' of the last two of the exhibition stereo-cards.



Figure 17. A traditional Holmes-style stereoscope in the exhibition. Photo credit: Krysta Guille.



Figure 18. OWL stereoscopes from London Stereoscopic Company in the exhibition. Photo credit: Krysta Guille.

The stereoscopes for viewing the stereo-cards, as they were displayed in the exhibition, are shown in Figure 19. Visitors were encouraged to take a set of the stereo-cards home with them.



Figure 19. Exhibition attendees viewing the Albany Then & Now stereo-cards using the OWL stereoscopes and the Holmes stereoscope. Side note: the exhibition attendees pictured here are the lead author's aunt, mum and sister. Photo credit: Andrew Woods.

Conclusion

At the time of writing this paper there have been around 24,000 visitors to the exhibition and we are expecting a total visitation of around 30,000. The exhibition has a companion website – www.HistoricalPanoramas.com.au/Albany – that allows the historical panoramic images to be viewed in a web-based interface on mobile, laptop or desktop displays. At the present time the stereoscopic images and stereocards are not available online.

We were very pleased to have been able to include historical stereoscopic images of Albany in the exhibition as stereo-cards.

Acknowledgements

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The primary team members involved in the development of the exhibition include: Andrew Woods and Tomas Szabo (Curtin University HIVE); Tanya Edwards, Monika Durrer, Theresa Archer, Fred Saunders, Donna Wallis-Smith, Toni Church, Sahrum Safuan, Catherine Salmaggi (Western Australian Museum); Kate Gregory, Denien Toomath, Cristina Albillos, Robert Simeon, Susan McEwan, Catherine Belcher (State Library of Western Australia); Lowana Bibby (Insomnia Design); Dave Primmer (Mixed Media); and Narrators: Stephen Hopper, Lynette Knapp, Malcolm Traill, Larry Blight, David Theodore, Sue Lefroy, Penny Williams and Samara Williams.

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Author Biographies

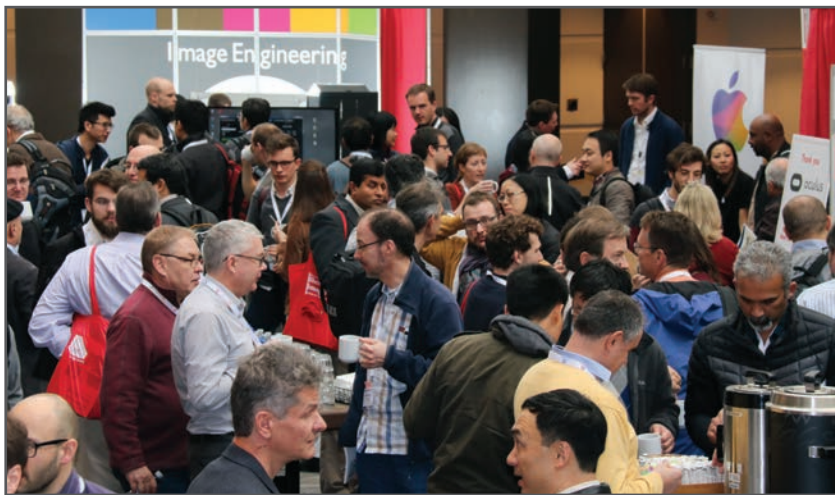
Andrew Woods is an Associate Professor at Curtin University where he manages the HIVE visualisation facility. He has BEng and MEng degrees in electronic engineering and his PhD was on the topic of crosstalk in stereoscopic displays. In 2017 he was recognised as one of Australia's Most Innovative Engineers by Engineers Australia. He has been co-chair of the Stereoscopic Displays and Applications conference since 2000. He is a senior member of IS&T.

Tomas Szabo is a video editor and digital content specialist at the Curtin HIVE on the Albany Then & Now project. Studying at Curtin University, he attained a Bachelor of Creative Arts (Screen Arts) with distinction and was awarded 'Best Editing' (Curtin Razor) and 'Most Outstanding Photography Specialisation Student' (Curtin DBE) at student award ceremonies. He also completed a HIVE summer internship (2024-2025) focused on creating 8K film content for use at the Western Australian Museum.

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